Energy and Risk: Discourse, Framing, and Content

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ENERGY AND RISK: DISCOURSE,
FRAMING, AND CONTENT

by

Temis Gardner Taylor

A dissertation submitted in partial fulfillment
of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Environment and Society

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2018
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ABSTRACT

Energy and Risk: Discourse, Framing, and Content

by

Temis Gardner Taylor

Utah State University, 2018

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Department: Environment and Society

Energy development often faces public resistance due to perceived risks. Risk perceptions contain important social and cultural values that are not implicit in technical risk assessments. Public participation and input in the process of making energy policy and development decisions is important in a democratic society. Understanding the socially shared perceptions of risk can help foster better communication among scientists, policy-makers, and the public.

Public discourses of risk were the subject of three case studies of risk policy-making in the Western United States. This qualitative analysis of discourse, framing, and content adopted a social constructionist perspective, using the Social Amplification of Risk Framework as a conceptual model. Theories of risk guided the coding and interpretation of texts.

Findings indicated that national identity and expectations of democracy were commonly-held values across discourses. Other entities, such as energy, the oil and gas industry, and property rights, were constructed in ways that created polarization and competition among discourses. There was a widespread lack of trust in the institutions of government and in other members of the public in these policy decisions. Different
underlying assumptions about the role of government and what should be protected created social tensions and competing accounts of risks.

Discourses presented arguments on the basis of risks to the environment; climate; human health and safety; jobs and economic prosperity; property rights; and local governments. Governments were seen as risks when they were perceived to allow misuse of public resources or threatened to override democratic processes. The quantity of water, energy, and land resources that would be consumed in the production of unconventional fuels were perceived to be social and environmental risks.

The discourses of the public applied social rationality in the use of evidence and rhetoric. Cultural worldviews and mechanisms of cultural cognition were observed in the construction, amplification, and attenuation of risks. Results demonstrate the usefulness of the Social Amplification of Risk Framework for evaluating the process of creating and circulating shared social knowledge about risks through discourse analysis. Overall findings lend support to theories of risk and indicate possible communication strategies for scientists and policy-makers.

(848 pages)
PUBLIC ABSTRACT

Energy and Risk: Discourse, Framing, and Content

Temis Gardner Taylor

This research examined how people communicate and create knowledge about energy-related risks. Analysis of the discourse, frames, and content surrounding unconventional energy policy and development in the Western United States was conducted using three case studies. The results contribute to an understanding of energy-related risk perceptions in social and historical contexts.

Discourses contained in newspapers and public comments to the Bureau of Land Management presented arguments on the basis of risks to the environment; climate; human health and safety; jobs and economic prosperity; property rights; and local governments. Governments were seen as risks when they were perceived to allow misuse of public resources or threatened to override democratic processes. The quantity of water, energy, and land resources that would be consumed in the production of unconventional fuels were perceived to be social and environmental risks.

Findings indicate that national identity and expectations of democracy were commonly-held values. Other entities, such as energy, the oil and gas industry, and property rights, were constructed in ways that created polarization and conflict among discourses. Different underlying assumptions about the role of government and what should be protected created social tensions and competing accounts of risks. Overall findings lend support to theories of risk and indicate possible communication and trust-building strategies for scientists and policy-makers.
I want to express my thanks my committee members, Drs. Joseph Tainter, Roslyn Brain, D. Layne Coppock, Peter D. Howe, and Barty Warren-Kretzschmar for their interest, expertise, and assistance throughout this process.

I owe my deepest gratitude to my friends and family who supported, helped, and encouraged me in countless ways over these years of work. I would especially like to thank Gaylord and Lynell Gardner, Maia Taylor, Matthew Hepworth, Jaynan Chancellor, Wendy Bernard Gooch, Deborah O’Rourke, and Christine Dyer.

I am also grateful True Rubal of the Institutional Review Board, Russell Price of Research Integrity and Compliance, and Mark McLellan, Vice President for Research and Graduate Studies, for the opportunities and support they provided.

Temis Gardner Taylor
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>PUBLIC ABSTRACT</td>
<td>v</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xvii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xix</td>
</tr>
<tr>
<td>LIST OF TEXT BOXES</td>
<td>xxi</td>
</tr>
<tr>
<td>DEFINITIONS</td>
<td>xxii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. ENERGY AND RISK: DISCOURSE, FRAMING, AND CONTENT</td>
<td>1</td>
</tr>
<tr>
<td>Energy as Risk</td>
<td>2</td>
</tr>
<tr>
<td>Risk Perceptions</td>
<td>3</td>
</tr>
<tr>
<td>Discourse, Frames, and Content</td>
<td>5</td>
</tr>
<tr>
<td>Research Design</td>
<td>6</td>
</tr>
<tr>
<td>Significance</td>
<td>8</td>
</tr>
<tr>
<td>Energy and Risks</td>
<td>10</td>
</tr>
<tr>
<td>Energy as a complex problem</td>
<td>12</td>
</tr>
<tr>
<td>Energy as an economic risk</td>
<td>12</td>
</tr>
<tr>
<td>Energy, food, and water</td>
<td>13</td>
</tr>
<tr>
<td>Energy and climate risk</td>
<td>14</td>
</tr>
<tr>
<td>Energy decision-making</td>
<td>15</td>
</tr>
<tr>
<td>Theoretical Background</td>
<td>16</td>
</tr>
<tr>
<td>Risk</td>
<td>16</td>
</tr>
<tr>
<td>Discourse Analysis</td>
<td>18</td>
</tr>
<tr>
<td>Framing</td>
<td>19</td>
</tr>
<tr>
<td>Content Analysis</td>
<td>20</td>
</tr>
<tr>
<td>Summary</td>
<td>20</td>
</tr>
<tr>
<td>II. PERCEPTIONS OF RISK</td>
<td>23</td>
</tr>
<tr>
<td>Conceptions of Risk</td>
<td>24</td>
</tr>
<tr>
<td>Risk Defined</td>
<td>28</td>
</tr>
<tr>
<td>Risk Perception and Risk Assessment</td>
<td>29</td>
</tr>
<tr>
<td>Changing Nature of Risk</td>
<td>35</td>
</tr>
<tr>
<td>Theories of Risk Perception</td>
<td>40</td>
</tr>
<tr>
<td>Economic Approaches</td>
<td>42</td>
</tr>
</tbody>
</table>
IV. METHODS ................................................................. 182

Description of Case Studies and Data Sources .................. 185

Case Study 1 - 2008 Programmatic Environmental Impact
Statement ................................................................. 185

Case Study 2 - 2012 Programmatic Environmental Impact
Statement ................................................................. 187

Case Study 3 - 2013 Colorado Ballot Measures .................. 187

Similarities and Differences among the Cases .................. 189

Data Collection, Screening, and Preparation ................... 191
2008 PEIS Data .......................................................... 192
2012 PEIS Data .......................................................... 193
2013 CBM Data .......................................................... 194
Sample Selection for PEIS Case Studies ............................ 195
Screening Texts for 2013 CBM Case Study ........................ 198
Software and Data Limitations ........................................ 199
Coding and Analysis .................................................... 200
Qualitative Tools for Analysis ........................................ 200
Storylines ............................................................ 201
Figured worlds ....................................................... 202
Situated meanings ................................................... 203
Goal framing ......................................................... 203
Cultural worldviews and rationality .................................. 204
  Worldviews ....................................................... 204
  Rationalities ...................................................... 205
Reading and Coding ................................................ 207
Analysis of coded data ............................................... 210
Use of Quantitative Tools ........................................... 212
Write-up and Final Analysis ........................................ 215

V. CASE STUDY 1 – 2008 OIL SHALE AND TAR SANDS PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT .......................................................... 220
History of Oil Shale ..................................................... 224
  Impacts of OSTS ................................................... 227
    Impacts on communities ...................................... 228
The 2008 Programmatic Environmental Impact Statement .... 229
  Alternatives Considered .......................................... 230
    Alternative A ................................................... 230
    Alternative B ................................................... 231
    Alternative C ................................................... 231
Public Comments .................................................... 232
  Campaign letters ................................................. 232
Analysis of Discourses in the Draft OSTS PEIS Comments ...... 236
Entities across Discourses .......................................... 238
  Oil shale and tar sands ......................................... 241
  Land ................................................................. 241
  Energy .............................................................. 246
  Development ...................................................... 249
  Resources ........................................................ 251
  Time ................................................................. 252
Other entities and agents across storylines .......................... 254
Not Worth the Destruction Storyline ................................ 256
  Storyline ........................................................ 258
  Entities .......................................................... 259
  Agents and motives ............................................ 263
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metaphors, rhetoric, and situated meanings</td>
<td>269</td>
</tr>
<tr>
<td>Assumptions about relationships and figured worlds</td>
<td>273</td>
</tr>
<tr>
<td>Worldview</td>
<td>274</td>
</tr>
<tr>
<td>Framing</td>
<td>275</td>
</tr>
<tr>
<td>Summary</td>
<td>275</td>
</tr>
<tr>
<td>Better Options than Fossil Fuels Storyline</td>
<td>276</td>
</tr>
<tr>
<td>Storyline</td>
<td>278</td>
</tr>
<tr>
<td>Entities</td>
<td>279</td>
</tr>
<tr>
<td>Agents and motives</td>
<td>286</td>
</tr>
<tr>
<td>Metaphors, rhetoric, and situated meaning</td>
<td>290</td>
</tr>
<tr>
<td>Assumptions about relationships and figured worlds</td>
<td>292</td>
</tr>
<tr>
<td>Worldview</td>
<td>294</td>
</tr>
<tr>
<td>Framing</td>
<td>294</td>
</tr>
<tr>
<td>Summary</td>
<td>295</td>
</tr>
<tr>
<td>Misuse of Public Lands Storyline</td>
<td>296</td>
</tr>
<tr>
<td>Storyline</td>
<td>299</td>
</tr>
<tr>
<td>Entities</td>
<td>299</td>
</tr>
<tr>
<td>Agents and motives</td>
<td>301</td>
</tr>
<tr>
<td>Metaphors, rhetoric, and situated meaning</td>
<td>307</td>
</tr>
<tr>
<td>Assumptions about relationships and figured worlds</td>
<td>310</td>
</tr>
<tr>
<td>Worldview</td>
<td>312</td>
</tr>
<tr>
<td>Framing</td>
<td>312</td>
</tr>
<tr>
<td>Summary</td>
<td>313</td>
</tr>
<tr>
<td>Irresponsible Government Storyline</td>
<td>314</td>
</tr>
<tr>
<td>Storyline</td>
<td>316</td>
</tr>
<tr>
<td>Entities</td>
<td>316</td>
</tr>
<tr>
<td>Agents and motives</td>
<td>319</td>
</tr>
<tr>
<td>Metaphors, rhetoric, and situated meaning</td>
<td>328</td>
</tr>
<tr>
<td>Assumptions about relationships and figured worlds</td>
<td>331</td>
</tr>
<tr>
<td>Worldview</td>
<td>332</td>
</tr>
<tr>
<td>Framing</td>
<td>332</td>
</tr>
<tr>
<td>Summary</td>
<td>333</td>
</tr>
<tr>
<td>Not Enough Information Storyline</td>
<td>334</td>
</tr>
<tr>
<td>Storyline</td>
<td>336</td>
</tr>
<tr>
<td>Entities</td>
<td>336</td>
</tr>
<tr>
<td>Agents and motives</td>
<td>338</td>
</tr>
<tr>
<td>Metaphors, rhetoric, and situated meanings</td>
<td>343</td>
</tr>
<tr>
<td>Assumptions about relationships and figured worlds</td>
<td>343</td>
</tr>
<tr>
<td>Worldview</td>
<td>349</td>
</tr>
<tr>
<td>Framing</td>
<td>356</td>
</tr>
<tr>
<td>Summary</td>
<td>356</td>
</tr>
<tr>
<td>Pro-OSTS Storyline</td>
<td>358</td>
</tr>
<tr>
<td>Storyline</td>
<td>359</td>
</tr>
<tr>
<td>Entities</td>
<td>359</td>
</tr>
<tr>
<td>Agents and motives</td>
<td>360</td>
</tr>
<tr>
<td>Better Options than Fossil Fuels Storyline</td>
<td>360</td>
</tr>
<tr>
<td>Storyline</td>
<td>362</td>
</tr>
<tr>
<td>Entities</td>
<td>362</td>
</tr>
<tr>
<td>Agents and motives</td>
<td>365</td>
</tr>
</tbody>
</table>
VI. CASE STUDY 2 – 2012 OIL SHALE AND TAR SANDS PROGRAMMATIC
ENVIRONMENTAL IMPACT STATEMENT .................................................. 384
   Context of the 2012 Programmatic Environmental Impact Statement .... 385
   The 2012 Programmatic Environmental Impact Statement .............. 389
   PEIS Alternatives ........................................................................... 393
   Public Comments ........................................................................... 394
   Campaign letters ........................................................................... 395
   Analysis of Discourses in the Draft OSTS PEIS Comments ............... 399
   Entities across Case Studies and Discourses .................................... 400
      Oil shale and tar sands ................................................................. 401
      Environment and environmental policies .................................... 401
      Land, development, and energy .................................................. 403
      Leasing ....................................................................................... 403
   Basic Assumptions across Discourses ............................................. 404
   Positions on OSTS ........................................................................ 406
   Pro-Alternative 1 Storylines ............................................................ 407
      Environmentalists Have Hijacked the System Storyline ............... 415
         Storyline ................................................................................ 415
         Entities .................................................................................. 417
         Agents and their motives ......................................................... 418
         Metaphors, rhetorical devices, and situated meanings ............... 421
         Assumptions about relationships and figured worlds ............... 423
         Worldview ............................................................................... 425
         Framing .................................................................................. 425
         Summary ................................................................................ 426
   Obstacles are Unfair to Companies Storyline ................................... 427
      Storyline .................................................................................. 429
      Entities ..................................................................................... 429
      Agents and their motives ............................................................ 433
      Metaphors, rhetorical devices, and situated meanings ................. 434
      Assumptions about relationships and figured worlds ................. 436
      Worldview ............................................................................... 438
      Framing .................................................................................. 439
      Summary ................................................................................ 439
   Regulations Hurt Local Economies Storyline ................................... 440
      Storyline .................................................................................. 442
      Entities ..................................................................................... 443
      Agents and their motives ............................................................ 445
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>VII.</td>
<td><strong>CASE STUDY 3 – 2013 COLORADO BALLOT MEASURES</strong></td>
<td>520</td>
</tr>
<tr>
<td></td>
<td>Hydraulic Fracturing</td>
<td>525</td>
</tr>
<tr>
<td></td>
<td>Public response to hydraulic fracturing</td>
<td>526</td>
</tr>
<tr>
<td></td>
<td>Case Study Background</td>
<td>527</td>
</tr>
</tbody>
</table>

**Discourses in Opposition of Alternative 1**

**Too Many Resources to Gamble Storyline**

**Unsafe for People and the Environment Storyline**

**Stop Climate Change Storyline**

**Protect Parks Storyline**

**Summary of 2012 OSTS PEIS**
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Analytical Paradigms</td>
<td>100</td>
</tr>
<tr>
<td>4.1 Author Types</td>
<td>195</td>
</tr>
<tr>
<td>5.1 2008 OSTS PEIS Campaign Letters</td>
<td>233</td>
</tr>
<tr>
<td>5.2 Discursive Storylines in the 2008 OSTS Sample</td>
<td>237</td>
</tr>
<tr>
<td>5.3 Frequency of Key Content Words in 2008 OSTS PEIS Sample</td>
<td>239</td>
</tr>
<tr>
<td>5.4 Frequency of Key Content Words in Not Worth the Destruction Storyline</td>
<td>257</td>
</tr>
<tr>
<td>5.5 Frequency of Key Content Words in Better Options than Fossil Fuels Storyline</td>
<td>277</td>
</tr>
<tr>
<td>5.6 Frequency of Key Content Words in Misuse of Public Lands Storyline</td>
<td>297</td>
</tr>
<tr>
<td>5.7 Frequency of Key Content Words in Irresponsible Government Storyline</td>
<td>315</td>
</tr>
<tr>
<td>5.8 Frequency of Key Content Words in Not Enough Information Storyline</td>
<td>335</td>
</tr>
<tr>
<td>5.9 Frequency of Key Content Words in Pro-OSTS Storyline</td>
<td>361</td>
</tr>
<tr>
<td>6.1 Unemployment in the U.S., States, and Counties in the OSTS Region</td>
<td>387</td>
</tr>
<tr>
<td>6.2 2012 OSTS PEIS Campaign Letters</td>
<td>396</td>
</tr>
<tr>
<td>6.3 Storylines in the 2012 OSTS sample</td>
<td>400</td>
</tr>
<tr>
<td>6.4 Frequency of Key Content Words in 2012 OSTS PEIS Sample</td>
<td>402</td>
</tr>
<tr>
<td>6.5 Frequency of Key Content Words in Environmentalists Have Hijacked the System Storyline</td>
<td>416</td>
</tr>
<tr>
<td>6.6 Frequency of Key Content Words in Obstacles are Unfair to Companies Storyline</td>
<td>428</td>
</tr>
<tr>
<td>6.7 Frequency of Key Content Words in Regulations Hurt Local Economies Storyline</td>
<td>441</td>
</tr>
<tr>
<td>6.8 Frequency of Key Content Words in Too Many Resources to Gamble Storyline</td>
<td>466</td>
</tr>
</tbody>
</table>
6.9 Frequency of Key Content Words in Unsafe for People and the Environment Storyline .......................................................... 482
6.10 Frequency of Key Content Words in Stop Climate Change Storyline .......... 492
6.11 Frequency of Key Content Words in Protect Parks Storyline...................... 506
7.1 Text Sources .................................................................................. 546
8.1 Discursive Storylines by Case Study .................................................. 722
8.2 Cultural Worldviews of the PEIS Discourses........................................ 740
8.3 Rationalities of the 2013 Colorado Ballot Measures Discourses ............... 744
8.4 Goal Framing in Discourses .................................................................. 749
A.1 Application of Discourse Analytic Tools............................................. 808
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Subjective Value Function of Prospect Theory</td>
<td>49</td>
</tr>
<tr>
<td>2.2</td>
<td>Per Cultural Theory Worldviews According to Group-Grid Orientation</td>
<td>81</td>
</tr>
<tr>
<td>2.3</td>
<td>Group-Grid Worldviews of Cultural Cognition Theory</td>
<td>86</td>
</tr>
<tr>
<td>2.4</td>
<td>The Social Amplification of Risk</td>
<td>93</td>
</tr>
<tr>
<td>3.1</td>
<td>Varieties of Discourse Analysis</td>
<td>160</td>
</tr>
<tr>
<td>3.2</td>
<td>Goal Framing with Positive and Negative Valence</td>
<td>170</td>
</tr>
<tr>
<td>3.3</td>
<td>Example of Goal Framing with Positive and Negative Valence</td>
<td>171</td>
</tr>
<tr>
<td>4.1</td>
<td>The Social Amplification of Risk Applied to Case Studies</td>
<td>184</td>
</tr>
<tr>
<td>4.2</td>
<td>Cultural Theory and Cultural Cognition Worldviews</td>
<td>206</td>
</tr>
<tr>
<td>4.3</td>
<td>MAXQDA Interactive Word Tree</td>
<td>215</td>
</tr>
<tr>
<td>5.1</td>
<td>Worldwide Energy Consumption per Capita, 1990-2014</td>
<td>221</td>
</tr>
<tr>
<td>5.2</td>
<td>Oil Shale Deposits in Colorado, Utah, and Wyoming</td>
<td>222</td>
</tr>
<tr>
<td>5.3</td>
<td>Special Tar Sands Area in Utah</td>
<td>223</td>
</tr>
<tr>
<td>5.4</td>
<td>Selected Commodity Index Prices, 1960-2014</td>
<td>225</td>
</tr>
<tr>
<td>6.1</td>
<td>Average U.S. retail gasoline prices from January 2000 to July 2012</td>
<td>386</td>
</tr>
<tr>
<td>6.2</td>
<td>Oil Shale in Colorado, Utah, and Wyoming</td>
<td>391</td>
</tr>
<tr>
<td>6.3</td>
<td>Detail Map with Locations of the RD&amp;D Tracts and Associated PRLAs</td>
<td>392</td>
</tr>
<tr>
<td>7.1</td>
<td>Natural Gas Production from Tight Formations in the United States, January 2007 to January 2014</td>
<td>522</td>
</tr>
<tr>
<td>7.2</td>
<td>Oil Production from Tight Formations in the United States, January 2007 to January 2014</td>
<td>523</td>
</tr>
<tr>
<td>7.3</td>
<td>Map of the Colorado Niobrara Formation with Detail of Colorado Ballot Measures Case Study Area</td>
<td>524</td>
</tr>
</tbody>
</table>
8.1 Components of the SARP Found in Use in Case Studies ........................................ 717

8.2 Goal Framing Combined with Prospect Theory ...................................................... 749
<table>
<thead>
<tr>
<th>Box</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Discursive Elements Shared across Discourses</td>
<td>256</td>
</tr>
<tr>
<td>5.2</td>
<td>Not Worth the Destruction Storyline</td>
<td>276</td>
</tr>
<tr>
<td>5.3</td>
<td>Better Options than Fossil Fuels Storyline</td>
<td>296</td>
</tr>
<tr>
<td>5.4</td>
<td>Misuse of Public Lands</td>
<td>314</td>
</tr>
<tr>
<td>5.5</td>
<td>Irresponsible Government Storyline</td>
<td>334</td>
</tr>
<tr>
<td>5.6</td>
<td>Not Enough Information Storyline</td>
<td>360</td>
</tr>
<tr>
<td>5.7</td>
<td>Pro-OSTS Storyline</td>
<td>381</td>
</tr>
<tr>
<td>6.1</td>
<td>Shared Elements of the Pro-A1 Storylines</td>
<td>415</td>
</tr>
<tr>
<td>6.2</td>
<td>Environmentalists have Hijacked the System</td>
<td>427</td>
</tr>
<tr>
<td>6.3</td>
<td>Obstacles are Unfair to Companies</td>
<td>440</td>
</tr>
<tr>
<td>6.4</td>
<td>Regulations Hurt Local Economy</td>
<td>453</td>
</tr>
<tr>
<td>6.5</td>
<td>Shared Elements of the Anti-A1 Storylines</td>
<td>464</td>
</tr>
<tr>
<td>6.6</td>
<td>Too Many Resources to Gamble</td>
<td>481</td>
</tr>
<tr>
<td>6.7</td>
<td>Unsafe for People and the Environment</td>
<td>494</td>
</tr>
<tr>
<td>6.8</td>
<td>Stop Climate Change</td>
<td>505</td>
</tr>
<tr>
<td>6.9</td>
<td>Protect Parks</td>
<td>514</td>
</tr>
<tr>
<td>7.1</td>
<td>Health, Safety, and Community Rights Storyline</td>
<td>598</td>
</tr>
<tr>
<td>7.2</td>
<td>Political Variant of the Health, Safety, and Community Rights Storyline</td>
<td>607</td>
</tr>
<tr>
<td>7.3</td>
<td>Industry Storyline</td>
<td>640</td>
</tr>
<tr>
<td>7.4</td>
<td>Pro-Fracking Public Storyline</td>
<td>671</td>
</tr>
<tr>
<td>7.5</td>
<td>Lawsuits Storyline</td>
<td>699</td>
</tr>
<tr>
<td><strong>DEFINITIONS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Actuarial risk assessment</strong></td>
<td>Risk assessments made with statistical data about previous events to predict average values of future risks.</td>
<td></td>
</tr>
<tr>
<td><strong>Affect</strong></td>
<td>The specific qualities of ‘goodness’ or ‘badness’ (a) experienced as a feeling state (with or without conscious awareness) and (b) demarcating a positive or negative quality of a stimulus. (Slovic, 2001/2010, p. 86).</td>
<td></td>
</tr>
<tr>
<td><strong>Affect heuristic</strong></td>
<td>Reliance on intuitive and experiential thinking that is guided by emotion.</td>
<td></td>
</tr>
<tr>
<td><strong>Analytical paradigm</strong></td>
<td>The ways that interpretive communities recognize, create, validate, filter, and apply knowledge. Analytical paradigms also determine how uncertainties and conflicting evidence are resolved.</td>
<td></td>
</tr>
<tr>
<td><strong>Anchoring and adjustment heuristic</strong></td>
<td>Estimates made from an initial value (the anchor) that is then adjusted to formulate an answer. The anchor is often given too much weight or insufficiently adjusted, resulting in a bias.</td>
<td></td>
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<tr>
<td><strong>Anticipated emotions</strong></td>
<td>Beliefs and expectations about future emotional states.</td>
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<tr>
<td><strong>Anticipated regret</strong></td>
<td>The expectation that a decision will lead one to regret a choice in the future.</td>
<td></td>
</tr>
<tr>
<td><strong>Anticipatory emotions</strong></td>
<td>The immediate visceral reactions experienced in the moment as a decision-maker faces a choice.</td>
<td></td>
</tr>
<tr>
<td><strong>Attribute frames</strong></td>
<td>This type of frame influences an individual's evaluation by emphasizing certain characteristics of an object or event.</td>
<td></td>
</tr>
<tr>
<td><strong>Availability heuristic</strong></td>
<td>Assessment of the frequency or probability of an event according to how readily instances or occurrences come to mind or how easy it is to imagine.</td>
<td></td>
</tr>
<tr>
<td><strong>Benign nature</strong></td>
<td>In Cultural Theory, the idea that that nature is forgiving and will return to a global equilibrium. This attitude toward nature corresponds with the individualist worldview.</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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</tr>
<tr>
<td>Biased assimilation and polarization</td>
<td>The mechanism for cultural cognition wherein evidence and arguments that reinforce existing beliefs are found to be more credible, while information in conflict with beliefs is dismissed.</td>
<td></td>
</tr>
<tr>
<td>Biases</td>
<td>Logical fallacies that can be the product of heuristics or social cognition.</td>
<td></td>
</tr>
<tr>
<td>Big &quot;D&quot; Discourse</td>
<td>Varieties or styles of language that are used to enact specific socially situated identities and the activities and practices that are associated with those identities (Gee, 2011, 2014).</td>
<td></td>
</tr>
<tr>
<td>BLM</td>
<td>The Bureau of Land Management, a division of the United Stated Department of the Interior</td>
<td></td>
</tr>
<tr>
<td>Bounded rationality</td>
<td>A theory of decision-making that proposes that due to limitations on complete rationality, people use heuristics to make decisions rather than strict, rigid rules of optimization.</td>
<td></td>
</tr>
<tr>
<td>Capricious nature</td>
<td>In Cultural Theory, a preference for strong group boundaries and strict social roles in which some members have control over others.</td>
<td></td>
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<tr>
<td>COGA</td>
<td>Colorado Oil and Gas Association</td>
<td></td>
</tr>
<tr>
<td>COGCC</td>
<td>Colorado Oil and Gas Commission</td>
<td></td>
</tr>
<tr>
<td>Communication act</td>
<td>In ethnography of communication, the combination of a social communicative action and its interpretation.</td>
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<tr>
<td>Communication event</td>
<td>In ethnography of communication, a culturally bounded sequence of acts that have a beginning and an end.</td>
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<tr>
<td>Communication frames</td>
<td>Properties of the communication itself, rather than the individual's internal understanding of the situation or event. Communication frames focus on what a speaker says.</td>
<td></td>
</tr>
<tr>
<td>Communication situation</td>
<td>In ethnography of communication, the specific settings and scenes for communication.</td>
<td></td>
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<tr>
<td>Contextualizing cues</td>
<td>Signaling mechanisms such as tone, inflection, rhythm, and syntax that speakers and listeners use to recognize and interpret meaning.</td>
<td></td>
</tr>
<tr>
<td><strong>Contingency</strong></td>
<td>The element of difference between possible and chosen action. Contingency is a mental model that allows people to make choices that promise at least some marginal benefit by preventing harm in advance.</td>
<td></td>
</tr>
<tr>
<td><strong>Cooperative principle</strong></td>
<td>The idea that talk exchanges are cooperative efforts among rational participants that follow conversational maxims about what can and should be said.</td>
<td></td>
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<tr>
<td><strong>Cultural availability</strong></td>
<td>A mechanism in cultural cognition theory in which worldviews make certain risks more salient and significant, thus more readily recalled according to cultural predispositions.</td>
<td></td>
</tr>
<tr>
<td><strong>Cultural cognition</strong></td>
<td>A theory deriving from Cultural Theory. It also proposes that individuals form perceptions of societal risks that cohere with values characteristic of groups with which they identify. It uses different names for worldviews, redefines the fatalist worldview, and takes a more flexible approach to cultural identity.</td>
<td></td>
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<tr>
<td><strong>Cultural credibility heuristic</strong></td>
<td>In cultural cognition theory, the tendency for people to credit an expert with greater credibility when they perceive that the expert shares their values.</td>
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</tr>
<tr>
<td><strong>Cultural Theory</strong></td>
<td>A theory that views risk as a construction wholly resulting from social processes. Cultural Theory states that people make choices about what to fear and formulate their social responses to risk based on threats to their preferred and culturally conditioned ways of life.</td>
<td></td>
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<tr>
<td><strong>Decision frame</strong></td>
<td>The conception of the consequences associated with a choice that casts the outcomes as a positive or negative.</td>
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<tr>
<td><strong>Discourse</strong></td>
<td>An act of communication. Originally seen as consisting of language in use, discourse now includes non-linguistic communicative acts, such as symbols, gestures, dress, images, sounds, etc. that reflect intentions, ideas, relationships, and identities.</td>
<td></td>
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<tr>
<td><strong>Discourse analysis</strong></td>
<td>In its most basic form, the study of language in use. Discourse analysis studies the processes of giving meaning to ideas, objects, and events.</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Discourses</td>
<td>Larger-scale interrelated sets of communications that are socially shared accounts of the world. Discourses often compete for status as accepted truth.</td>
<td></td>
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<tr>
<td>Dread risk</td>
<td>A factor in the psychometric paradigm defined by a risk's lack of control, catastrophic potential, fatal consequences, and inequity.</td>
<td></td>
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<tr>
<td>Dual-process theory</td>
<td>The theory that that people apprehend their world, including risks and benefits, by employing two interacting systems for processing information. Dual-process theory holds that feelings that arise from or amidst the experiential mode of thinking are influential during judgment and decision-making processes.</td>
<td></td>
</tr>
<tr>
<td>Egalitarian communitarian</td>
<td>In cultural cognition theory, the high-group, low-grid way of life. This is equivalent to the egalitarianism worldview in Cultural Theory.</td>
<td></td>
</tr>
<tr>
<td>Egalitarian individualism</td>
<td>In cultural cognition theory, the low-group, low-grid way of life. This is equivalent to the individualism worldview in Cultural Theory.</td>
<td></td>
</tr>
<tr>
<td>Egalitarian worldview</td>
<td>In Cultural Theory, a preference for strong group orientation and low social control and role differentiation.</td>
<td></td>
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<tr>
<td>EIA</td>
<td>U.S. Energy Information Administration</td>
<td></td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
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<tr>
<td>Emerging systemic risks</td>
<td>New forms of risk characterized by extreme uncertainty and a potential for extensive and perhaps irreversible harm.</td>
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<tr>
<td>Ephemeral nature</td>
<td>In Cultural Theory, the idea that nature is unforgiving and disturbances may trigger complete collapse of an ecosystem. This attitude toward nature corresponds with the egalitarian worldview.</td>
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<tr>
<td>Expected utility</td>
<td>The calculation of possible outcomes, weighted by probabilities that each one will occur.</td>
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<tr>
<td>Fatalist worldview</td>
<td>In Cultural Theory, a worldview where people have neither group membership nor individual autonomy and feel that they are controlled by external forces that rule their lives.</td>
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<td>Term</td>
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<tr>
<td>Figured World</td>
<td>A simplified mental construct that represents what is taken to be normal, typical, or appropriate, &quot;the way things should be.&quot;</td>
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<tr>
<td>Frack</td>
<td>A popular term referencing hydraulic fracturing.</td>
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<tr>
<td>Frame</td>
<td>The interpretive cues conversants use to understand or disambiguate communications. Frames are metamessages about how to categorize or interpret a message.</td>
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<tr>
<td>Frame building</td>
<td>Media framing, when studied as a dependent variable, is known as frame building. Like discourse analysis, frame building examines the production of frames as they are evident in communication.</td>
<td></td>
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<tr>
<td>Frame setting</td>
<td>Media frames can also be evaluated as an independent variable, in which the psychological effects of frames are measured as outcomes (Druckman, 2001b). This approach is referred to as frame setting, and it is used to reveal effects on individuals and media agendas.</td>
<td></td>
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<tr>
<td>Framing</td>
<td>The way individuals and groups organize, conceptualize, and communicate about a situation, activity, problem, or the world.</td>
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<tr>
<td>Goal framing</td>
<td>A type of manipulation designed to influence the evaluation of a given situation or behavior. The objective is to persuade an individual to adopt the goals that the message framer desires. Goal framing directs attention to the outcome of making the desired choice or behavior, or the consequences of not doing so.</td>
<td></td>
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<tr>
<td>Grid</td>
<td>In Cultural Theory and cultural cognition theory, the degree to which one believes social structure should be stratified and rigid.</td>
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</tr>
<tr>
<td>Group</td>
<td>In Cultural Theory and cultural cognition theory, an orientation toward individual versus collective social organization.</td>
<td></td>
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<tr>
<td>Heuristics</td>
<td>Quick, informal, and intuitive tactics that simplify understandings and responses to risk.</td>
<td></td>
</tr>
<tr>
<td><strong>Hierarchical communitarianism</strong></td>
<td>In cultural cognition theory, the high-group, high-grid way of life. This is equivalent to the hierarchy worldview in Cultural Theory.</td>
<td></td>
</tr>
<tr>
<td><strong>Hierarchical individualism</strong></td>
<td>In cultural cognition theory, the low-group, high-grid way of life that values independence and favors highly structured local control. This is the reconceived fatalist worldview from Cultural Theory.</td>
<td></td>
</tr>
<tr>
<td><strong>Hierarchy worldview</strong></td>
<td>In Cultural Theory, a preference for strong group boundaries and strict social roles in which some members have control over others.</td>
<td></td>
</tr>
<tr>
<td><strong>Home Rule</strong></td>
<td>Home rule cities and towns are self-governing, based on their adopted home rule charters. According to the Colorado Local Government Handbook (2013), home rule allows for greater power and autonomy from state government than a statutory municipality in the state.</td>
<td></td>
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<tr>
<td><strong>Hydraulic fracturing</strong></td>
<td>A process of using pressurized fluid to enhance production from oil and gas wells.</td>
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<tr>
<td><strong>Hydrofracking</strong></td>
<td>A term used for hydraulic fracturing.</td>
<td></td>
</tr>
<tr>
<td><strong>Identity-protective cognition</strong></td>
<td>A mechanism for cultural cognition in which an individual has an unconscious motivation to mold their attitudes, views, and beliefs to match those of others in the groups with which they identify.</td>
<td></td>
</tr>
<tr>
<td><strong>Indirect speech acts</strong></td>
<td>Communicate more than is actually spoken by relying on their mutually shared background information, along with rationality and inference on the part of the listener. Indirect speech acts allow for layers of meaning beyond those explicitly stated in the conversation, and permit listeners to make sense of conversation when the literal meaning of an utterance is not relevant.</td>
<td></td>
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<tr>
<td><strong>Individualist worldview</strong></td>
<td>In Cultural Theory, a way of life defined by low group cohesion and an absence of strictly prescribed social roles.</td>
<td></td>
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<tr>
<td><strong>Interpretive repertoire</strong></td>
<td>“Discernible clusters of terms, descriptions and figures of speech often assembled around metaphors or vivid images&quot; (Potter &amp; Wetherell, 1995, p. 89).</td>
<td></td>
</tr>
<tr>
<td><strong>Intertextuality</strong></td>
<td>References or citation of other texts and discourses, or allusion to them in more subtle ways.</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td><strong>Inverse relationship of risks and benefits</strong></td>
<td>The association of low perceived risk with activities thought to be good or beneficial, and high risk with activities that are disliked or thought to be harmful.</td>
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<tr>
<td><strong>Langue</strong></td>
<td>In Saussurian structuralism, the level of language as a system.</td>
<td></td>
</tr>
<tr>
<td><strong>Little &quot;d&quot; discourse</strong></td>
<td>Instances of language-in-use or any stretch of spoken or written language.</td>
<td></td>
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<tr>
<td><strong>MOU</strong></td>
<td>Memorandum of Understanding</td>
<td></td>
</tr>
<tr>
<td><strong>Mimesis</strong></td>
<td>The Socratic idea that the idea that the true essence of a thing is imitated in the sounds of language.</td>
<td></td>
</tr>
<tr>
<td><strong>Mineral rights</strong></td>
<td>Property rights that entitle the owner to search for and remove minerals from a plot of land. Also referred to as a mineral estate. Mineral rights include the extraction of oil and gas. Mineral rights can be owned separately from the surface rights on a parcel.</td>
<td></td>
</tr>
<tr>
<td><strong>Multiperspectival research</strong></td>
<td>Multiperspectival work combines elements from different discourse theories and methods, and sometimes includes non-discourse analytical perspectives.</td>
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<tr>
<td><strong>NEPA</strong></td>
<td>National Environmental Policy Act of 1969</td>
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<tr>
<td><strong>Normal accidents</strong></td>
<td>The inevitable disasters brought on by complexity and tight coupling of systems.</td>
<td></td>
</tr>
<tr>
<td><strong>OSTS</strong></td>
<td>Oil shale and tar sands</td>
<td></td>
</tr>
<tr>
<td><strong>Parole</strong></td>
<td>In Saussurian structuralism, the level of language in use.</td>
<td></td>
</tr>
<tr>
<td><strong>PEIS</strong></td>
<td>Programmatic Environmental Impact Statement</td>
<td></td>
</tr>
<tr>
<td><strong>Performative speech acts</strong></td>
<td>J.L. Austin's term for language as a form of action, or doing things with words.</td>
<td></td>
</tr>
<tr>
<td><strong>Perverse/tolerant nature</strong></td>
<td>In Cultural Theory, a preference for strong group orientation and low social control and role differentiation.</td>
<td></td>
</tr>
<tr>
<td><strong>Probabilistic risk assessments</strong></td>
<td>Risk assessments made by breaking complex systems into smaller parts and using estimated probabilities of system component failures to synthesize and model overall systems risk.</td>
<td></td>
</tr>
</tbody>
</table>
Prospect Theory: A theory that describes the way people make decisions in the face of risk and uncertainty. Choices are influenced by decision frames and subjective value.

Psychometric paradigm: A method for evaluating risk perceptions based on the characteristics of technologies and activities that generate different perceptions of risk.

Representativeness heuristic: The substitution of seemingly similar information or previously formed ideas, such as stereotypes, for missing information.

Researcher’s philosophy: The basic assumptions a researcher holds about discourse and the topic of study.

Revealed preferences: Understanding of risk perceptions based on the assumption that societies will reach an acceptable balance between risks and benefits through trial and error.

Risk: “A situation or an event where something of human value (including humans themselves) is at stake and where the outcome is uncertain” (Rosa, 2003, p. 56).

Risk assessment: Evaluation of risk based on scientific and technical measures and models.

Risk perception: Judgment about risk that depend on intuitive, experiential, emotional, social, and cultural factors in combination with cognitive evaluations.


Risky choice frames: Different portrayals of logically equivalent information in a decision problem.

SARF: Social Amplification of Risk Framework

Sign: In Saussurian structuralism, the combination of the word or symbol (signifier) and the concept that is represented (signified).

Signal value: The capacity of a risk to generate symbols and images that serve as warning signals and provide new information.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signified</strong></td>
<td>In Saussurian structuralism, a concept that is represented with a word or symbol.</td>
</tr>
<tr>
<td><strong>Signifier</strong></td>
<td>In Saussurian structuralism, a word or symbol that represents a concept.</td>
</tr>
<tr>
<td><strong>Situated meaning</strong></td>
<td>One of Gee's (2011, 2014) analytic tools to understand the context-dependent meaning of words in use.</td>
</tr>
<tr>
<td><strong>Social Amplification of Risk Framework</strong></td>
<td>An interdisciplinary, continuously evolving model designed to bridge research on technical risk analysis, risk perceptions, and sociology of risk.</td>
</tr>
<tr>
<td><strong>Social constructionism</strong></td>
<td>The theory that knowledge and identities are created through the effects of language, rather than viewing language as an accurate representation of a state of objective reality.</td>
</tr>
<tr>
<td><strong>Social language</strong></td>
<td>One of Gee's (2011, 2014) analytic tools to identify language use that enacts a particular social identity.</td>
</tr>
<tr>
<td><strong>Social license to operate</strong></td>
<td>Social license to operate refers to the ongoing approval and broad acceptance of a mining project by local communities and stakeholders (Prno &amp; Slocombe, 2012).</td>
</tr>
<tr>
<td><strong>Speech communities</strong></td>
<td>Groups of people who share at least a minimal set of rules for using and interpreting communication practice.</td>
</tr>
<tr>
<td><strong>Split estate</strong></td>
<td>A split estate occurs when surface rights and mineral rights to a parcel of land are not owned the same entity.</td>
</tr>
<tr>
<td><strong>Storyline</strong></td>
<td>A description of discourses narratives that include basic entities, assumptions about natural relationships, agents and their motives, and key metaphors and rhetorical devices.</td>
</tr>
<tr>
<td><strong>Structuralism</strong></td>
<td>The theory initiated by Ferdinand de Saussure that language has two levels, langue and parole. Within the system of language (langue) signs are believed to have stable, unchanging relationships that give language its fixed structure.</td>
</tr>
<tr>
<td><strong>Subjective value function</strong></td>
<td>The inconstant value people assign to perceived gains or losses, influenced by an individual's point of reference.</td>
</tr>
<tr>
<td><strong>Super catastrophes</strong></td>
<td>Extreme disasters produced by interacting human and natural systems where cascading events generate significant losses in a non-linear way.</td>
</tr>
<tr>
<td><strong>Surface rights</strong></td>
<td>Property rights to the surface of a plot of land. Also referred to as a surface estate. Surface rights can be owned separately from the mineral rights on a parcel.</td>
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<td>--------------------</td>
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</tr>
<tr>
<td><strong>System 1</strong></td>
<td>In dual-process theory, the experiential, automatic, and fast processing that employs heuristics and intuition.</td>
</tr>
<tr>
<td><strong>System 2</strong></td>
<td>In dual-process theory, the conscious, deliberative, analytic information processing commonly used for assessing and managing risks.</td>
</tr>
<tr>
<td><strong>Thought frames</strong></td>
<td>The representations, interpretations, and simplifications that are used in an individual's mental process. Thought frames center on what an individual is thinking.</td>
</tr>
<tr>
<td><strong>Toxicological risk assessments</strong></td>
<td>Risk assessments that assess health and environmental risks with models designed to identify consequences of exposure, causal agents, and the relationship between risk and physical harm.</td>
</tr>
<tr>
<td><strong>Unknown risk</strong></td>
<td>A factor in the psychometric paradigm defined by unobservable, unknown, new, and delayed risks.</td>
</tr>
<tr>
<td><strong>Utility</strong></td>
<td>The degree of satisfaction or happiness an individual experiences from a good.</td>
</tr>
<tr>
<td><strong>Wicked problems</strong></td>
<td>Challenges where stakeholders bring fundamentally different worldviews, values, beliefs, and experiences to their understanding of the issues, and the range of possible solutions is contingent upon the formulation of the problems.</td>
</tr>
<tr>
<td><strong>Worldviews</strong></td>
<td>In Cultural Theory and cultural cognition theory, cultural belief patterns shaped by clusters of related convictions and values.</td>
</tr>
</tbody>
</table>
In October 2016, the cover story of the journal *Science* featured a set of lessons for the leadership of the United States (Malakoff & Mervis, 2016). The article provided guidance on the six biggest science-related challenges the country is expected to face in the coming years. Perception of risk was one of these challenges. The importance of risk is underscored by the dangers inherent in the other five priorities the authors selected: new evolving pathogens, gene editing, climate change, brain disease, and artificial intelligence.

Risks in modern society are different from the hazards faced by people in pre-industrial societies. Today, human systems span the globe and interact with natural systems on local, regional, and planetary scales. Interconnectivity produces global risks such as climate change and the evolution of dangerous pathogens with pandemic potential. Natural hazards combine with technological and human failures to produce catastrophes such as Fukushima and Hurricane Katrina. Industrialization has facilitated population growth and levels of resource consumption that threaten the stability of human societies. Advances in science and technology produce social benefits but also introduce new risks and raise ethical questions.

As issues come to the fore, lawmakers and politicians will form perceptions of these and countless other risks. So, too, will other policy makers, scientists, experts, and the lay public, and those perceptions are sure to vary widely. A leader's personal perceptions of risks, public communications about risks, and the level of public trust he
or she holds are critical for leadership and good governance (Malakoff & Mervis, 2016). Although it is important, it is not enough for a leader or a policy maker to be conscious of his or her own subjective perceptions of risk. Good risk governance must also consider scientific evidence and the range of perceptions among the public (Aven & Renn, 2010; Kahan & Braman, 2006; Kahan, Slovic, Braman, & Gastil, 2006; Renn, 2001).

In a democratic society, one of the expectations of risk policy is the equitable distribution of risks and benefits (Aven & Renn, 2010; Beck, 1986/1992). People have a propensity to view matters of risks and benefits differently. Those perceptions may or may not correspond with scientific assessments or comport with the instrumental and pragmatic nature of policy making. When they do not align, perceptions of risk are often dismissed or even denigrated by scientists and policy makers (Garvin, 2001). Whether by voting, public participation, or protest, citizens make their perspectives and concerns about risks known. Disparate perceptions and the divisions between perceptions and expert assessments of risk often lead to conflict and deadlock. Therefore, public perceptions of risk should be of great interest to policy makers and researchers alike. Modern life presents myriad forms of risk, and risk perceptions are consequential but often ignored.

**Energy as Risk**

Patterns of energy use are tightly woven into the life in the modern world. Dependence on fossil fuels provides great benefits, but it also creates conflicts and risks. Prodigious energy consumption is the foundation for industrial societies, providing comfort, transportation, technology, and an abundance of material goods. Since the
industrial revolution, the use of fossil fuels has eased the burden of manual labor and made it possible to have high rates of urbanization, education, and innovation (Tainter, Strumsky, Taylor, Arnold, & Lobo, 2018; Taylor & Tainter, 2016).

Contemporary ways of life that are made possible by fossil fuels are vulnerable to the limitations of resources and production technologies. Energy is central to familiar challenges such as environmental degradation, sustainability, and climate change, as well as in lesser-recognized matters such as food production, education, and innovation (Taylor & Tainter, 2016). In our technical and industrial age, any risk involving energy is a potential threat to modern ways of life (Nikiforuk, 2012). As a result, decisions surrounding energy resources, development, production, and use are common sources of disagreements based upon risk perceptions.

The ways people conceive of risks associated with energy in their daily lives are reflected and reinforced through their use of language (Rupp, 2013). From a policy perspective, the role of the language of energy problems and solutions in policy making has only recently been recognized (Scrase & Ockwell, 2010). From an anthropological perspective, energy as a cultural artifact remains a gap in the literature on energy (Hornborg, 2013; Strauss, Rupp, & Love, 2013).

Risk Perceptions

The perceptions of individual members in a society contribute to the shared understandings and production of politically relevant knowledge of risk (Jasanoff, 2004; Kasperson, Kasperson, Pidgeon, & Slovic, 2003). Perceptions of risk have been tied to responses, adaptation, and mitigation of risks in fields as diverse as climate change (e.g.,
Grothmann & Patt, 2005; Howe, Thaker, & Leiserowitz, 2014; O’Connor, Bord, & Fisher, 1999), natural hazards (e.g., Browne & Hoyt, 2000; Riad, Norris, & Ruback, 1999), health care (e.g., Agha, 2003; Brewer et al., 2007), technology (e.g., Whitfield, Rosa, Dan, & Dietz, 2009), and food (e.g., Verbeke, Frewer, Scholderer, & De Brabander, 2007; Yeung & Morris, 2001). The public is aware of the existence and complexity of modern risks, and is also cognizant of the shortcomings of science and politics in dealing with them (Beck, 1986/1992, Garvin, 2001). Where risk is concerned, scientists, policy makers, and the public tend to create and use knowledge in dissonant ways (Garvin, 2001). Those differences often cause them to mistrust and misunderstand each other (Garvin, 2001; Irwin & Wynne, 1996; Toumey, 1996).

Public discourse offers an opportunity to observe how knowledge and meanings of risks are constructed, validated, and contested through social processes. Understanding perceptions of risk can help communicators foster more sustainable behaviors (Tainter, Taylor, Brain, & Lobo, 2015). Improved communication is key to broadening support, reducing conflict, and preventing polarization in decision-making (Kahan, 2010). In particular, bridging the communication divide is imperative for responding to pressing energy-related problems such as climate change, fossil fuel supplies, and pollution. Finding ways to promote mutual understanding will enable the future cooperation of scientists, policy makers, and the public (Garvin, 2001). Analysis of public discourse is an avenue for developing new knowledge of perceptions of energy-related risks.
Discourse, Frames, and Content

Discourse has been defined as “a particular way of talking about and understanding the world” (Jorgensen & Phillips, 2002, p. 1) and “a set of meanings, metaphors, representations, images, stories, statements… that in some way together produce a particular version of events” (Burr, 1995, p. 48). Discourse is more than just the exchange of information. It is an interpretive process people use to generate shared meanings or to refute other conflicting accounts of the world. Discourse functions to define common sense and legitimate truths, setting the context for the ongoing processes of social construction and transformation of knowledge. In this sense, language is viewed as constructive of social realities. Frames and content are elements of discourse that can affect perceptions of risk. Frames systematically emphasize certain aspects of an issue while minimizing others. Framing has been found to be a reliable phenomenon that influences decisions under risk (Kühberger, 1998). Content of communications can reveal patterns and trends in discourses. Analysis of content has been used to explore values and attitudes expressed by communicators, the logic they apply, and the worldviews they hold (Krippendorff, 1989).

Discourse, framing, and content construct and transform knowledge of energy and risks in social contexts. They are used to amplify or attenuate particular aspects of risks. The rhetoric and narratives in discourse are strategies to create common knowledge, establish a version of truth, and to persuade decision makers. By defining problems in particular ways, a discourse creates a limited set of possible solutions. Discourses shift and adapt over time as circumstances change and in response to other competing
discourses. Analyzing discourse can provide insight about the ways energy-related risks are created as social problems that require certain solutions.

**Research Design**

This research approached energy decisions and associated perceptions of risk using a novel combination of discourse analytic methods and risk theories to explore social understandings of energy-related risks. The aim of this study was to contribute to theory and knowledge of risk perceptions associated with energy through the contextual analysis of language. The primary objectives were:

- To characterize discourses of risk as they relate to energy development decisions.
- To identify factors that contribute to the construction, amplification, and attenuation of meaning and knowledge in discourse.
- To apply theories of risk perceptions in a real-world setting.

These objectives were undertaken through multiperspectival analysis of discourse, framing, and content in three case studies.

Grounding theories of risk perceptions in analysis of public discourses has allowed for the evaluation of social factors and processes that contribute to and maintain different perceptions of risk. Investigating risk perceptions through case studies extends research beyond survey questions and laboratory experiments into real-world events. This research addressed the following questions:

- What discourses of risk are present in these energy resource decisions?
- How do discourse, framing, and content of energy risks change over time?
• How are worldviews and rationalities manifest in communications about risk in energy decisions?

• What theories of risk perception can be supported through analysis of discourse, framing, and content?

The analytic process integrated theories of discourse and risk in order to study risk perceptions in documents related to public participation in energy development. Discourse provided a lens for understanding the shared meanings, rationalities, and worldviews expressed as part of energy development decisions. Analysis of framing was used to evaluate strategies for making a persuasive case in favor of certain actions. The interpretation and quantification of content supported discourse and framing analysis, and was used to evaluate theories of risk perceptions.

Risk theory supplied the overarching framework for this study. The Social Amplification of Risk Framework (SARF) incorporates multiple theories of risk and describes a social process for the generation, transmission, amplification, and attenuation of knowledge and perceptions of risk (Burns et al., 1993; R. Kasperson, 1992; R. Kasperson & Kasperson, 1996; R. Kasperson et al., 1988; Pidgeon, Kasperson, & Slovic, 2003; Renn, 1991). The SARF aligns with the social constructionist orientation of discourse analysis.

Three case studies were used to explore the topics of energy and risk in public decision-making processes. Two cases addressed land use policies affecting development of commercial oil shale and tar sands production in the Western United States. The third case involved public discourse in efforts to prevent hydraulic fracturing in three cities in Colorado.
In 2008 and 2012, the Bureau of Land Management (BLM), an agency of the U.S. government, conducted Programmatic Environmental Impact Statements (PEISes) in consideration of leases for the development oil shale and tar sands on public lands in Colorado, Utah, and Wyoming. Both of these PEISes required that the public be given the opportunity to provide input before a final decision was issued. Public comments from the Oil Shale and Tar Sands PEIS reports have been used as materials for the first two case studies.

The third case study occurred in 2013, when the November ballots three neighboring towns in Colorado proposed measures designed to restrict hydraulic fracturing in their jurisdictions. The texts for this study came from news articles, opinions, and editorials published in state and local newspapers. Analysis covered the period leading up to and immediately following the November vote.

**Significance**

One of the core principles of democratically grounded risk regulation is the involvement of the public (Kahan et al., 2006). Public participation in energy development decisions can expose underlying disagreements and contradictory perceptions of risk. The regularity and intensity of conflicts—both among public groups and between the public and expert risk assessors—indicates that the issue of disparate risk evaluations is complex and multifaceted. Some policy and law experts have suggested that the public is not prepared to make rational judgments about risk, and recommend that decision-making should be left to the experts (e.g., Breyer, 1993;
However, the perceptions and perspectives of the public can add to the understanding of risk in important and meaningful ways.

Public participation can articulate moral and ethical concerns that may not have been considered (Sovacool, 2014), and lay experts can contribute to overall knowledge (Funtowicz & Ravetz, 1993; Otway, 1992). Public participation extends the scientific debate beyond a closed circle of experts (Ravetz, 2006) to create an extended peer community (Funtowicz & Ravetz, 1993). Furthermore, inclusion can increase buy-in and reduce controversy (Hajer & Versteeg, 2005). According to Richard Sclove (2010), “[w]hen science and technology decisions are demonstrably responsive to the concerns of a wider range of citizens, the public is more likely to accept those decisions” (p. 8).

Analyzing public discourse in policy-making can reveal the supposed natural order of the world, the values people hold in the present, and those they wish to project into the future (Farrell, 2015). Public participation in decisions about risk is widely considered essential to the inclusive and pluralistic processes we expect in democracies (e.g., Lidskog & Sundqvist, 2012; Pidgeon, Lorenzoni, & Poortinga, 2008; Rosa, 1998). Rather than treating risk perception as the sociology of error, with the goal of exposing "how people formulate and hold onto false beliefs" (Jasanoff, 1998, p. 92), risk perception should be understood as an important part of the democratic process.

Recognizing risk as a socially organized and constructed phenomenon can help to account for the complex interplay between individual and social factors in risk evaluation (Rhodes, 1997). Understanding how existing discourses of energy and risk resist change can open possibilities for new problem definitions and novel solutions. With greater knowledge of risk perceptions, science communicators and policy makers can work to
avoid ideologically-biased interpretation of information (Kahan, Landrum, Carpenter, Helft, & Jamieson, 2017). Insight into underlying social factors for perceptions of risk may help scientists to direct inquiry, and policy makers to respond to public interests in ways that integrate public values and concerns into policy based on scientifically sound knowledge.

**Energy and Risks**

Amidst widespread apprehension regarding energy technologies, prices, distribution, supplies, geopolitics, and environmental impacts, societies grapple with their dependence on fossil fuels. The International Energy Agency (IEA) (2014) estimated that by 2040, global energy demand will grow by approximately 37%. As conventional energy reserves are depleted, resource discovery and extraction become ever more costly and difficult. This leaves less net energy available to society for productive purposes and creates a cycle of diminishing returns (Hall, Balogh, & Murphy, 2009; Murphy, 2013). Insufficient supplies of energy to support increasingly complex societies have led to the collapse of civilizations (Tainter, 1988, 2011). Technological optimism and faith in innovation create a contemporary hubris that blinds modern societies to their vulnerability to these same forces (Allen, Tainter & Hoekstra, 2003).

Yet energy problems are not merely issues of supply and demand. Energy is fundamental to a wide range of human values and goals, such as sustainability, equity, global development, economic prosperity, material wealth, geopolitical stability, environmental integrity, education, innovation, and public health. In a more abstract sense, energy is a taken-for-granted force that propels modern life, imbued with
scientific, spiritual, and mystical meanings (Rupp, 2013). These types of social and symbolic meanings often give rise to intractable arguments over what it means to be good, right, and just (Farrell, 2015). Such moral and ethical questions contribute to conflicts over present affairs and the obligations we feel to the future.

Technological innovation outpaces the ability to resolve the moral, cultural, and political challenges of energy, making it difficult to respond effectively to the energy risks facing contemporary societies (Jasanoff, 2003; Strauss et al., 2013). Technical, quantitative assessments of risk need social narratives to give them meaning, to place them in context, and to direct appropriate action, although those interpretations are often contentious (Jasanoff, 1998). Conflicts emerge as people with deeply held beliefs struggle to achieve aims in line with their ethics and morals (Farrell, 2015) or when worldviews prompt conflicting interpretations of information and events (Kahan, 2012b). People engage in discourse to support and legitimize their positions and ideologies. They use discourse to share and create knowledge, to promote action, and sometimes to refute or redefine the positions of others. In a democratic society, these discourses contribute to policies and practices that govern relationships within and between the social, political, and material worlds (Dryzek, 2013; Sjöberg, 2001).

To the extent that energy policy attends only to the technical aspects of risk and ignores social meanings, processes, emotions, and values, it will fall short of promoting important change (Árvai, 2014; Scrase & Ockwell, 2010; Slovic, 2010; Sovacool, 2014; Stirling, 2014; Strauss et al., 2013). If we are to restructure our relationship to energy in a more sustainable way, we must first understand our current ways of thinking and talking about energy and its associated risks. We need to know what opportunities and common
interests exist within various discourses, and why there is resistance to change. This would include understanding what perceptions of risks might motivate us to adjust course and how conceptions of risk limit the available options. Despite the human dimensions of energy problems, scholarly engagement with social and cultural aspects of energy has been “minimal and uneven” (Strauss et al., 2013, p. 10). Analysis of discourse is an underutilized method with potential to explore and provide insight into important issues such as these.

**Energy as a complex problem.** In his 1984 book on origins of disasters, Charles Perrow refers to complex interactive systems where disturbances spread quickly and irretrievably as tightly coupled systems. Risks in interactive, complex, and tightly coupled systems are difficult to anticipate and measure. Despite efforts to prevent system failures, components cannot be isolated and events can cascade quickly. Recent disasters such as the Gulf oil spill and the Fukushima Daiichi nuclear crisis highlighted the tight coupling within energy production systems. The ubiquitous and complex connections of energy to other natural and human systems are less visible.

Energy is part of the ongoing cycle of problem solving that sustains our ways of life. When faced with problems, the institutions of society solve them in ways that increase complexity (Tainter, 1988). Complexity is costly and drives the need for ever more energy and resources, eventually reaching a point of diminishing returns (Allen et al., 2003; Tainter, 1988, 2011). A society without reserve energy capacity lacks resilience and is at increased risk (Tainter & Taylor, 2013).

**Energy as an economic risk.** There are basic assumptions in classical economics that substitutability and innovation will overcome the constraints of limited resources,
and that supply, demand, and prices will drive creativity and invention (Daly, 2008; Foster, 1999; Tainter et al., 2015; Taylor & Tainter, 2016). When energy prices rise, money is diverted from economic activities that would otherwise contribute to economic growth, including innovation and research (Murphy & Hall, 2011a, 2011b, Tainter et al., 2018). As energy prices increase, other prices rise as well.

Tightening economies lead to reduced wages and business activities, driving loss of jobs and lower tax revenues (Fantazzini, Höök, & Angelantoni, 2011; Tverberg, 2012). When this occurs, governments have reduced capacity to meet commitments and provide for social welfare, and the public has less purchasing power (Fantazzini et al., 2011). Dependence on government supported safety nets increases as poorer citizens place greater demand on social welfare systems. Distressed business may require government bailouts. Credit is restricted, home and stock prices fall, and debts go unpaid (Tverberg, 2012). Evidence suggests the future will hold a fluctuating cycle of oil price spikes that drive the economy into recession, followed by slow but weak recovery and limited prospects for future growth (Brown et al., 2011; Murphy & Hall, 2011a, 2011b; Tverberg, 2012).

**Energy, food, and water.** Energy is tightly coupled to both water and food systems. Energy is required for agricultural inputs, irrigation, and operations, and the subsequent processing, distribution, and storage of food products. Industrialized agriculture requires ten calories of fossil fuels for every one calorie of food produced (Giampietro & Pimentel, 1993). Relatively cheap energy has facilitated the global movement of food. This has created a worldwide interdependency and vulnerabilities in the global food supply that contributed to the 2008 food crisis (United Nations, 2011).
The conversion of crops into biofuels intensifies the coupling of food, water, and energy systems (Gerbens-Leenes, Hoekstra, & van der Meer, 2009; King, Holman, & Webber, 2008).

**Energy and climate risk.** The United Nations Educational, Scientific, and Cultural Organization states that climate change is among the most severe threats to both human and environmental systems (Moss et al., 2011). According to the Intergovernmental Panel on Climate Change (IPCC) (2014), fossil fuel combustion accounts for the vast majority of the anthropogenic carbon emissions that contribute to climate change. The IPCC stresses that limiting emission of greenhouse gases is a necessary component of reducing climate risks.

The U.S. Department of Energy (DOE) (2013) reports that energy systems not only contribute to climate change, they are also vulnerable to it. Energy infrastructure and transportation are at risk from climate change-related flooding, sea level rise, and increasing intensity and frequency of storms. Hurricanes Katrina and Harvey are vivid examples of storms and floods impacting energy hubs.

Decreasing water availability and elevated air and water temperatures adversely impact the production of energy (DOE, 2013). For example, the efficiency of thermoelectric power generation is diminished by elevated air and water temperatures. Increased air temperatures also reduce the generation of solar energy and the efficiency and capacity of electricity transmission. Generation of hydropower is affected by decreased precipitation and evaporative losses. Biofuel crops require more irrigation and are susceptible to crop failure at higher temperatures. At the same time production
capacity is reduced, overall energy demand is likely to rise as more energy is required for increased cooling and mitigation measures (DOE, 2013).

**Energy decision-making.** Whether energy is renewably or non-renewably sourced, providing for human wants and needs forces us to make tradeoffs. At issue are choices about such things as energy quality, energy quantity, economic prosperity, and human and environmental health. Our propensity to use the best resources first means that the quality of the resources we must use has declined significantly and will continue to do so (Cleveland, 2008).

The future of fossil fuel use is fraught with complications. Oil use poses geologic, geopolitical, and peak production concerns. Coal is plentiful in the present, but has been targeted for reductions in attempts to control atmospheric carbon. Natural gas has created some optimism, particularly in the United States. There are indications, however, that production levels boosted by hydraulic fracturing are only a temporary reprieve for energy markets (Hughes, 2013), with environmental consequences that are not well understood. Oil shale and tar sands are abundant but pose technological and environmental challenges. They are carbon intensive and expensive to produce in terms of capital, energy, and water.

Fossil fuel alternatives do not offer easy solutions, either. Some experts maintain that renewables cannot supply current consumption levels and lifestyles, let alone support a growing population or escalating levels of affluence (Brown et al., 2011; Hall, Lambert, & Balogh, 2014; MacKay, 2009). Nuclear energy has been stigmatized, and the problem of waste disposal has not been adequately addressed.
Managing energy needs and resources into the future will present difficult decisions. Compromises about risks and benefits are inevitable. The risks we choose to assume, how we choose them, and who bears the costs are important social concerns. To make these decisions effectively and garner public support, it is important to reduce conflict and avoid polarization. Finding common ground in risks and values may be key to effective communication and risk conciliation.

**Theoretical Background**

**Risk**

The word ‘risk’ is common but has a multiplicity of meanings. In its most basic form, risk is defined as the probability of an event in combination with the severity of potential outcomes. In practice, risk is not this easily described. For some risks, there is little or no probabilistic information available. Even in cases when risks can be quantified, widely-held conceptions and perceptions of risk often do not align with the opinions of experts (Fischhoff, Slovic, Lichtenstein, Read, & Combs, 1978; Slovic, Fischhoff, & Lichtenstein, 1979).

Many definitions of risk focus on probabilities and consequences while others equate risk to uncertainty (Aven & Renn, 2009). Eugene Rosa offers a frequently used, socially-oriented definition of risk as “a situation or an event where something of human value (including humans themselves) is at stake and where the outcome is uncertain” (Rosa, 2003, p. 56). This definition incorporates human values as part of risk in a way is missing from technical assessments based on probabilities and outcomes.
Life in modern society brings new types and scales of risks (Beck, 1986/1992). In the late 20th century, a heightened awareness of technological threats and environmental damage exposed new facets of risk (Aven & Renn, 2010). These risks differ from risks in the past. They are characterized by environmental damage, pollution, and failures of human technology, with a scale and magnitude that threaten continuance of our ways of life (Beck, 1986/1992). Assessments of these risks are often hypothetical, involving new or rare hazards and a great deal of uncertainty.

Risk has long been viewed as a consequence of human interaction with nature and technology, an “inevitable by-product of the pursuit of benefits that are important to societies and communities” (Tierney, 2014: p. 31). This perspective has shifted as the social sciences have turned toward questions of risk. Even the most scientific and quantitative assessments of risk are now seen as social and political activities due to the cultural embeddedness of risk (Jasanoff, 1999).

Risks in a society are driven by demographic, socioeconomic environmental, technological, social-structural, and social-psychological forces that influence the ways we deal with risks and the nature of the risks themselves (Organisation for Economic Co-operation and Development [OECD], 2003; Tierney, 2014). Social perspectives on risk recognize that how problems are described, what we see as risk, and what we admit as evidence determine the range of possible responses (Hajer, 1995). Perceptions of risks and the resulting conflicts over those perceptions have come into focus as important issues in democratic societies (Slovic, Fischhoff, & Lichtenstein, 1982), leading to a proliferation in theory and research on risk perceptions over the past 40 years.
**Discourse Analysis**

Discourse analysis centers on the processes by which the social world is constructed, changed and maintained through language in use (Jorgensen & Phillips, 2002; Phillips & Hardy, 2002; Wood & Kroger, 2000). Discursive approaches have been used to develop understandings of environmental conflict (e.g., Cantrill & Oravec, 1996; Dryzek, 2013; Evernden, 1992; Hajer, 1995; Herndl & Brown, 1996). Discursive theory and methods have only recently been introduced to studies on energy policy (Scrase & Ockwell, 2010). There is growing recognition that social knowledge of energy is constructed, transmitted, reinforced, reproduced, and altered through language. Discursive approaches to research on public participation in energy development decisions and policy-making can provide new information about risk perceptions associated with a fundamental part of modern societies.

Discourse analysis differs from other qualitative approaches to the study of language. While traditional qualitative methods explore the deeper meanings embedded in language or the hidden qualities of an individual, discourse analysis examines the production of social knowledge, practices, and structures (Phillips & Hardy, 2002). Discourse analytic methods are used to examine how and why meaning is constructed in the social world; how categories are created, differentiated, and changed; and how discursive or categorical boundaries are held in place (Phillips & Hardy, 2002; Wood & Kroger, 2000).

Some discourse analysts advocate for studies on structural features of texts, such as linguistics and grammar, while others focus on content and context, such as ideas, issues and themes (Gee, 2014; Phillips & Hardy, 2002). In application, studies exist in the
continuous space of these approaches with elements of each necessary to the work of discourse analysis. Discourse analysis often borrows and builds upon other qualitative methods and the lines between them are not always distinct. In combination, they can provide complementary insights. (Phillips & Hardy, 2002). This study combined discourse analysis with qualitative analysis of framing and content as part of discourse.

**Framing**

Framing is the practice of organizing the world by selecting certain features and emphasizing them while minimizing others. Frames reduce ambiguity and simplify the world. They can serve as shorthand for shared social and cultural knowledge, beliefs, and positions. They can also be metamessages about how to interpret a communication. Frames can be part of an individual’s mental process, or they can be properties of communication. When used in communication, a frame can reveal what an individual finds important about an issue or situation (Druckman, 2001b; Gamson & Modigliani, 1989). Thought and communication frames work together, constructing and upholding the meanings of a frame (Reese, 2010; Van Gorp, 2007). In that they project a certain version of the world through language, signs, and context, frames are an intrinsic part of discourse.

As the linguistic formulation of a decision problem, communication framing is important to understanding discourse. Framing is also part of risk and decision-making theories. Frames can reveal underlying assumptions in discourse (Scrase & Ockwell, 2010). Communication frames can be used to advocate for a particular point of view,
define a problem in deliberate ways, or promote a pre-determined outcome (Reese, 2010).

Content Analysis

Content analysis originated in communication research. It is used to observe symbolic qualities of communication in view of the context and meanings that are attributed to the messages (Krippendorff, 1989). There are quantitative and qualitative approaches to content analysis. When applied in an interpretive form, analysis of content can be part of discourse analysis (Phillips & Hardy, 2002). Discourse analysis cannot take place without consideration of content (Wood & Kroger, 2000).

Qualitative content analysis approaches the use of words as communication set in contexts, while quantitative content analysis focuses on the words, phrases, or sentences themselves. Discourse analytic approaches to content aim to see how content is used to achieve specific functions and effects (Wood & Kroger, 2000). Qualitative content analysis examines what meanings are created through the use of language. Discourse analysis evaluates how those meanings are constructed, with form and function of content seen as inseparable when considering language in use (Fairclough, 1992a; Wood & Kroger, 2000).

Summary

Tightly coupled energy systems are significant risks in contemporary societies, and emerging systemic risks have increasingly severe consequences. The decisions we make about energy and how we make them are critical to a secure and sustainable future.
Good risk governance needs to incorporate science, public concerns, and values, and be responsive to the pressing needs for policy implementation.

In recent human history, the nature of risks has changed. Energy is a key component of many new emerging risks. Alone or interacting with other risks, they are capable of producing catastrophic disasters. Because of the far-reaching consequences, risk is involuntarily imposed on people who may not gain any benefit (Beck, 1986/1992). People reasonably resist the burden of risks they do not understand and cannot avoid or control.

Research on risk perception has produced new insights and changes in perspective on the often bitter and protracted controversies over risks (Slovic, 2000a). There was once little understanding of the differences between expert and public opinions of risk, or of the variations in risk perception among experts and the public. Over the past 40 years, risk perception research has “exhibited a clear progression away from the simple views in the initial studies of perception to an increasingly complex conception of risk and its assessment as a socially constructed phenomenon” (Slovic, 2000a, p. xxxvi). Despite this knowledge, discourse analysis, an important method for the study of social construction, has been little-used in the furtherance of risk perception research.

When acting as a policy maker, scientist, or member of the public, people use different kinds of rationality in their thinking about risk, which often leads to misunderstandings and misinterpretations (Garvin, 2001). Furthermore, cultural predispositions and biases can create conflicting interpretations of evidence, even when the express objective is to communicate a neutral, accurate assessment of risks (Kahan,
Bolstering cooperation and mutual understanding between groups can lay the foundation for improved, inclusive risk governance (Garvin, 2001). Risk perceptions express important values and concerns. Understanding them can improve the ways scientists and policy makers address public concerns, communicate about risks, formulate evidence-based public policy, incorporate science into shared knowledge, and work to decrease conflict and polarization in matters of risk (Garvin, 2001; Jasanoff, 1998, 1999; Kahan, 2012a; Kahan et al., 2006; Slovic, 2000b).

This research is a step in assessing the ways in which those goals might be accomplished. Blending constructivist approaches with risk theories takes risk perception research in a direction not well explored. This work approached risk perception as part of a social process. It examined how the public communicates to policymakers and to each other about risk in matters of energy development. Case studies allowed observation of change over time, amplification and attenuation of messages, and theories of risk perception in real-world situations.

Chapter 2 discusses theories and history of research on risk perception. Theories, methods, and background on the study of discourse are covered in Chapter 3, along with approaches to framing and content. The approach to analysis and application of methods is described in Chapter 4. Chapters 5, 6, and 7 detail the analysis of the three case studies, and Chapter 8 discusses the conclusions from these analyses.
CHAPTER 2
PERCEPTIONS OF RISK

Conflict over risk can arise when the existence, source, type, and severity of a risk are perceived differently by members and sectors of society. The need to reduce conflict and manage risk in a democratic society makes it necessary to understand risk perception (Jasanoff, 1998, 1999; Kahan, 2012a, Slovic, 2000a). Over the past 50 years, researchers have developed various theories on social and cultural aspects of risk. These approaches have offered explanations of the origins of risk perceptions and the differences in perceptions among people and groups.

Risk perceptions are judgments about risk that derive from intuitive, experiential, emotional, social, and cultural factors in combination with cognitive evaluations. Gut-level evaluations of risk often lead to disproportionate responses, making them an insufficient basis for sound policy and management. Perceptions of risk stand in contrast to professional risk assessments. Risk assessments are based on scientific and technical measures and models. Assessments purport to represent the “real” information about risks (Jasanoff, 1998). It might appear, and some have suggested, that policy should be made on the basis of expert risk assessments alone (e.g., Breyer, 1993; Sunstein, 2005). However, there are many reasons risk perceptions should not be dismissed. Perceptions contain important social information about risks, such as values, ethics, and fairness — principles that are not adequately incorporated in quantitative risk analysis. In a democratic society, risk perceptions are an important part of deliberative and inclusive policy making, regardless of political disposition (Kahan et al., 2006).
Perceptions are criticized for a lack of objectivity, but risk assessments are also affected by subjectivity and inherent biases. Risk assessments require many simplifying assumptions about complex and interacting natural, human, and technological systems (Renn, 1992). Making assessments requires decisions about which factors to include and how to measure risks, hence they have potential to introduce the experts’ personal bias and agendas (Jasanoff, 1998; Malakoff & Mervis, 2016). The ways in which risk information is expressed and communicated are known to influence perceptions, judgments, and choices about risks (Fischhoff, 1995; Kahneman & Tversky, 1979, 1984; Tversky & Kahneman, 1981, 1986). Risk assessments are shaped and conditioned by the judgments and biases of scientists and experts, many of which go unrecognized.

The study of risk perception has an important role in informing policy and reducing conflict (Slovic, Fischhoff, & Lichtenstein, 1982). Policy makers and advisors need to understand how perceptions of risk work in their own evaluative processes and in those of the individuals and groups they serve and represent. Good risk policies must incorporate both the technical and social dimensions of risk (Jasanoff, 1998; Renn, 2008). Inclusion of risk perceptions can facilitate socially credible and technically prudent risk assessment and management, and can reduce the pressures toward distrust in social institutions that generate, evaluate, and regulate risks (Freudenberg, 2003).

Conceptions of Risk

Risk communication is common in everyday social lives, business, politics, and economics, and is a prevalent theme in the media we consume. Yet the word risk and the idea it represents date back only four to five hundred years (Luhmann, 2005; Rosa,
1998). At that time, words existed to describe other notions we now associate with risk, such as danger, venture, and chance. The adoption of a new term indicates that the contemporaneous concept of risk was not adequately represented by existing language (Luhmann, 2005).

Risk is a concept that humans invented to cope with dangers and uncertainties (Slovic, 1999). Although there may have been a need for a more precise term in the 16th century, the modern meaning of risk is quite mutable. Whether as a noun or verb, there is no singular definition of risk. Its meaning changes with context and as users assume different social roles. Risk has long been viewed as a consequence of human interaction with nature and technology, an “inevitable by-product of the pursuit of benefits that are important to societies and communities” (Tierney, 2014, p. 31). Originally considered matters for actuaries and statisticians, efforts to clarify what risk is and where it originates have expanded as social sciences have taken up questions of risk.

All conceptions of risk share contingency, the element of difference between possible and chosen action. Contingency is a mental model that allows people to make choices that promise at least some marginal benefit by preventing harm in advance (Renn, 2008). Both contingency and risk hold forth the possibility that humans can make causal connections and take action to influence or prevent undesirable outcomes (Renn, 1992). Contingency indicates a change in thinking from older customs that explained problems through fate, religion, witchcraft, magic, or folklore (Beck, 1986/1992; Luhmann, 2005; Tierney, 2014). Without contingency, the term risk would have no meaning.
Beyond the notion of contingency, conceptions of risk begin to diverge. Perspectives are differentiated by views on undesirable outcomes, underlying concepts of reality, and normative obligations for managing risk (Renn, 2008). If risks are thought of as objectively measured conditions with well-defined effects, it follows that the responses should prioritize the elimination, avoidance, or mitigation of harm, beginning with the greatest risks first (Renn, 1992). On the other hand, if risk is seen as a psychological, social, or cultural product, the goals of risk management need to have broader scope than simply preventing harm. This can be achieved by incorporating and supporting social values and knowledge (Aven & Renn, 2010).

These differences follow a widely-recognized divide in risk scholarship along lines of realist notions of risk and constructivist perspectives. The realist framework rests on a positivist theory of knowledge, where risk is the tangible byproduct of natural and social processes that experts can map, measure, and to some extent, control (Jasanoff, 1998, 1999). In this school of thought, risk is the combination of the likelihood that an event will occur and the potential severity of its consequences, often expressed as the equation \( \text{risk} = \text{probability} \times \text{magnitude} \).

As part of the realist model, quantitative assessments treat risk as a linear and mechanistic cause/effect relationship (Jasanoff, 1998). Realist perspectives see risk originating in hazards in the material world. Hazards first produce some stimulus that is observed and determined to be a threat. The risk is communicated, followed by efforts to manage, prevent, or ameliorate the unwanted consequences of the event (Rayner, 1992). Experts are presumed to be the sole source of authoritative knowledge of risk, which is presented as objective and unbiased (Jasanoff, 1998). Risk assessments rest on the
assumption that risk is an objective, measurable property. One only needs the right tools and techniques to make risks manageable (Rosa, 1998; Slovic 1992). In realist debates about risk, arguments revolve around facts and the uncertainties that derive from model structures and inputs (Taylor, 2012).

In contrast, the constructionist perspective sees risks as the products of every day human actions, observations, and experiences that are shaped by history, politics, and culture (Jasanoff, 1998). There is a push for a new understanding of risk as generated by the interplay of social-structural, organizational, cultural, and social-psychological forces (Jasanoff, 1998; Tierney, 2014). Because this view of risks invokes social and cultural values, it requires different types of evidence and evaluation. It is a far more egalitarian process, open to opinions and perspectives on risk from everyone. Knowledge is produced and validated through interactions among experts and laypeople who interpret available information according to their own interests and experiences (Jasanoff, 1998). Conflicts over risk arise from differences in individual, social, and cultural values. Risks are understood to be constantly in flux as people adapt and respond to risk within the social and physical contexts (Tierney, 2014).

Perhaps most importantly, social perspectives on risk recognize that how risk is described, what we see as risk, and what we admit as evidence determines what response is needed. At the same time, it limits the range of possible responses that are available (Hajer, 1995). Of the many possible hazards, individuals and societies select which ones to prioritize based on such things as culture, values, institutional resources, economics, situated knowledge, and moral acceptability (Aven & Renn, 2010; Beck, 1986/1992; Douglas & Wildavsky, 1982; Tierney, 2014). Hazards and dangers may be real, but risk
is socially constructed by blending those criteria with science and reasoned judgment (Slovic, 1999). The result is that perceived risks have characteristics and meanings that vary between social groups (Jasanoff, 1999).

Risk Defined

Given the social dimensions present in all risk conceptions, a formulaic expression does not capture the nuances of risk experienced in daily life. Rosa (2003) offers a socially-oriented definition of risk as “a situation or an event where something of human value (including humans themselves) is at stake and where the outcome is uncertain” (p. 56). Some prefer to define risk as the uncertainty in the situation, rather than the situation or event itself (e.g., Aven & Renn, 2009; Riesch, 2013). In some theories of risk, risk is defined as perceived risk (Aven & Renn, 2009), although for most, rejecting the idea that a “real risk” or “objective risk” exists does not mean that risk is the same as perceived risk.

Rosa’s definition has been criticized for its dependence on knowledge of a risk and the implication of objective states of risk in the “real world” (Aven & Renn, 2009). However, Rosa’s definition works well for purposes of understanding perceptions of risk because risks that are unknown do not have perceptions to evaluate. By definition, perceived risks create an understanding of the situation in which something of value is at stake, whether or not it is under threat from measurable forces in the “real world.”

Some theorists have argued that there is a false dichotomy between social and technical definitions of risk. Sheila Jasanoff (1999) described scientific and quantitative assessments of risk as inherently social and political actions due to the cultural
embeddedness of risk. Glynis Breakwell (2007) took the position that risk probability and
effects are defined in relation to harm, and harm is itself defined by social values.
Therefore, even when risk is defined as probability and magnitude of potential harms,
risk is a product of social processes. Although Aven and Renn (2009) differentiate
between probabilistic approaches and constructivist approaches, they acknowledge that
uncertainty underlies the probabilistic assessments, and uncertainty is a human construct.
They, too, concluded that even in the most technical of approaches, the social aspects of
risk are inescapable.

**Risk Perception and Risk Assessment**

Risk has long been the domain of realist fact gathering and probability forecasting
(Bernstein, 1996; Golding, 1992). Corresponding theories of risk were based upon the
expectation that predicting hazards and consequences would help prevent, eliminate, or
mitigate the undesirable outcomes of risk (Krimsky, 1992). There are three forms of
technical, quantitative risk assessment (Renn, 1992). *Actuarial* approaches are those that
use statistical data about previous events to predict average values of future risks.
*Toxicological* approaches assess health and environmental risks with models designed to
identify consequences of exposure, attribute causality, and quantify the contributions of
dose and exposure to physical harm (Renn, 1992). *Probabilistic* risk approaches break
complex systems into smaller parts, using estimated probabilities of system component
failures to synthesize and model overall systems risk. For all these measures of risk,
physical harm to humans and the environment is seen as the undesirable outcome of risk
(Aven & Renn, 2010).
In the technical expression \( \text{risk} = \text{probability} \times \text{magnitude} \), risk is dependent on the metrics used, the variables included, and the accuracy of each in representing the factors constituting to risk. Probabilistic analyses provide the best approach to establishing links between hazards and actions (Renn, 1992), and for systematizing knowledge and uncertainties about risks (Aven & Renn, 2010). They work well when projecting averaged outcomes over a large number of instances on the basis of empirical evidence (Renn, 1992).

However, predicting the outcome of a series of coin tosses is different in many ways from projecting the accident rate of a nuclear reactor or the safety of a waste disposal site. Few large-scale public risks have extensive actuarial datasets on which to base analyses (Starr, 1991). Many risks, especially newly emerging technical and systemic risks, do not have known outcomes or sufficient sample sizes to support probabilistic assessments. Incomplete data and knowledge of a complex system forces analysts to create reductionist models from the combined probabilities of its parts, often neglecting emergent properties and the effects of human management and failures (Aven & Renn, 2010; Funtowicz & Ravetz, 1993; Renn, 1992).

Human and technological systems are far more complex than average probabilities can capture. Designers and engineers may fail to foresee interactions and interdependencies between them (Freudenberg, 1992). Technical experts can never determine all possible risks (Taleb, 2007; Taylor, 2012; Thompson & Wildavsky, 1982), and assessors are often overconfident in their ability to anticipate all possibilities for systems failure (Freudenberg, 1992). The overall effect is uncertainty and a loss of fidelity resulting from incomplete data (Aven & Renn, 2010). The realist perspective of
risk assessments implies that the root of the problem of risk prediction is insufficient
scientific knowledge, and that it can be remedied with more information and greater
technical precision (Wynne, 1992).

Starting in the early 1960s, around the same time that the potential technical
shortfalls of risk assessment were becoming evident, the public and scholars alike began
to question the objectivity and assumptions of scientists and risk assessors. Scientific risk
assessments had long been presumed to be value-neutral, but it was becoming apparent
that their production requires choices that rely upon the values, biases, intuitions, and
ideologies of the professionals, particularly when they are working at the limits of their
expertise (Slovic, 1999). These judgments may present conflicts of interests because they
are often made by people whose livelihoods depend on the outcomes (Freudenberg, 1992;
Skjong & Wentworth, 2001). Perception plays a consequential role in risk assessment,
although it is seldom acknowledged.

In contrast to the quantitative and technical measures of risk assessment,
perceptions of risk are highly intuitive risk judgments that the majority of people rely on
to assess hazards (Slovic, 1987). Perceptions of risk are influenced by factors that include
personal experience, social interaction, geography, culture, ideology, worldviews, and
morals. Perceptions of risk cannot be separated from judgments of risk acceptability or
tolerability (Aven & Renn, 2009). Perceptions are also informed by scientific and
technical risk assessment, but because perceptions draw from a much broader set of
concerns, perceptions and expert assessments very often do not align. Risk perceptions
are inherently subjective and operate on different models and assumptions from those
used for quantitative risk estimates (Breakwell, 2007; Slovic, 1992).
There are important social dimensions to risk that are not included in scientific measurements. The public has a broad set of goals that includes equity, fairness, flexibility, and resilience. Causes and consequences of risk are mediated by social knowledge, resources, and interactions (Tierney, 2014). The burdens of risks fall unevenly on individuals, and those who face higher degrees of exposure and disproportionate consequences justifiably object (Renn, 1992). Assessments of risk tend to smooth over individual variations with averages over time and place. People may be more vulnerable to a risk due to individual factors, such as genetic predispositions for diseases such as cancer or heart disease. The geography of poverty often puts members of lower socioeconomic groups in flood zones or polluted areas, while malnutrition makes them less resilient in the face of disease and famine.

People have different goals and preferences that lead to variations in acceptability and judgments of risk. The outcomes that people perceive as undesirable depend on their personal or group goals, beliefs, and preferences. Such determinations do not require empirical evidence (Renn, 1992). Identifying risk requires establishing the potential for negative impacts to things of value. Science may be good at predicting potential harms, but it provides no special insight into what a society should value (Fischhoff, Watson, & Hope, 1984). Things seen as risk and what is included in the calculus depends on the values and priorities of the societies in which they are made, as well as those of the individual laypersons and experts who make them.

Although assessments rely upon the deceptively simple formula risk = probability x magnitude, the outputs of quantitative assessments of risk are not readily conveyed in easy to understand terms. With such a simplified view of risk that gives equal weight to
the two factors, there is no differentiation between low consequence/high probability events and high consequence/low probability events. In practice, this is an important distinction in perceptions of risk (R. Kasperson et al. 1988; Slovic, Fischhoff, & Lichtenstein, 1980). For example, incidents of nuclear power accidents have a low rate of probability, but high catastrophic potential (Slovic et al., 1980). Nuclear reactor accidents have high value as signals of risk, and people fear them more than many other mundane but more probable risks (Slovic, 1987; Slovic et al., 1980). On the other hand, people tend to be willing to buy insurance against small but probable losses, while they often choose not to insure themselves against catastrophes such as floods and earthquakes (Slovic, Fischhoff, & Lichtenstein, 1976/2000; Slovic, Fischhoff, Lichtenstein, Corrigan, & Combs, 1977). These behaviors indicate that risk perceptions are not simply misunderstandings of probabilities. Other aspects of risk, such as voluntariness, control, and familiarity clearly play a part in shaping risk perceptions (Slovic et al., 1982).

Bridging the gap between risk assessments and risk perceptions has been an elusive goal for policy makers, experts, and industry. Public debates that are structured around technical risk assessments delegitimize other forms of understanding and evaluating risks. In such a forum, raising social perspectives of risk is considered disruptive and irrational. When risk discourse prioritizes quantitative assessment, it implicitly decides who is being rational (Otway, 1992). Defining risk is a struggle where “[t]here are always losers but also winners in risk definitions because ‘modernization risks’ are ‘big business’ for the private sector while ‘civilization risks are a bottomless barrel of demands’ made on the public sector” (Beck, 1986/1992, p. 23).
All this is not to say that perceptions should determine risk governance. The public is not always right, and “the tyranny of the majority is no better than the tyranny of the elite” (Otway, 1992, p. 218). The human tendency to seek causal explanations and patterns in the world creates errors in thinking and information processing (Kahneman, 2011). Intuition leads people to make mistakes in probabilistic thinking (Kahneman & Tversky, 1972; Tversky & Kahneman, 1971). People are bad intuitive statisticians (Slovic, Kunreuther, & White, 1974). They are overly optimistic about their own chances of experiencing negative or positive events compared to others (Weinstein, 1980). Moreover, people are very confident in the judgments they make on the basis of mental shortcuts (Fischhoff, Slovic, & Lichtenstein, 1977).

There is a tendency to see perceptions of risk as distortions rather than differences in risk assessments. Supreme Court Justice Stephen Breyer (1993) recommended the establishment of a federal organization to “bring a degree of uniformity and rationality to decision making in highly technical areas” (p. 61). He felt an expert group was necessary because “the public’s ‘nonexpert’ reactions reflect not different values but different understandings about the underlying risk-related facts” (p. 35). Cass Sunstein (2005) suggested that fear drives people to overreact in relation to the statistical probabilities of risk. An alternative view is that people have shortcomings, but they are not irrational. Instead, people can be seen to apply a social and cultural rationality that is based on a different, and some would argue equally valid (e.g., Garvin, 2001; Wynne, 1992), set of priorities. Policymaking should not attempt to protect supposedly rational risk assessments from “contamination by irrational public fears” (Jasanoff, 1998, p. 98). Perceptions of risk supply important information from non-scientists and extended peer
communities (Funtowicz & Ravetz, 1992, 1993; Wynne, 1992). Perceptions add richness and depth by incorporating a variety of social values into risk judgment and policy making.

Governments need to find balance between those who produce risk and those who are exposed to those risks. The ultimate goal of risk governance, the acceptance of the outcomes of decision making by those involved, requires a process that includes competing perspectives and discourses of risk (Aven & Renn, 2010). To this end, “the only possibility to include all these plural knowledge bases and values, [is] to embed procedures for participation into the risk governance process” (Aven & Renn, 2010, p. 183).

A growing body of work indicates that an individual’s views about how society should function and be organized permeate his or her cognitive and emotional understandings of risks, apprehension of empirical information, and trust in information sources (Kahan et al., 2006). This applies to the public, but also to scientists, experts, and policy makers. It suggests that risk is a dispute over what constitutes the good life, and that “the challenge that risk regulation poses for democracy is less how to reconcile public sensibilities with science than how to accommodate diverse visions of the good with any popular system of regulation” (Kahan et al., 2006, p. 4).

**Changing Nature of Risk**

The most formal notions of risk are the technical risk assessments that predict and monitor risk based on sampling and estimation of average probabilities (Aven & Renn, 2010). This type of risk assessment provides reliable information when causal agents are
well known and sufficient statistical data are available to represent probable outcomes (Renn, 1992). However, it is now widely recognized that many risks are more complex than such appraisals can represent.

New technologies, socioeconomic structures, and globalization have made it necessary to conceive of risk in new ways (Aven & Renn, 2010). Science-based technologies have produced problems that science cannot solve alone (De Marchi & Ravetz, 1999). Changing types and scales of risks challenge societies’ capacities to manage them, while underscoring the social, political, and economic aspects of decisions about risk exposure. The Organisation for Economic Co-operation and Development (OECD) (2003) terms the new forms emerging systemic risks, characterized by “extreme uncertainty and a potential for extensive and perhaps irreversible harm” (p. 32).

Scientific uncertainty and the importance of the values at stake can be so high that methods used for evaluating risks in the past have proven inadequate (Funtowicz & Ravetz, 1992). Emerging systemic risks no longer leave room for societal learning through trial and error (Evans, 2003; von Winterfeldt, 1992). The consequences of such risks can be irreversible, widespread, and long-term; they are incremental, indirect, unbounded, incalculable, and often invisible (OECD, 2003). Emerging systemic risks are produced by conditions and systems of modern life, and include environmental destruction, pollution, population growth, nuclear armament, terrorism, pesticides, and food safety (Beck, 1986/1992; OECD, 2003). The impacts of such hazards accrue and interact, often in unpredictable ways. The harms they produce reach far beyond the boundaries of local risk governance and will persist long into the future. More than ever
before, new types of hazards require values to be incorporated alongside the facts in order to evaluate the risks they pose (von Winterfeldt, 1992).

Emergent risks have a scale and magnitude that threaten continuance of existing ways of life (Beck, 1986/1992). Knowledge of these risks is often hypothetical, involving new or rare hazards and a great deal of uncertainty. Traditional risk assessment is difficult due to insufficient experience or data to support calculations of probabilities. Taking measurements and establishing causal relationships and are complicated because many of the effects are cumulative and have a long latency period. Risk/benefit evaluations give rise to questions of ethics and justice because those who bear the costs of risk can be distant in both time and place from those who make the decisions or benefit from the risk. Harms are so varied and dispersed that it is impossible to hold anyone accountable (Beck, 1986/1992). Emergent risks have potential to cause irreversible damage to global resources that are shared by all, leaving none safe from the impacts.

Public awareness of emerging risks first centered on threats to the environment, human health, and pollution. Rachel Carson’s 1962 book *Silent Spring* was a popular introduction to systemic risks and environmental damage that was brought about through applied science and technology (Killingsworth & Palmer, 1996). Over time, news of dying lakes, burning rivers, smog, leaking dump sites, the industrial disaster in Bhopal, and widely publicized nuclear accidents reinforced fears about vulnerability to large-scale risks rooted in human activities (Foster, 1999; Perrow, 1984/1999).

Some of the worst catastrophes in recent decades have been produced by the interplay of natural hazards and the imperfections in human systems. Disasters such as Hurricane Katrina, Fukushima, and Deepwater Horizon resulted from vulnerabilities to
natural hazards combined with failures of technological systems, leading to complex, interacting, and unpredictable outcomes. These have been called Super Catastrophes (or Super Cats), where cascading events generate significant losses in a non-linear way (Grossi & Muir-Wood, 2006). Charles Perrow (1984/1999) refers to them as normal accidents, the inevitable disasters brought on by complexity and tight coupling of systems. For such threats, implementation of preventative measures often increases rather than decreases risk due to greater complexity and tighter coupling imposed by safety systems (Perrow, 1984/1999).

This sense of changing risk is exemplified by German sociologist Ulrich Beck (1986/1992), who has described the world as transforming into a risk society. Beck had two interrelated theses: one concerns reflective modernization, the other the issue of risk. One of the most influential thinkers about contemporary risks, Beck divides human history into three stages. A pre-modern feudal society was first. In this era, risk was defined by mores, taboos, religion, and tradition. Next was an industrial stage that began during the 19th century. Modernization led to industrial societies in which scientific and technical experts were believed to be capable of measuring and controlling risks, and science was not itself subjected to scientific skepticism. This was followed by the present era, which is immersed in the management of largely human-produced risk.

Beck describes our current state as one of reflexive modernity, where science has lost its exclusive claim to rationality, causing us to live with the uncomfortable knowledge that risks are pervasive, ubiquitous, global, and uncontrollable. In this new modernity, “[t]he gain in power from techno-economic ‘progress’ is being increasingly
overshadowed by the production of risks” (Beck, 1986/1992, p. 13). Jasanoff (1999) also views the changes in risk as the consequence of modernity:

Where do risks come from, who is to blame for them, and how can they be mastered, coped with, or avoided altogether? Just as, a century or so ago, the idea of progress helped to name an optimistic era, so today risk, by its very pervasiveness, seems to be the defining marker of our own less sanguine historical moment. (pp. 135-6)

Risk is no longer simply a wager on the basis of probability. Risk is now viewed primarily as involuntary dangers associated with everyday life in a contemporary society (Graubard, 1990). Management of risks was once handled by the application of quantitative science, but now falls increasingly to the processes of risk governance (De Marchi & Ravetz, 1999; von Winterfeldt, 1992). In many societies and cultures, government is viewed as responsible to protect individuals from these risks. According to Beck (1986/1992), government once oversaw the distribution of social goods, but is now tasked instead with managing the impacts of harm.

As the role of government has changed, so, too has the position of science itself. The public, policy makers, and even scientists themselves have come to understand that science contains irreducible uncertainties and unselfconscious bias (Funtowicz & Ravetz, 1992). Modern science is no longer primarily a method of advancing knowledge; it is now charged with coping with uncertainties of risk. In order to do so, it must shift from reductionist models to synthetic, systemic, and humanistic approaches (Funtowicz & Ravetz, 1993). Uncertainty and human values are defining features of this new scientific paradigm.

Funtowicz and Ravetz (1992) theorize that there are three types of problem solving activities needed in industrial civilizations. First are the traditional risks,
situations with low uncertainty and low impact that we deal with regularly through science. Second are the medium risks. These are the domain of professional consultancy, which uses science but arrives at conclusions through radically different solutions and methods. The third type is risks where uncertainty is high, values are disputed, and decision stakes are significant. Funtowicz and Ravetz have proposed that these require what they call a post-normal approach to science (1993).

Post-normal science includes stakeholders as members of an extended peer community. The extended peer community brings with it a distributed fact base, which includes the beliefs and feelings of the public (Funtowicz & Ravetz, 1992). This involvement of social actors and institutions gives rise to more complex problem-solving processes, sometimes under the objection of traditional scientists (Funtowicz & Ravetz 1993). Post normal science does not refute knowledge gained through traditional and applied sciences, but proposes that it should be complemented by other considerations when making risk assessments and policy decisions (De Marchi & Ravetz, 1999; Funtowicz & Ravetz, 1992).

Theories of Risk Perception

As the nature of risk began to change, the public began to place less trust in scientific measures of risk that did not represent their lived experiences, values, and fears. Public perceptions began to diverge from and contradict the risk assessments of experts, leaving public officials astonished by the apparent irrationality of the public (Wandersman & Hallman, 1993). People were worried about low probability/high consequence risk events but expressed far less concern for serious but more mundane and
avoidable risks, such as the dangers of traffic accidents and smoking. The public’s responses to natural hazards generated puzzling behaviors. For example, efforts that began in the 1930s to protect against floods were later observed to lead to increased damage in the long term, as a false sense of security promoted building in floodplains (White, 1945). Where new technologies were concerned, particularly nuclear energy, perceptions of risk were dismissed as irrational, contrary, and even subversive (Funtowicz & Ravetz, 1992; Sjöberg, 2012; Wandersman & Hallman, 1993). As perceptions of risk diverged from technical assessments, scientists and policy makers began to ask why lay people failed to respond to the advice of experts and what caused the public to react more strongly to some risks than others (Krimsky, 1992).

Social scientists who were already studying judgment and decision-making took up these questions. Many of the first efforts to investigate perceptions of risk endeavored to explain the gap between quantitative risk assessments and the risk perceptions of the lay public. Those research efforts tended to hold realist assumptions of risk and sought not to understand perceptions in their own right, but to find ways to bring them in line with expert views (Jasanoff, 1998).

Economists attempted to explain the apparent irregularities of decision-making under risk by modifying the rules they applied to optimal choices made by rational individuals. Psychologists investigated risk processing at individual cognitive levels. With risk perception growing as a field of study, government agencies (in the United States, the Environmental Protection Agency, Food and Drug Administration, Nuclear Regulatory Commission, and Department of Energy) became involved in trying to understand how risk perceptions are formed and how they could be predicted or corrected.
(Golding, 1992). These programs were invested in positivist assumptions of risk, looking to align or comparing perceptions with “real” risks. Over time, other disciplines (e.g., sociologists, social psychologists, anthropologists, and systems theorists) became involved, and perspectives on risk perception evolved into more constructionist conceptions of risk.

Perceptions of risk were first studied at the individual level (e.g., Fischhoff, Slovic, Lichtenstein, Read, & Combs 1978; Lichtenstein, Slovic, Fischhoff, Layman, & Combs, 1978; Slovic et al., 1977; Tversky & Kahneman, 1974). It was important to begin by understanding what people perceive as risks and what characteristics create impressions of riskiness. Research in other fields contributed information about how individuals process information and make judgments. Perception work began to analyze the formation of perceptions as they originate in social processes or cultural structures. Social and cultural theories of risk contend that individuals are believed to perceive the world through perceptual filters that are created by social and cultural meanings (Renn, 1992). The most recent theoretical developments build on early works and merge theories into larger descriptive models of how risk perceptions are formed, transmitted, and reproduced.

**Economic Approaches**

By introducing social and behavioral factors into risk theory, economic approaches were the first to suggest that attitudes toward risk are legitimate avenues for risk research (Aven & Renn, 2010). Economic concepts of risk rely on the idea of people as rational agents who follow axioms of logical choice (Kahneman, 2011). Within the
realm of social accounts of risk, economic theories of risk are those closest to technical risk assessments, and they remain part of the realist-objectivist paradigm (Renn, 1992). They presuppose that “real” levels of risk can be known and require data about outcomes and probabilities to reach judgments about risks (Rosa, 1998).

Whereas expert risk assessments use harm as the measure of risk, economic models consider effects on subjective utility (Renn, 1992). Utility is the degree of satisfaction or happiness an individual experiences from a good. The idea of utility dates back as far as 1738, when Bernoulli proposed that the best choice in making a bet is the one that maximizes utility (Kahneman, 2002; Slovic et al., 1974). The subjective value of utility is based on individual or group preferences. The economic approach to risk equates maximizing utility with rational behavior (Fischhoff & Kadvany, 2011; Simon, 1955).

As a single metric, utility allows direct comparison of costs and benefits across different choices, and selections based on individual preference. Utility is often equated with money, but money cannot always substitute for incommensurate values such as health or life. Comparisons of utility can help individuals and societies to make more informed, although not necessarily better, choices (Renn, 1992).

Under economic perspectives of risk, the goal of management is to allocate resources in ways that maximize their utility for society (Renn, 2008). Aggregating individual utilities into overall social good is challenging, given that individuals’ preferences for probabilities and outcomes are not all the same (Renn, 1992). Economic principles require adjustments to utility that can sometimes be difficult to calculate. Because benefits and consequences accrue over time, there must be an appropriate
discount rate for utility in the future (Aven & Renn, 2010). When outcomes are uncertain, utility must be weighted by probabilities that are likely to be in flux as people respond to threats and hazards (Aven & Renn, 2010; Tierney, 2014).

Economic approaches to risk rely on utilitarian ethics, which can create socially undesirable outcomes when viewed from other ethical perspectives (Renn, 2008). It is inaccurate to assume that the risk choice with maximum utility is necessarily the best ethical choice (Rosa, 1998). For instance, when acceptance of a risk (e.g., a hazardous waste site or nuclear power plant) is driven by bargaining in the marketplace, poor communities receive money for accepting risk, while wealthy communities pay to avoid exposure. This may be seen as optimizing utility, but it also perpetuates environmental injustice and unfair distribution of risks (Renn, 1992).

Economic paradigms can provide a decision model if social actors are able to agree on definitions and measures of utility, although reaching consensus can be problematic. An outcome that is positive for some may be deemed negative by others. Maximization of expected utility is a logical decision framework if the risk choices are made by individuals and the consequences are confined to those who made the decisions (Aven & Renn, 2010). In reality, most risk decisions are collective, not individual, and they impose risks on others who may not experience benefits and are often subjected to them involuntarily (Renn, 1992).

Neoclassical economic representations of risk presume economically-driven humans are rational actors that are risk-neutral and will make consistent, rational, and optimal choices to maximize utility (Simon, 1955, 2000). This is a normative theory that describes how people, as rational actors, should make decisions. However, the theory of
rational actors does not accurately represent human decision making or correctly predict choices (Kahneman & Tversky, 1982).

**Expected utility.** Economic rationality depends on knowledge and full consideration of alternatives before a utility-maximizing decision can be made (Simon, 1955, 2000). Many situations exist where important decision criteria are unknown, leaving the decision-maker to operate under uncertainty. Recognizing that uncertainty permeates decisions about risk, economists incorporated probability theory into utility theory (Simon, 2000). This modification made room for the maximization of *expected utility*.

Expected utility is the calculation of possible outcomes, weighted by probabilities that each one will occur. In economic risk theory, probability also includes individual strengths of beliefs (Aven & Renn, 2010; Fischhoff & Kadvany, 2011). Expected utility takes into account that individuals may be risk-averse, that context may influence decision-making, and that individuals must make assumptions when faced with uncertainty. Choices under risk can be very sensitive to those assumptions, particularly when assessing rare extreme events. Expected utility does not dictate which trade-offs people should make, only that their choices should be consistent (Fischhoff & Kadvany, 2011). Although it was not intended as a psychological model, behavioral economists adopted expected utility theory to examine how people actually make decisions (Kahneman, 2011). Under expected utility, probabilities and outcomes should have equal influence on evaluations. Yet research on affect and emotion demonstrates that emotional reactions rely more heavily on outcomes than on probabilities (Loewenstein, Weber, Hsee, & Welch, 2001; Rottenstreich and Hsee, 2001). These findings indicate that even
though economic theories of risk make allowances for uncertainty, people cannot be said to consistently process information in a purely rational way.

**Bounded rationality.** Most of the time people do not have complete knowledge about the range of possible outcomes and the probabilities of each (Slovic et al., 1974). In cases where that information is available, there may be neither the time nor cognitive resources to calculate the utility of all available options before making a decision (Simon, 2000). Instead, decisions are often made on the basis of simplifications and assumptions about pay-offs (Simon, 1955). Herbert Simon (1955) suggested that humans are boundedly rational, using heuristics to make decisions rather than strict, rigid rules of optimization. Whereas perfect economic rationality is based on outcomes, *bounded rationality* is additionally concerned with the processes of decision-making (Simon, 2000; Slovic et al., 1974).

Bounded rationality takes into account the perceptual and cognitive capabilities of decision makers that require people to use a simplified model of the world (Slovic et al., 1974). It implies that humans take reasoning shortcuts that may lead to suboptimal decision-making. As a modified, more realistic version of rational choice, bounded rationality makes provisions for a choice that is satisfactory but does not always seek maximization of utility (Simon, 1955). Bounded rationality does not conform to the economic ideals of rationality, but it is consistent with the pursuit of a set of goals or objectives that can be considered rational within the confines of context and limited knowledge.

Even as modified by expected utility and bounded rationality, economic theories of risk do not fully explain the risks that people take in real life (such as smoking or not
wearing seat belts), choices that do not maximize personal utility (such as generosity), or inconsistencies in patterns of choice. Bounded rationality has been criticized as an individualistic model that precludes social learning and outside influences on choice (Dietz & Stern, 1995). There is substantial empirical evidence that human behavior is not fully predicted by explanations of rationality (Kahneman, 2011; Simon, 2000; Slovic et al., 1974).

**Prospect Theory.** Many of the economic studies testing decision-making attempted to measure the utility of wealth used laboratory experiments analyzing small gambles. The work of Amos Tversky and Daniel Kahneman emerged from this paradigm (Kahneman, 2011). Tversky and Kahneman were interested in studying people’s attitudes to risky options without imposing any assumptions about rationality. Their early work together focused on the question, “what rules govern people’s choices between different simple gambles and between gambles in sure things?” (Kahneman, 2011, p. 270).

Kahneman and Tversky realized that it was not the quantity of money, but changes in wealth, i.e., losses and gains, that drove people’s choices (Kahneman, 2011). They developed a modified theory of bounded rationality that explains their observations about preferences and factors that influence choice (Kahneman & Tversky, 1979). This theory, which they named *Prospect Theory*, earned Daniel Kahneman the Sveriges Riksbank Prize in Economic Science in Memory of Alfred Nobel in 2002. There are two primary components of Prospect Theory: *decision frames* and *subjective value functions*.

In Prospect Theory, the decision frame is the conception of the outcomes and consequences associated with a choice. Individual and social characteristics of the decision-maker play a role, but the way in which a choice is formulated influences an
individual’s perspective. Experiments have shown that different frames can lead to reversal of preferences (Tversky & Kahneman, 1981). Framing outcomes that have the same expected utility in either positive or negative light influences the point of reference from which an individual evaluates the options. Positive framing creates the perception of gains, while negative frames create the view of objectively identical outcomes as losses.

Framing effects are demonstrated by what is known as the “Asian disease problem” Tversky and Kahneman (1981) used to test the theory. Tversky and Kahneman found that by giving subjects a choice between two options with equivalent expected value, preferences could be altered by the ways in which the options were framed. Participants were told that the country faced an outbreak of an unusual Asian disease that was expected to kill 600 people. They were then presented with two options and asked to state their preferred choice. When the options were framed positively (as lives saved), the majority of participants were risk averse. When choices between the same objective outcomes were negatively framed (as lives lost) there was a robust and persistent preference for the riskier option.

The subjective value function of Prospect Theory describes the inconstant value people assign to perceived gains or losses. Subjective value is the change an individual perceives based on his or her reference point. As gains objectively increase, the subjective value diminishes. This is often demonstrated by differences in the perception of gains or losses in monetary terms. The quantitative difference between $5 and $10 is identical to the difference between $50 and $55. Yet the subjective value of a $5 gain (or loss) is experienced as more or less significant depending on the reference point (Tversky & Kahneman, 1981). A $5 gain feels more significant compared to $5 than to $50.
Tversky and Kahneman (1981) describe this as a non-linear, S-shaped curve, convex above the point of reference (Figure 2.1). Below the reference point the curve is convex, although steeper for losses than for gains (Tversky & Kahneman, 1981). This means that as a gain increases in objective value, the subjective value decreases. The same occurs for losses, but the response to losses is more extreme. People tend to dislike losses more than they like equivalent gains.

*Figure 2.1. Subjective Value Function of Prospect Theory. Change in subjective value decreases as objective value increases or decreases, dependent on the reference point. Losses produce a greater decrease in subjective value than equivalent gains. Adapted from Kahneman and Tversky, 1979.*
There are some things that Prospect Theory does not allow for. The two biggest blind spots are in regard to disappointment and regret (Kahneman, 2011). Prospect Theory does not incorporate the influence of expectations, particularly when there is a high probability of winning. In this case, winning nothing may be experienced as a loss, although there is no change from the reference point. Regret, or the anticipation of regret, can sway a decision in ways that are not accounted for in both Prospect Theory and utility theory (Kahneman, 2011).

**Individual, Social, and Cultural Perspectives**

Throughout the 1960s and into the 1970s, public concern in the face of environmental toxins, industrial accidents, nuclear facilities, and hazardous wastes was growing. Scientists continued to explore the causes and consequences of risks, while engineers strove to design and build safer systems that would minimize risk (Tierney, 2014). Concerned citizens clashed with risk experts over the sources of risks, magnitudes of risk, and the *possibility* rather than *probability* of harm. Increased public involvement produced frustrations on the part of policy makers, scientists, engineers, and industry about perceptions of risk impeding the pace of technological progress. Public perceptions were characterized as extreme and irrational, driven by the emotional reactions of an uneducated public (Dietz, Stern, & Rycroft, 1989; Funtowicz & Ravetz, 1992; Slovic, 1992; Wandersman & Hallman, 1993). Research was focused on finding a way to close the gap between “real” risks and the public’s reaction to them. Many of these works held to the notion that experts know or can establish what the “real risks” are and that science and scientists are free from political and social influences.
Social scientists and policy makers were investigating why the public reacted more strongly to certain risks than others and why they failed to respond to the advice of experts. Early research on risk perception attempted to “aid policy-makers by improving communication between them and the lay public, anticipating public responses to experiences and events… and directing educational efforts” (Slovic et al., 1982 p. 83). Studies were conducted with surveys and comparisons of risk perceptions to assess the divergence between experts and groups of lay citizens (e.g., Kraus, Malmfors, & Slovic, 1992; Slovic, Fischhoff, & Lichtenstein, 1979).

Attention then turned to the subjective judgments of risk to find how they are influenced by factors such as personal preferences, contexts, and intuitive processing of information (Renn, 2008). Researchers wanted to know why individuals did not base their risk judgments on expert assessments or expected values, and how they differed from technical assessments of risk. Their objectives were to discover what people mean when they consider something a risk and to determine the factors that shape and support those perceptions. They sought to develop a theory that would allow them to predict public perceptions of new risks (Slovic et al., 1982).

Studies were designed to clarify why people feared some risks more than others, even in the face of evidence to the contrary (Slovic et al., 1982). Researchers produced techniques and measures for assessment of opinions about risk. For many activities and technologies, people were found to believe that current risk levels are unacceptably high (Fischhoff et al., 1978). The growing resistance to risk alongside the changing nature of risks made it important to understand how safe is safe enough for people and what contributes to the acceptability of risks.
Psychological perspectives on risk perception consider risk to be all the undesirable effects people attribute to a cause (Renn, 1992). The relationships between causes and effects of risks need not be proven, and scientific assessments apply only as far as they are integrated into an individual’s perception. The strength of the beliefs people hold about risk are more important to forming risk perceptions than probabilities (Renn, 1992).

Economic perspectives of risk are applied to individual decision-making, while psychological, cultural, and social theories are concerned to varying degrees with policy making, regulations, conflict resolutions, and risk communications (Renn, 1992). Psychological theories blend into social theories when social interests such as perceived fairness and trust come into play. Social and cultural theories of risk perception tend to view knowledge and perceptions of risk to be socially constructed in that they reflect the interests and values of groups and institutions (Aven & Renn, 2010). Social analysis of risk is dependent on individual or social interests and values, whereas cultural perspectives assume that individuals are motivated to adopt perspectives of risk based on cultural views about how society should be structured. In social theories, qualities of fairness and acceptability prime people for risk perception (Renn, 1992). Cultural theories advocate group identity and threats to valued ways of life as the source of risk perception (Douglas & Wildavsky, 1982).

Developments in research and theories have provided new understanding of perceptions, new understandings of risk itself, and explanations at the individual, social, and cultural levels. These perspectives together lead to the conclusion that society is not
merely concerned with the minimization of risk. Context and process matter, as do values and identities.

**Revealed preferences.** If risk is a threat to something of human value, then it is important to be able specify those values clearly enough to make choices about them (Fischhoff & Kadvany, 2011). Values can be understood by examining how they are embedded in definitions of risk, or by observing what people implicitly or explicitly value when they make judgments and decisions about risk (Fischhoff & Kadvany, 2011). Chauncey Starr first attempted to address such questions in 1969 with his theory of revealed preferences. He sought to answer the fundamental question “How safe is safe enough?” by examining social behaviors around risk. He assumed that by trial and error, societies reach an optimum balance between risk and benefit, and that historical or contemporary data will reveal preferences and “acceptable” levels of risk (Starr, 1969). Through the analysis of data from eight industries and activities, Starr (1969) concluded that:

- The acceptability of risk appears to be crudely proportional to the third power of the benefits from an activity.
- The public is willing to accept “voluntary” risks roughly 1000 times greater than “involuntary” risks.
- The statistical risk of death from disease appears to be a psychological yardstick for establishing the level of acceptability of other risks. (p. 1237)

Although this takes the tone of a conveniently formulaic counterpart to quantitative risk assessment, Starr’s approach contained oversimplifications, incorrect assumptions, and biases of its own (Fischhoff, Slovic, & Lichtenstein, 1979). Starr made the mistake of
assuming that *accepted* risks are the same as *acceptable* risks. His theory ignored problems of distributions of risks and benefits, presumed that people have full information and will use it in rational ways, and took for granted a freedom of choice in the marketplace that may not exist (Slovic, 1992).

Despite its problems, Starr’s work on revealed preferences established several important pathways for perception research. He elicited preferences in ways that allowed consideration of more than “dollars and body counts” in risk evaluation (Slovic, 2000a, p. xxii). His results suggested that a spectrum of social values need to be included in understanding responses to risk, and that acceptable risks are based on social rather than economic factors. Starr incorporated data across a large number of activities and technologies, which opened the door to further work on comparative risk assessments (Starr, 1991).

**Heuristics and biases.** As part of the development of Prospect Theory, Tversky and Kahneman were investigating intuitive thinking, problem-solving, and decision-making under conditions of uncertainty. Evidence from gambling studies indicated that cognitive processes in real world thinking did not necessarily follow the structured reasoning of economic rationality (Kahneman, 2002). Tversky and Kahneman needed a way to include cognitive limits on the use of rational thinking they observed in their data. Working within the framework of bounded rationality, they described a strategy of *heuristics and biases* that individuals use in making judgments (Tversky & Kahneman, 1974).

Heuristics are quick, informal, and intuitive tactics that simplify understandings and responses to risk (Slovic et al., 1979). They are mental shortcuts used to make
decisions and solve reasoning problems without the effort of critical analysis. According to Kahneman (2011), “when faced with a difficult question, we often answer an easier one instead, usually without noticing the substitution” (p. 12). Perrow suggests heuristics save effort, prevent decision paralysis, and benefit social interactions by allowing others to estimate what we are likely to do (1984/1999).

Without statistical information readily available when making a decision, people must rely on inferential rules (Slovic et al., 1979). Heuristics ease the cognitive burden by providing shortcuts to reduce efforts and time in decision-making. The use of heuristic strategies may be helpful or valid in some circumstances, but they can also produce large and persistent effects in perceptions of risk (Slovic et al., 1974). When heuristics fail to produce correct judgments, they can lead to biases.

Biases are logical fallacies that can be the product of heuristics or social cognition. There are countless ways in which people are biased when it comes to rational decision making (Breakwell, 2007). Many of these have systemic effects in judgment and decision-making about risk. The original work on heuristics by Tversky and Kahneman (1974) described three heuristics that lead to biases and influence decision-making under conditions of uncertainty. Additional heuristics and biases pertaining to risk have been subsequently proposed by others. The initial three, termed the availability, representativeness, and anchoring and adjustment heuristics, have been broadly tested and applied, particularly in theories of risk.

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1 It is important to note that the correctness of these judgments is determined by comparison to realist assessments of probabilities and magnitudes of risk.
**Availability heuristic.** The availability heuristic is invoked when people assess the frequency or probability of an event according to how readily instances or occurrences come to mind or how easy it is to imagine (Tversky & Kahneman, 1973, 1974). It has been found to play a significant role in risk perception (Finucane, Alhakami, Slovic, & Johnson, 2000). Frequent or familiar events are recalled more quickly and more easily than rare ones. Highly salient and more recent events also contribute to availability. The availability heuristic can be a useful tool in making judgments because frequency supplies informal information about probabilities (Tversky & Kahneman, 1974).

However, this heuristic can create bias though the availability of sensationalized or high consequence events. For example, shark attacks can be vivid, but are quite rare and only a threat to those who swim in the sea. When adverse outcomes can be easily retrieved from memory, people tend to think such an event is more likely than probability might indicate. Availability can be apocryphal because in judging risk by the ease with which hazards come to mind, people may rely on fictional events such as those in books or movies (Breakwell, 2007). This heuristic can create the illusion of correlation if independent circumstances or events are judged to be associated more often than they actually are (Tversky & Kahneman, 1974).

**Representativeness heuristic.** When facing unfamiliar risks, the representativeness heuristic may be invoked. This heuristic is the substitution of seemingly similar information or previously formed ideas, such as stereotypes, for missing information (Kahneman & Tversky, 1982; Tversky & Kahneman, 1974). The strategy can prove especially detrimental when it focuses attention away from important information.
One of the sources of representativeness is insensitivity to known probabilities, or base-rate frequencies. Tversky and Kahneman (1974) told study participants that a group of people was composed of 30% lawyers and 70% engineers. They gave participants a brief personality description of an imaginary individual from the group and asked them to assign one of the two occupations (engineer or lawyer). Tversky and Kahneman found that the assumptions participants made about the character’s occupation were based on stereotypes instead of their knowledge of the composition of occupations within the group. Rather than relying upon known probabilities, participants used representativeness to make their determinations (Tversky & Kahneman, 1974).

The representativeness heuristic is tied to insensitivity about sample size (Kahneman, 2011). People are not good intuitive statisticians, often placing unwarranted faith in small samples and misinterpreting probabilities. The representativeness heuristic also creates bias in predictions. People tend to make predictions of the future by selecting an outcome that is most representative of something in the present (Tversky & Kahneman, 1974). They place unwarranted confidence in these predictions without concern for the validity or accuracy of the evidence they use.

**Anchoring and adjustment heuristic.** The anchoring and adjustment heuristic is often used when people are asked to make numerical predictions or estimates. Individuals start from an initial value that is then adjusted to formulate an answer (Tversky & Kahneman, 1974). Anchors can come from numbers supplied by researchers, memory, a first-pass guess, or the environment. That initial figure is then adjusted until a satisfactory answer is reached. Final estimates tend to be biased toward initial values due to insufficient adjustment. Although it may be a sensible strategy for making judgments
under uncertainty, more often than not, the anchor is given too much weight or insufficiently adjusted, resulting in a bias (Kahneman, 2011).

Heuristics and biases provide cognitive explanations for perceptions of risk, but later research found that perceptions were far more multidimensional that what these heuristics and biases alone could account for (Sjöberg, 2000a). As the lines of inquiry expanded, it became apparent that cognition is important, but it is not the only factor involved. However, as a new perspective on judgment and decision making, heuristics and biases stimulated new thinking about psychological elements of risk perceptions (Slovic, 2000b; Slovic, Fischhoff, Lichtenstein & Roe, 1981) and generated momentum for risk perception research.

**Expressed preferences and psychometrics.** Expected utility theory, bounded rationality theory, revealed preferences, and gambling studies were the bases for the earliest understandings of risk perceptions. The mismatch between actual behaviors and theories that predict “rational” behaviors intrigued psychologists Paul Slovic, Baruch Fischhoff, and Sarah Lichtenstein. They began a program to research what they termed “cognitive processes and societal risk-taking” (Slovic et al., 1976/2000, p. 32) using a variety of psychometric scaling methods to produce quantitative measures of perceived risk. This methodological approach to exploring risk perception through expressed preferences came to be known as the psychometric paradigm.

Using methods borrowed from personality theory and the risk perception factors Starr had found important, Slovic, Fischhoff, and Lichtenstein began to study the characteristics of technologies and activities that generated different perceptions of risk (Aven & Renn, 2010; Slovic, 2000a). They asked participants to rate hazards on a variety
of qualities or characteristics. The first study assessed 30 potential hazards for nine attributes including perceived voluntariness, immediacy of effect, knowledge, control, novelty, and severity (Fischhoff et al., 1978). A later study expanded the research to include 90 hazards and 18 risk characteristics (Slovic et al., 1980). The researchers were pleasantly surprised to find that people could and would answer the difficult questions posed to them about risks (Slovic, 2000a).

Principal-components factor analysis showed that two factors were closely associated with risk perception (Slovic et al., 1980). The first factor, labeled dread risk, was highly correlated with lack of control, catastrophic potential, fatal consequences, and inequity (Slovic, 1987). Evidence suggested that because it was most highly correlated with perceived risks, dread may be the most important factor (Fischhoff et al., 1978). The second factor was labeled unknown risk, which was represents unobservable, unknown, new, and delayed risks (Slovic, 1987). The average ratings of hazards were represented as scatter plots with each factor as an axis, creating the iconic maps of early risk perception research.

Psychometric methods provided a way to compare similarities and differences in risk perceptions and attitudes among groups of people, including experts and the lay public (e.g., Flynn, Slovic, & Mertz, 1993; Kraus et al., 1992; Lazo, Kinnell, & Fisher, 2000; Slovic, Fischhoff, & Lichtenstein, 1985). Results showed that there were substantial differences between expert and public estimates of risk, particularly where there were no demonstrable right or wrong answers about levels of risk (Breakwell, 2007).
Psychometric studies demonstrated that risk does not have the same meaning for everyone (Slovic et al., 1979; Slovic et al., 1982). Judgments of risk by experts were highly correlated with estimates of annual fatalities. For the lay public, judgments of risk took other factors, such as controllability and catastrophic potential, into account as well (Slovic et al., 1979). A second point of interest was that lay people were able to produce somewhat accurate estimates of fatalities when they were asked to do so. This finding suggested that the public was not ignorant of the fatality rates that were the basis for technical risk assessments, but that they applied a broader set of factors when judging risks.

In early psychometric studies, researchers also found that the heuristics and biases described by Kahneman and Tversky helped explain some of the information processing mechanisms people were using in making their evaluations (Kahneman & Tversky, 1979; Slovic et al., 1974; Tversky & Kahneman, 1974). People apply heuristic strategies to simplify understanding and formulate responses to risk. The use of heuristics provides a quick and easy way to make a judgment without the effort of critical analysis, and the availability heuristic figures prominently in perceptions of risk (Slovic et al., 1976/2000, 1979).

Psychometric methods have been broadly applied. In a psychometric study of chemical risks that included expert toxicologists, Kraus et al. (1992) provided evidence to support doubts about the impartiality of expert assessments. They found that experts had a great divergence of opinion and disagreement over the validity of results from animal and bacterial studies. Strong bias was observed among toxicologists working for industry. Those experts perceived chemical risks to be more benign than toxicologists working in
academia and government. In samples of the lay public and toxicologists alike, women tended to perceive greater risk than men, although the differences were smaller for females and males in the expert group.

Psychometric studies have been conducted with international participants, comparing risk perceptions of college students in United States with those in different countries (e.g., Englander, Farago, Slovic, & Fischhoff, 1986; Teigen, Brun, & Slovic, 1988; Keown, 1989). Surveys of the general public within countries have also been conducted with participants in European and North American countries (Finucane, Slovic, Mertz, Flynn, & Satterfield, 2000; Flynn, Slovic, & Mertz, 1994; Slovic, Kraus, Lappe, Letzel, & Malmfors, 1989; Slovic, Kraus, Lappe, & Major, 1991). Within a country, ethnic identity and acculturation may be important factors influencing risk perceptions (Johnson, 2004, 2011).

**Inverse relationships.** There are strong connections between perceived risk, risk acceptance, and perceived benefits. Studies have found that risk acceptability is positively related to the perceived benefit to be derived from a hazard (Fischhoff et al., 1978; Slovic et al., 1980; Starr, 1969). Most risks and benefits tend to be positively correlated, i.e., activities with the potential for high gains tend to be riskier than situations with low benefits (Alhakami & Slovic, 1994). This is particularly evident in finance, where the possibility of high returns on investments comes with high risk, while less risky ventures tend to produce lower returns. However, Alhakami and Slovic (1994) showed that there is a robust inverse relationship between the perceived risk and the perceived benefit of a hazard. The degree to which an individual viewed an activity as good or bad was related to inverse judgments that associated high benefits with low risks,
or low benefits with high risks (Alhakami & Slovic, 1994; Finucane, Alhakami, et al., 2000). Participants exhibited this tendency more strongly in experimental conditions where they were required to make judgments under pressure (Finucane, Alhakami, et al., 2000). Research showed that information designed to alter the favorability of an individual’s evaluation could systematically change the risk and benefit judgments for that activity. By providing information about benefits or harms from an activity, Finucane and colleagues (Finucane, Alhakami, et al., 2000) were able to influence the participants’ views of it as good or bad.

**Criticism of the psychometric paradigm.** The psychometric paradigm has been highly influential in the field of risk perception work. However, as a novel approach to the study of a newly defined problem, psychometrics has faced significant criticism. Lennart Sjöberg (2000a, 2000b) argues that the two-factor model is insufficient. Sjöberg (2002, 2012) has been particularly critical of psychometrics, claiming it has low explanatory power and uses the wrong factors to explain risk perception. He proposes that a third factor, which he terms tampering with nature, is most significant. This factor is described as the perception that risky activities are “interfering with natural processes” (Sjöberg, 2000b, p. 364). Sjöberg claims that tampering with nature accounts for much of the predictive power of the two-factor model. However, the tampering factor has not been widely tested or adopted by other researchers.

The psychometric paradigm has been denounced for being based on a positivist or realist model of psychological functioning, although Slovic has been explicit about his views that “risk does not exist ‘out there’, independent of our minds and cultures, waiting
to be measured” (Slovic, 1992 p. 119). Jasanoff (1998) has leveled strong criticism against the use of psychometrics in understanding risk perception. She writes:

The psychometric paradigm, in particular, has been instrumental in preserving a sharp dualism between lay and expert perceptions of risk, together with an asymmetrical emphasis on investigating and correcting distortions in lay people’s assessments of environmental and health hazards. In policy settings, psychometric research has provided the scientific basis for a realist model of decision making that seeks to insulate supposedly rational expert judgments from contamination by irrational public fears. (p. 98)

Some scholars disagree with the paradigm because it seeks to quantify what they believe to be unquantifiable (Breakwell, 2007). In psychometric surveys, it is difficult to know if the risks people are given to rate are relevant to the lives of the participants (Otway, 1992). Surveys ask people to provide meaningful answers to questions that may not be possible to answer, but they answer them anyway (Slovic, 2000a). Responses may be biased if laypeople find it socially undesirable to admit that they see benefits in stigmatized risks (Breakwell, 2007).

Psychometric studies have been criticized for being highly dependent upon factors such as the nature of the hazards selected, the questions asked, the participants, and the forms of data analysis used (Breakwell, 2007; Sjöberg, Moen, & Rundmo, 2004). However, researchers have tended to acknowledge the assumptions and limitations of their studies (e.g., Fischhoff et al., 1978; Slovic, 2000b; Slovic et al., 1980). The usefulness of psychometrics has been questioned because it lacks the power to predict perceptions of risk (Wåhlberg, 2001). The validity of the method and its results have been challenged due to the use of aggregated data that neglects individual differences in risk perception (Siegrist, Keller, & Kiers 2005; Vlek & Stallen, 1981).
Psychometrics have high explanatory power for average ratings of hazards (as much as 70% or more), yet some claim that for individual data, the model has only a moderate level of explanatory power (Gardner & Gould, 1989; Siegrist et al., 2005; Sjöberg, 2012). Siegrist et al. (2005) point out that the psychometric paradigm was not designed to assess individual level data. The questions answered by psychometrics are about how groups of people on average view different risks. By contrast, individual level data would address how individual people view the same risk differently.

Despite the volume of criticism, the psychometric paradigm continues to be an important part of risk perception research. It broke new ground, and still has potential to produce important results, such as for international comparisons of risk perception, characterization of new risks, and discovery of trends and patterns in perceptions. It also serves as a useful tool to evaluate and hone new theories of risk.

**Demographics and perceptions of risk.** Gender is the strongest demographic influence on perceptions of risk. Numerous studies have found men to assess risk differently than women (e.g., Boholm, 1998; Byrnes, Miller, & Schafer, 1999; Davidson & Freudenburg, 1996; DeJoy, 1992; Flynn et al., 1994; Glendon, Dorn, Davies, Matthews, & Taylor, 1996). There is strong evidence that men tend to judge risks as smaller and less problematic than women do (Slovic, 1999). Davidson and Freudenburg (1996) concluded in a review of the literature that women consistently express higher levels of concern about potential environmental and technological risks than men.

Other demographic effects on perception of risk were less significant in early empirical work, due in part to small and homogenous samples (Savage, 1993). Later studies showed that ethnic minorities, less educated people, and less wealthy people had
higher levels of concern about risk (e.g., Bord & O’Connor, 1997; Flynn et al., 1994; Pilisuk & Acredolo, 1988; Savage, 1993). These results, however, were not as significant or consistent as those indicating higher risk perceptions in females.

Heightened risk perceptions in women have been attributed to biological and social factors, increased physical vulnerability to violence, or a presumed lack of scientific knowledge and familiarity with technology (Slovic, 1999). Studies by Barke, Jenkins-Smith, and Slovic (1997) and Slovic, Malmfors, Mertz, Neil, and Purchase (1997) found that among scientists, female scientists judged risks differently from their male counterparts. This would suggest that the gender difference is not due to a lack of scientific literacy, and it is not limited to the general public. Gardner and Gould (1989) conducted research on gender differences that suggested the gender discrepancies in risk perception do not reflect differences in rationality or education.

White male effect. A risk perception survey conducted by Flynn et al. (1994) challenged biological explanations for gender differences, while at the same time providing new results about gender and race. The research team found that the percentage of women rating hazards “high risk” was greater for each of the 25 items presented on the questionnaire. If biology was the primary factor, gender-dependent perceptions should persist across races. However, nonwhite females and males were much more similar in their ratings of risks than white females and males were. Risk perception ratings made by white males were consistently lower than those for white females, non-white males, and non-white females. The stark difference led Flynn et al. to examine the responses from white males more closely. After controlling for income and education level, the effect remained. The researchers found that what has come to be called the “white-male effect”
was generated by a group of approximately 30% of white males in the sample who judge risk to be extremely low (Flynn et al., 1994). Other white males in the sample judged risks similarly to other subgroups.

The researchers then compared the extremely low-risk group to other white males in the sample. The white males with the lowest risk perception scores had higher educations, higher household incomes, and were politically conservative (Flynn et al., 1994). A pattern of survey responses stood out for this group. They were more likely to agree that future generations can take care of themselves when facing technological risks, that small involuntary risks are acceptable, that science can settle differences of opinion about nuclear power risks, and that nuclear power experts and engineers can be trusted. The low risk perceiving males also agreed with traditionally conservative positions on capital punishment, distribution of wealth, and equal rights. They indicated disagreement with statements that technological development is destroying nature, that they have very little control over health risks, and that the public should have sway on issues of nuclear power. In short, those responsible for the white-male effect can be characterized by “trust in institutions and authorities and by anti-egalitarian attitudes, including a disinclination toward giving decision-making power to citizens in the areas of risk management” (Slovic, 1999, p. 693).

While the survey was not designed to provide explanations for risk perceptions, Flynn et al. (1994) suggest that white males may perceive less risk “because they create, manage, control, and benefit from so much of it” (p. 1107). On the other hand, women and nonwhite men may perceive more risk in the world because they receive fewer benefits from technologies and institutions and because they have less power and control.
The data about the extremely low risk-perceiving white male subgroup moves away from biological and toward sociopolitical explanations for the demographic factors of risk perception. Race and gender differences suggest that power, status, alienation, trust, perceived government responsiveness, and other sociopolitical factors shape risk perceptions and attitudes (Slovic, 1999).

A study replicating and extending the work by Flynn et al. (1994) confirmed earlier findings (Finucane, Slovic, et al., 2000). Whites rated risk lower than nonwhites, and nonwhite females were often those who rated risks the highest. White males again consistently had the lowest overall risk perceptions across a range of hazards. White males were more trusting of technology managers and less trusting of government than other groups. The worldviews displayed by white males were hierarchical and individualistic. They tended to place more trust in risk experts and proponents, with less tolerance for community-based decision making and regulatory processes. The researchers speculate that whereas many females and nonwhite males tend to be in positions of less power and control, the world appears safer and hazardous activities seem more beneficial to white males. Risk perceptions among nonwhite groups varied considerably. Finucane, Slovic, et al., (2000) concluded that because some activities and technologies may pose a greater risk or benefit to minority groups, understanding their risk perceptions and sociopolitical attitudes is an important goal for risk perception research.

Affect and risk. In contrast to the deliberative behaviors originally thought to be responsible for risk evaluation, people have been shown to rely heavily on feelings when judging risks (Loewenstein et al., 2001). Affect is believed to play a significant role in
risk perception. Affect refers to “the specific qualities of ‘goodness’ or ‘badness’ (a) experienced as a feeling state (with or without conscious awareness) and (b) demarcating a positive or negative quality of a stimulus” (Slovic, 2001/2010, p. 86).

Early judgment and decision research focused on cognitive and rational aspects of human processes (Lerner & Keltner, 2001). Feelings and emotions were not incorporated into explanations until much later (Finucane, Alhakami, et al., 2000). In the early days of risk perception research, Zajonc (1980, 1984) proposed that emotions have primary influence over individuals because they occur automatically and prior to cognitive processes, thus influencing information processing and judgment. Zajonc’s general hypothesis was that “affect and cognition are separate and partially independent systems and…although they ordinarily function conjointly, affect could be generated without a prior cognitive process” (Zajonc, 1984, p. 117). The theory that affect is the primary reaction, and that it subsequently guides information processing and judgment, was a difficult notion for researchers who were focused on cognitive processes to accept (Lazarus, 1982). Studies in neuroscience have come to support Zajonc’s position that emotions are the primary response and have demonstrated that they are necessary for effective decision-making (Bechara & Damasio, 2005; Damasio, 1994).

Technical assessments of risk are reported in measures and statistics. Affect lends context and meaning to quantitative information (e.g., Alhakami & Slovic, 1994; Bechara & Damasio, 2005; Damasio, Everitt, & Bishop 1996; Peters, 2006; Peters & Slovic, 1996; Zajonc, 1980). Because rational decision making requires evaluation of information, affect is a key ingredient of what is considered to be rational behavior (Bechara & Damasio, 2005; Damasio et al., 1996; Slovic, Finucane, Peters, &
MacGregor, 2004; S. Slovic & Slovic, 2010). Research also suggests that affect may be a mediating factor between cognitive risk assessment and subsequent risk-related behavior (Loewenstein et al., 2001). This contradicts the conventional belief that emotional reactions are the antithesis of rational responses to risk.

**Affect heuristic.** Following the growing evidence that information processing and decision-making involved more than cognition and rationality, Finucane, Peters, Slovic, and their colleagues postulated that the initial emotional reactions to risk can serve as an important cue for cognition, perceptions, and judgments (Finucane, Alhakami, et al., 2000; Slovic et al., 2004). They called this reliance on intuitive and experiential thinking that is guided by emotion the *affect heuristic* (Finucane, Alhakami, et al., 2000). Affect in risk perception covers two dimensions of feelings. It can be viewed as an emotional state, e.g., happiness or sadness, or it can be a quality such as good or bad that an individual associates with an object or event. Affective evaluations are quick and automatic. Like other heuristics, reliance on affect and emotion can be an easier and more efficient way to process complex information (Slovic, 2000a). The affect heuristic implies that to be meaningful, information must convey emotion or feeling (Hsee, 1996; Slovic, 2010).

In hindsight, it was clear from the importance of the dread factor in the psychometric paradigm that there is a significant emotional component in perceptions of risk (Peters, Burraston & Mertz, 2004; Slovic, 2000a, 2010). Previous research had inadvertently demonstrated the affect heuristic in risk perception, although the link between risk and feelings was not fully appreciated at the time (Slovic, 2010). For instance, studies with gambles showed that the amount of a bet could not be evaluated until other conditions were introduced that allowed participants to determine if the win or
loss was good or bad (Kahneman & Tversky, 1979; Slovic et al., 2002). The inverse relationship between perceived risk and perceived benefit also indicated that feelings are at play in risk judgment (Fischhoff et al., 1978). Alhakami and Slovic (1994) supported this idea with their finding that an individual’s like or dislike of an activity or hazard was linked to perceived levels of risks and benefits.

Several studies had linked emotion to risk perceptions, resistance to nuclear waste, and stigmatization of technology (Gregory, Flynn, & Slovic, 1995; Kraus et al., 1992; Peters & Slovic, 1996). Peters and Slovic (1996) and Peters, Burraston, and Mertz (2004) found that emotion influenced the perception of nuclear risks, rather than risk creating the negative affect. Two studies evaluating hazards associated with nuclear power found that the affective qualities of a person’s word associations were strongly related to their attitudes and behaviors about nuclear risks (Slovic, Flynn, & Layman, 1991; Slovic, Layman, Kraus, Flynn, Chalmers, & Gesell, 1991).

Johnson and Tversky (1983) had tested emotion in risk perception by inducing negative mood in test subjects using short news articles. The resulting negative mood was found to have a strong effect that resulted in higher risk estimates, regardless of the similarity of the risk to the subject of the priming news report. This suggested that negative affect may lead to increased perception of risk no matter the cause of negative emotions.

Affect in risk perception research relies heavily on Damasio’s (1994) somatic marker theory. Stimuli are “marked” by positive or negative responses which create physical and mental states, or somatic emotions, which are perceived as feelings (Bechara & Damasio, 2005). While feelings may not always be beneficial to decision making,
those somatic states, which are often described as “hunches” or “gut feelings,” increase
the accuracy and efficiency of decision making. They also help select the most
advantageous response when information is complex or patterns are unclear (Bechara &
Damasio, 2005).

The affect heuristic draws upon the pool of negative and positive, conscious or
unconscious associations as a shortcut for making decisions that may otherwise involve
complex decisions or judgments (Finucane, Alhakami et al., 2000). In the first
publication describing the affect heuristic, Finucane, Alhakami, et al. (2000) presented
results from tests of the causal relationship between affect and the perception of
risk/benefit relationships. Their experiments supported both the feeling-based explanation
for changes in perception and for the primacy of emotion over cognition. Affect was
found to consistently influence judgments. The researchers were able to alter participants’
like and dislike of an activity by providing information about risks and benefits, and vice
versa. These findings are important because they indicate that in at least some situations
and with some hazards people tend to weigh one attribute (either risks or benefits) on an
emotional basis and make automatic conclusions of the other in an inverse relationship.
People use overall affective evaluation as the starting point to draw conclusions about
risks and benefits. The strong role that the affect heuristic plays in this determination
shows a significant, durable effect when affect is manipulated (Finucane, Alhakami, et
al., 2000). The researchers inadvertently discovered that it was very difficult to alter
positive and negative perceptions of the activities they tested, and often their
manipulations worked in directions not intended.
**Anticipated emotions.** Economic and some psychological approaches to risk take a consequentialist perspective, in which feelings, emotion and affect are not viewed as integral to the assessment process (Bechara & Damasio, 2005). People are presumed to make decisions on the basis of their evaluation of the consequences of possible choices (Loewenstein et al., 2001). To the extent emotions are considered in such models, they take the form of anticipated emotions. Anticipated emotions are beliefs and expectations about future emotional states that result from a choice to be made; the emotions are typically not experienced in the present. The best understood of these is anticipated regret.

Regret is an emotion that is normally retrospective. However, when people anticipate that in the future they will feel regret, they are motivated to avoid risks (Breakwell, 2007). Invoking the anticipation of regret is a useful risk communication strategy. Vividness of the risk consequences is an important factor in creating anticipatory emotion (Loewenstein et al., 2001). Explaining to people how they will feel about an outcome may be more persuasive than probabilistic information (Breakwell, 2007). Luhmann (2005) has suggested that if the idea of anticipated regret was not well represented in existing language in the 16th century, the word *risk* could have come from the need to represent the concept of future remorse.

The effects of anticipated regret have been demonstrated in relation to sexual behavior (Buunk, Bakker, Siero, van den Eijinden, & Yzer, 1998; van der Pligt & Richard, 1994; Richard, Van der Pligt, & De Vries, 1996), financial decisions (Zeelenberg & Beattie, 1997), gambling (Li et al., 2010; Zeelenberg, 1999), interpersonal relationships, and consumer decisions (Zeelenberg, 1999). The effect is not mediated by
how at-risk an individual feels (Loewenstein et al., 2001); instead, avoiding the feeling of regret is the driving factor in the risk decision and behavior (Breakwell, 2007).

Anticipated regret best deters risk-taking when decision-makers have no prior experience with the hazard (Caffray & Schneider, 2000). The effect of anticipated regret is contingent on the expectation that there will be feedback about the decision, and that it occurs quickly enough to be salient (Zeelenberg, 1999). When anticipated regrets fail to materialize, subsequent anticipation of regret is diminished (Breakwell, 2007).

*The feeling of risk.* In contrast, to anticipated emotions, *anticipatory emotions* are immediate visceral reactions experienced in the moment as a decision-maker faces a choice (Loewenstein et al., 2001; Loewenstein & Lerner, 2003). Research shows that the feelings that arise at the time of a decision tend to occur more quickly and be more basic than cognitive processes (Damasio, 1994; Bechara & Damasio, 2005). The emotions experienced during decision-making are the central focus of research and theory on the feeling of risk (Finucane, 2012; Finucane, Alhakami, et al., 2000).

Peters (2006) suggests that feelings play four different roles in judgment and decision-making. First, feelings act as information to guide the judgment or decision process. Second, they function as a spotlight that focuses the decision maker’s attention on certain kinds of information. Third, feelings motivate information processing and behavior, influencing tendencies to approach or avoid a potential hazard. Finally, they serve as a common currency in judgments and decisions that allows comparisons of complex events, arguments, and choices that would ordinarily have incommensurate values through the use of a common underlying dimension.
Pfister and Böhm (2008) added another function of feelings, proposing that they generate commitment to implementing decisions. Thus, emotions help people to act morally, even when it may be against their short-term self-interest. According to Kahan (2008) emotion helps people evaluate the social meaning of a potential risk so that they may discern what stance aligns with their values, worldviews, and identities.

Kahan and colleagues have provided evidence that contradicts affect as a heuristic device (Kahan, Braman, Slovic, Gastil, & Cohen, 2009). They used nanotechnology in an experiment to test the formation of attitudes when participants were provided with neutral information. The results indicated that for participants who had modest or substantial knowledge of nanotechnology, affect had a significantly greater impact than it did among those with little or no previous knowledge. This finding conflicts with the heuristic function as a shortcut or substitution, which would predict that people would rely more heavily on feelings when they have less knowledge or information (Finucane, 2012).

Most risk perception research has incorporated affect with a positive/negative valence based approach that compares the good/bad or like/dislike responses of the participants in their estimates of risk (Lerner & Keltner, 2000, 2001). However, affect may not be as straightforward as positive/negative valence. Fear and anger are both negative emotions, but in several studies, they were found to lead participants to make different risk assessments (Lerner, Gonzalez, Small, & Fischhoff, 2003; Lerner & Keltner, 2000, 2001). When individuals were fearful, they made pessimistic, or risk-averse judgments, while both angry and happy individuals made optimistic, risk-seeking choices. The participants’ underlying appraisals of certainty and control were believed to account for these differences. Fear is based in situational control and uncertainty. In
contrast, anger is based in individual control and certainty. Certainty correlates to the psychometric scale of unknown risk, while control reflects dread risk (Lerner & Keltner, 2001). When a person feels certain and in control, they are likely to perceive lower risk. Importantly, this indicates that distinct emotions of the same valence can have different effects on judgment and that affect is more complicated than a simple positive/negative valence evaluation would predict. Fischhoff, Gonzalez, Lerner, and Small (2005) cautioned that this effect could be used to manipulate responses to risk. People might be made angry to manipulate them to accept riskier policies, or fear could be used to make people more cautious than they would normally be.

A study by Torbjørn Rundmo (2002) also suggested that affect is not a one-dimensional component of risk perception. His structural equation modeling suggested that general affectivity may predict cognitive judgment of risk, making it a primary response. Results of factor analysis indicated that affectivity consists of two dimensions. The factor that accounted for the greater influence on cognitive judgments consisted of worry and concern\(^2\). Treating affect as a single component in risk perception may be a mistake. Emotions are often understood to share some essential characteristics which causes them to be grouped together in a single category (Pfister & Böhm, 2008). However, by approaching them in this way, their qualitative and functional differences are lost.

Emotional responses to probabilities and outcomes differ from cognitive processes. Cognitive evaluations use probability, while feelings about risk have been

\(^2\) Concern is how much an individual thinks about the source of the risk, while worry is the variation of intensity in thinking about it (Rundmo, 2002). Together, they create high negative affect.
shown to be unaffected by probabilities in emotionally vivid situations (Loewenstein et al., 2001). When the outcome of a risk is acutely positive or negative, or when strong feelings are involved, people have been found to ignore the statistical probability of that outcome (Finucane, 2012; Loewenstein et al., 2001). Instead, they based decisions on the mere possibility that an outcome could occur. Emotionally vivid outcomes can lead people to seek certainty at disproportionate costs (Loewenstein et al., 2001; Johnson, Hershey, Meszaros, & Kunreuther, 1993; Rottenstreich & Hsee, 2001). This all-or-none perspective is seen in the greater willingness to pay to reduce a risk from a probability of 5% to 0% than from 10% to 5% (Kahneman, 2011; Kahneman & Tversky, 1979).

The feeling of risk is now acknowledged as an important line of inquiry into risk perception (Slovic, 2010). Emotional reactions to risk are often inconsistent with cognitive evaluations, and affect is believed to bear a greater influence on behavior (Loewenstein et al., 2001). Emotions are thought to be influenced by variables that are not significant factors in cognitive evaluations, although what those variables are and how they operate are yet to be determined (Finucane, 2012).

**Dual-process theories.** All theories of risk and emotion acknowledge cognitive processes. However, some cognitive theories view feelings as only a byproduct of cognition (Finucane, 2012). Dual-process theory holds that feelings that arise from or amidst the experiential mode of thinking are influential during judgment and decision-making processes (Schwarz & Clore, 1983). Dual-process theories propose that people apprehend their world, including risks and benefits, by employing two interacting systems for processing information (Epstein, 1994). People are thought to be of two minds, with both systems active simultaneously but constrained by working memory
capacity and general intelligence (Evans, 2003). Dual-process theory encompasses a diverse set of hypotheses that attempt to explain how rational and affective systems work together (Evans, 2008).

These systems are called by many names, but the value-neutral labels System 1 and System 2 are most commonly used (Evans, 2008; Stanovich & West, 2000). System 1 is the experiential, automatic, and fast processing that employs heuristics and intuition (Kahneman, 2011; Kahneman & Frederick, 2002, 2005). It allows people to “rapidly contextualize problems with prior knowledge and beliefs” (Evans, 2008, p. 261). This system has variously been described as reactive, affective, unconscious, pragmatic, and non-verbal. System 2 refers to the conscious, deliberative, analytic information processing commonly used for assessing and managing risks (Finucane, 2012). This system is slow, conscious, and deliberative.

General dual-process theory originated in the psychology of deductive reasoning. Much of the work on dual-process theory has taken place in the study of reasoning and social cognition (Evans, 2008). Only recently has it been applied to the study of judgment and decision-making under risk. Of the many varieties of dual-process theory, some are concerned with the two systems as competing-parallel processes. Competing-parallel forms of dual-process theory suggest there are two types of knowledge, implicit and explicit, that vie for control over behavior (Evans, 2008). Other forms of dual-process theory are concerned with the influence of System 1 as a preconscious process that occurs first and later influences deliberative decision-making. This sequential approach, termed default-interventionist (Evans, 2008), proposes that System 1 processes occur automatically, generating default intuitive judgments and providing context. The more
effortful, deliberative reasoning of System 2 may then approve or intervene to replace or adjust the initial (possibly biased) response. Kahneman and Frederick (2002, 2005) used this type of dual-process theory to explain how judgments made using heuristics can be overridden by deliberative, rational processes.

There is substantial empirical evidence in support of dual-process theories, but it is possible that these findings do not all relate to the same underlying systems of cognition (Evans, 2008). The System 1 and 2 terminology covers a broad range of attributes and functions. As such, generic dual-process theory and System 1 and 2 labels may be oversimplified or misleading. It is possible that there may be more than just two systems. On the other hand, future research may demonstrate that these systems may not be entirely separate. Theories that use these labels are not united in their stance toward the timing or type of interacting systems in dual-process descriptions, but they are useful for integrating knowledge of heuristics, emotions, and cognition (Evans, 2008).

**Cultural Theory.** The Cultural Theory of risk, based on work by anthropologist Mary Douglas and political scientist Aaron Wildavsky, views risk as a construction wholly resulting from social processes (Douglas & Wildavsky, 1982; Rayner, 1992; Thompson & Wildavsky, 1982). Douglas’ early work explored the concepts of purity and pollution in different cultures (Douglas, 1966/2003). Cultural Theory began with the anthropological study of the moral, political, and religious principles that serve to uphold social order and maintain cohesion (Douglas, 1966/2003; Rayner, 1992). This theory emphasizes values and worldviews instead of utilities and harm as drivers of risk perceptions. Wildavsky and Dake (1990) claim that Cultural Theory is capable of predicting and explaining the kinds of risk various people will perceive and how
dangerous they will find them to be. Proponents aim to support improvements in risk policies in three ways (Thompson & Wildavsky, 1982). First is by clarifying why there are profound disagreements over risk. Second is by explaining why some conflicts cannot be resolved between certain groups in certain contexts, and third is by proposing how to reconcile differences between groups and the contexts in which it may be possible to resolve disagreements.

Cultural Theory states that individuals form risk perceptions in response to threats to the ways of life they support. People make choices about what to fear and formulate their social responses to risk based on threats to their preferred and culturally conditioned ways of life (Wildavsky & Dake, 1990). Social groups take specific positions on risk topics and formulate protective attitudes and strategies in accordance with their beliefs and convictions (Renn, 1992; Thompson & Wildavsky, 1982). Variations in perceptions of risk arise from different cultural biases, beliefs about social relations, values, ideologies, and worldviews (Wildavsky & Dake, 1990).

**Cultural Theory worldviews.** Worldviews are cultural belief patterns shaped by clusters of related convictions and values (Renn, 1992). There are four types of worldviews in Cultural Theory that are described by two dimensions, group and grid (Douglas & Wildavsky, 1982). These two orthogonal factors describe shared beliefs and preferences about social organization. An orientation toward individual versus collective social organization is referred to as the group variable. It describes such things as interdependence, group solidarity, and competitiveness (Rayner, 1992). High group orientation equates to tighter control of group admission, tighter control over individual
choice, and stronger boundaries between members and nonmembers of groups (Thompson, Ellis, & Wildavsky, 1990).

The degree to which one believes social structure should be stratified and rigid is the grid variable (Douglas & Wildavsky, 1982). Grid represents the availability or restrictions of activities and social roles, according to individual or group characteristics such as gender, age, and kinship (Rayner, 1992). A high-grid social context adopts institutionalized classifications and tightly regulates the interaction of individuals and groups. In low-grid interactions, individuals have freedom to negotiate relationships with others (Thompson et al., 1990).

In Cultural Theory, the group and grid dimensions create four worldviews described as egalitarianism, individualism, hierarchy, and fatalism as shown in Figure 2.2 (Douglas & Wildavsky, 1982). These worldviews originate in cultural institutions and social organizations, flowing down to the individuals who participate in them at any given time (Rayner, 1992). A fifth type, the hermit, is sometimes used. This is an individual who withdraws from social involvement altogether. The hermit avoids social control of others, and refuses to be controlled himself (Thompson et al., 1990). With neither group affiliation nor individual control, their lack of interaction makes the hermit inert as a social and cultural force; hence they are seen as having little consequence in Cultural Theory.
Hierarchy is a worldview that results from strong group boundaries and strict social roles in which some members have control over others. From this standpoint, high levels of risk may be acceptable when decisions are made by experts and risks are managed through institutions, rules, and procedures (Renn, 1992; Thompson et al., 1990). The egalitarian worldview is described by strong group orientation and low social control role differentiation. Cooperation and equality are key principles, and these groups take a precautionary approach to risk (Renn, 1992). Individualism is characterized by a lack of group cohesion and the absence of strictly prescribed social roles. This is an entrepreneurial, competitive worldview that has little concern for equity and believes that government regulation should be minimal (Renn, 1992). Individualists see risk as an opportunity (Thompson et al., 1990). Fatalism arises when people have neither group membership nor individual autonomy and feel that they are controlled by external forces that rule their lives (Thompson et al., 1990). Although they believe in hierarchy, fatalists do
not identify with the hierarchy to which they belong (Renn, 1992). They may make high
risk choices for themselves, but they object to externally imposed risks.

**Cultural Theory and nature.** Cultural Theory is socially oriented, first attending
to relationships among human beings, and secondly, to society’s relationships to nature
(Rayner, 1992, p. 86). According to Thompson et al. (1990), each of the four worldviews
has a perspective on nature that can be useful in understanding risk perception and
discourse. The myth that nature is benign proposes that nature is forgiving and will return to a
global equilibrium. This view of nature belongs to the individualist worldview, which advocates a
free market and a laissez-faire approach to environmental regulation.

Nature as ephemeral presumes that nature is unforgiving and disturbances may
trigger complete collapse of an ecosystem. Egalitarians have adopted this perspective. It
requires that ecosystems must be treated with great care lest they be completely
destroyed. As a consequence, they see nature as extremely fragile, and believe only
modest demands should be made upon it.

Hierarchy takes the view that nature is perverse/tolerant, forgiving most of the
time but vulnerable to tipping points and ecological thresholds. It is important to
understand the boundary between equilibrium and system change. This view of nature
values the certainty and predictability of science and probabilistic modeling.
Environmental management should protect against extreme or unusual treatment beyond
which it cannot recover.

The fatalists see nature as capricious, existing in a random world filled with
erratic, uncontrollable events. Attempts to manage or learn from nature are pointless.
Nature is believed to be as a “lottery-controlled cornucopia” (Thompson et al., 1990, p. 28).

**Criticism of Cultural Theory.** Cultural Theory has been highly influential, but it has been criticized for not being based on empirical evidence (Rayner, 1992; Sjöberg, 1997). However, work by Dake and Wildavsky (Dake, 1990, 1991, 1992; Wildavsky & Dake, 1990) and some psychometric studies have supported the correlation of cultural worldviews with perceptions of risk (Peters & Slovic, 1996; Slovic et al., 1995). Cultural Theory has also been challenged for overstating the influence on the perception of risk. Sjöberg (2000a) charges that he finds Cultural Theory to explain only a 5–10% of the variance in perceived risks.

Cultural Theory does not provide an explanation for the origins of group affiliation, nor is it able to account for an individual’s change in worldview or an individual’s fluid worldviews dependent on social roles (Renn, 1992). Because it is a constructivist approach to risk, exactly what is seen as an undesirable outcome depends on the cultural position from which risk is evaluated (Renn, 1992). Each way of life only acknowledges those risks that its cultural biases recognize as threats (Thompson et al., 1990). What is seen to be a grave risk by some may not be perceived as any threat at all by others.

Wildavsky and Dake developed measurement instruments for worldviews as part of their efforts to provide empirical evidence in support of Cultural Theory (Dake, 1990, 1991, 1992; Wildavsky & Dake, 1990). Their efforts concentrated on hierarchy, individualism, and egalitarianism becausefatalists were believed to be isolated, resigned to having risks imposed on them, and lacking both self-regulation and group solidarity.
As a result, the measures for fatalism were developed separately and later than the others. Critics suggest that the neglect of fatalism by some of the original theorists may have been the result of an ill-fitting description of a way of life that is not, in fact, fatalistic and resigned to powerlessness (Kahan, 2012b).

Cultural Theory has also been challenged because its two-by-two classification of cultural diversity is seen as overly simplistic. Asa Boholm (1996) dismissed it as conceptually confused and inconsistent, sharply attacking the epistemological base of Cultural Theory as tautological. She claims that the theory says people fear those things that threaten their way of life, but their way of life is defined by the very things they say they fear.

Douglas and Wildavsky’s original theoretical concept of worldviews applied to groups and social institutions. The use of individual-level data from questionnaires to test the theory has proven to be somewhat controversial (Rippl, 2002). Some have suggested that the surveys are measures of personality as much as they are gauges of cultural adherence (Oltedal, Moen, Klempe, & Rundmo, 2004). The instruments developed by Wildavsky have been shown to be unreliable, and because they use separate scales for worldviews, individuals frequently exhibit affiliation to mixed cultural types (Gastil, Braman, Kahan, & Slovic, 2005; Kahan, 2012b; Marris, Langford, & O’Riordan, 1998; Sjöberg, 1998). Work continues to develop and improve measurements of Cultural Theory (e.g., Marris et al., 1998; Rippl, 2002), while others use Cultural Theory as the foundation for new interpretations of its principles.

**Cultural cognition of risk.** Cultural cognition of risk is a conception of Cultural Theory that seeks to provide consistency and empirical evidence to a somewhat abstract,
axiomatic theory (Kahan, 2012b). Like Cultural Theory, it proposes that “individuals, as a result of a complex of psychological mechanisms, tend to form perceptions of societal risks that cohere with values characteristic of groups with which they identify” (Kahan et al., 2012, p. 732), although it modifies some of the positions previously taken by many Cultural Theorists. Unlike Cultural Theory, cultural cognition does not exclude other mechanisms that might contribute to individual perceptions of risk. Cultural cognition theory not only explains risk perception produced by cultural affiliation, it attempts to demonstrate the social and psychological mechanisms for shaping an individual’s beliefs about risk through culture. The overall goal is to promote collective management of perceptions of risk by finding ways to communicate in a manner that reduces automatic, culturally-driven polarization (Kahan, 2012b).

**Cultural cognition’s revisions to worldviews.** Cultural cognition differs from Cultural Theory in the recognition that individuals may not map directly onto Cultural Theory’s cultural types. Dan Kahan and colleagues have developed an internally valid measure of individuals’ cultural worldviews (Kahan, 2012b). Their approach is to apply psychometric techniques to collect data that allows for intermediate effects and varying levels of commitment to ways of life. The use of two continuous attitudinal scales avoids the problem of the Cultural Theory measures developed by Dake and Wildavsky, which could place individuals in multiple worldviews. The cultural cognition classification scheme also modifies the labels for worldviews, replacing them with group/grid descriptions for the preferred way of life in each of the quadrants, as shown in Figure 2.3.
Another significant divergence from Cultural Theory is in the view of fatalism/hierarchical individualism. In Cultural Theory, fatalists are believed to experience a sense of futility in attempts to manage or avoid risks, and to be resigned to acceptance of diminished personal agency (Thompson et al., 1990). Cultural Cognition portrays the same combination of weak group and high grid as individualists who are strongly opposed to regulation by distant, collectively-oriented authorities, although their local institutions are regimented and hierarchical (Kahan, 2012b). They dismiss environmental risks, but see social deviance as a threat with adverse consequences for the group. Hierarchical individualists do not see themselves as powerless, but they are selectively risk sensitive. Kahan (2012b) uses the western rancher as an example of the convergence of hierarchy and individualism. This is a person who is independent and resists interference, but exercises authority and control over the operations and family he

Figure 2.3. Group-Grid Worldviews of Cultural Cognition Theory. Cultural cognition theory replaces Cultural Theory’s worldview names with group-grid combinations of preferred ways of life. Adapted from Kahan, 2012b.
is responsible for. Kahan’s description of this cultural type generates testable predictions about risk perceptions which bear out in empirical research, unlike the fatalism scale eventually developed by Dake (Kahan, 2012b).

Cultural cognition proposes that risk perceptions are generated by the psychological and social processes described by psychometrics interacting with cultural worldviews (Kahan, Braman, Cohen, Gastil, & Slovic, 2010). Kahan, Braman, Gastil, Slovic, and Mertz (2007) found that group and grid characteristics were predictive of variations in perceptions of environmental and technological risks in a group of study participants. The measurements of cultural worldviews explained their findings better than other characteristics, such as demographics, personality type, or ideology.

Mechanisms for cultural cognition. There are several mechanisms that have been shown to contribute to cultural cognition (Kahan, 2012a, 2012b). Identity-protective cognition is the unconscious motivation for an individual to mold their attitudes, views, and beliefs to match those of others in the groups with which they identify. Cultural cognition contends that worldviews and cultural dispositions not only influence perceptions of risk, they also sway estimates of the validity and trustworthiness of new information. Biased assimilation and polarization take place when individuals selectively give credence to evidence and arguments that reinforce their beliefs, while dismissing those that are in conflict.

Commitments to groups can also drive interpretation of information and perceptions of risk in ways that support the cultural perspectives they share. This information bias produces radically different interpretations of balanced information (Kahan, 2012a, 2012b; Kahan et al., 2012). Disputes over meaning can create or exacerbate polarization between different cultural viewpoints. In Cultural Cognition,
conflicts over risk are seen to be rooted in disputes over the interpretation and meaning of facts, not over values as in Cultural Theory (Kahan et al., 2010; Kahan, Jenkins-Smith, & Braman, 2011; Kahan, Wittlin, et al., 2011).

Kahan et al. (2009) provided evidence that biased assimilation and polarization are part of the relationship between worldviews and risk perceptions through an experimental study in which participants were asked to rate the risk of an unknown technology. In a control group, risk perceptions were relatively uniform across cultural worldviews. When presented with balanced information about an unknown risk, participants assimilated the information that reinforced their cultural predispositions and their positions polarized.

Kahan and Braman (2003) suggest that culture is the factor that drives the availability heuristic. Cultural availability is a mechanism whereby worldviews make certain risks more salient and significant, thus more readily recalled according to cultural predispositions. Cultural availability could explain why there are systematic differences in opinions on culturally charged issues such as climate change, vaccinations, and nuclear waste. These are issues where public perceptions are in conflict with each other and with expert opinions on risks. Kahan, Jenkins-Smith, and Braman (2011) proposed that the public may not be simply repudiating the experts. Instead, cultural availability may be influencing individuals’ impressions of what the experts’ positions are. The researchers found that people were more likely to deem a fictional expert knowledgeable and trustworthy when they believe the expert’s cultural worldview was consistent with their own. Over time, such biased perspectives create skewed impressions of expert views and scientific consensus (Kahan, 2012a, 2012b; Kahan, Jenkins-Smith, & Braman, 2011).
The *cultural credibility heuristic* proposes that when people perceive an expert to share their values, they credit them with greater credibility (Kahan, 2012a; Kahan et al., 2010). In an experiment designed to test cultural influence on expert credibility, participants were presented with photos and biographical information of culturally-identifiable fictional experts. The expert information was randomly matched with position statements. When participants received position statements they agreed with matched to experts whose values they shared, or arguments they rejected matched experts whose values they opposed, polarization increased. When expert arguments and values did not align in expected ways, there was a significant decrease in polarization. (Kahan et al., 2010).

*Cultural cognition and communication.* Results of cultural cognition studies suggest that it is possible to address risks in a way that connects to the interests of all, or perhaps an important subset of cultural viewpoints. Creating shared understandings of societal risk might be achieved by intentionally communicating about information and policies so that they “bear a plurality of meanings that can be simultaneously endorsed by opposing cultural groups” (Kahan, 2012b, p. 755). When an individual’s cultural identity is affirmed, identity-protective backlash can be reduced (Kahan, Braman, Slovic, Gastil, & Cohen, 2007). If democratic deliberation can be structured in ways that reduce reliance on cultural affiliation, it may be possible to minimize the influence of cultural cues and heuristics (Kahan, 2012b).

*Criticism of cultural cognition.* The points on which cultural cognition strays from the original Cultural Theory have raised questions about whether it fits as a form of Cultural Theory. Cultural Theorists maintain that only a finite number of worldviews are
viable ways of life (Thompson et al., 1990). Cultural cognition uses a continuous scale for group and grid, which could imply the possibility of an infinite number of worldviews if people were found to cluster around group/grid coordinates (Kahan, 2012b). The reconception of fatalism is a deviation from Cultural Theory, although cultural cognition advocates see this as an improvement on a worldview that the original cultural theorists themselves appeared ambivalent about (Kahan, 2012b).

In Cultural Theory, cultural worldviews are embedded in institutions that are characterized by certain modes of social organization (Rayner, 1992). Those institutions foster outlooks in the individuals who occupy roles within them that are conducive to their operation. In contrast, cultural cognition theory sees worldviews as “latent predispositions of individuals (i.e., shared but unobserved orientations that one can measure . . . primarily in the form of professed attitudes” (Kahan, 2012b, p. 736). This again conflicts with one of the basic principles of Cultural Theory, although the premise has permitted psychometric evidence to support cultural cognition hypotheses. This perspective also bears similarity to the Cultural Theory questionnaires developed by Dake and Wildavsky that ask individuals to answer questions about their personal perspectives on ideal ways of life (Dake, 1990, 1991, 1992; Wildavsky & Dake, 1990).

Cultural cognition has been criticized for the distinctly American feel of its measures (Douglas, 2003). In answer to this, Kahan argues that in order to have meaning for participants, questionnaires must be appropriate for the sample under study (Kahan, 2012b). A universal measure across place and time is not feasible because different cultures will attach different meanings to survey items, and it is possible that concepts may not exist in some cultures (e.g., government welfare) and will not have any meaning
for them at all. The group grid framework may exist in all societies, but the indicators of them will not be the same for all cultures.

**Social Amplification of Risk Framework**

As theories of risk developed in diverse social science fields, it became apparent that the literature was fragmented and in need of structure (Pidgeon et al., 2003). Throughout the 1970s and 1980s, risk theories proliferated but were often disconnected from each other and from technical risk assessments. There was no existing framework that could describe the nature of risk perceptions, including their contexts, circulation, and consequences. The Social Amplification of Risk Framework (SARF) has emerged as the most prominent and comprehensive tool for describing the process of risk perception and response (J. Kasperson et al., 2003; Rosa, 2003).

The SARF is an interdisciplinary, continuously evolving model designed to bridge research on technical risk analysis, risk perceptions, and sociology of risk (Burns et al., 1993; R. Kasperson, 1992; R. Kasperson & Kasperson, 1996; R. Kasperson et al., 1988; Pidgeon et al., 2003; Renn, 1991). SARF is a collaborative attempt to relate disparate research and theories to each other for a better overall understanding of the social processes surrounding risk (Pidgeon et al., 2003). The conception of SARF arose from “an attempt to overcome the fragmented nature of risk perception and risk communication research by developing an integrative theoretical framework capable of accounting for findings from a wide range of studies” (J. Kasperson et al., 2003 p. 13).

The theoretical starting point for the SARF was Niklas Luhmann’s (1979) assertion that a risk will be irrelevant or localized unless it is observed and communicated
to others (J. Kasperson et al., 2003). The SARF grew from a research program funded by
the state of Nevada between 1985 and 1995 to study potential impacts of the proposed
nuclear waste repository at Yucca Mountain. The project had a broad scope of social and
economic risks that covered much of the range of the SARF, including studies on
perception, imagery, risk signals, media coverage, ripple effects, and distrust (J.
Kasperson et al., 2003). First proposed in 1988 by a group of risk scholars, it was
subsequently expanded and revised (Burns et al., 1993; R. Kasperson, 1992; R.
Kasperson & Kasperson, 1996; R. Kasperson et al., 1988; Pidgeon et al., 2003; Renn,
1991). The SARF integrates understandings of individual-level functions with social and
cultural perspectives on risk. Its central focus is the dynamic social processes that guide
and shape risk perceptions and decisions, particularly those that lead to the disparity
between expert and public assessments of risk (J. Kasperson et al., 2003).

The SARF is built upon the metaphor of amplification from classical
communications theory (R. Kasperson et al., 1988). It describes a system in which
information about an actual or hypothesized risk event is translated into signals, including
images, symbols, and signs that carry meanings. A diagram of the SARF is shown in
Figure 2.4.
Figure 2.4. The Social Amplification of Risk. Process diagram of the social amplification and attenuation of risk. Redrawn from Kasperon, R.E. and Kasperon, J.X. (1996).
In the first stage, information is filtered and shaped as it is transmitted and received. Risks are amplified or attenuated by the circulation of information through different communication pathways referred to as “stations.” These include individual social actors, groups, and organizations such as the mass media, scientific institutions, government agencies, politicians, and interpersonal network (J. Kasperson et al., 2003; R. Kasperon & Kasperon, 1996; R. Kasperon et al., 1988).

In the second stage, the impacts of a risk event ripple outward, like a stone dropping into a pond, causing diffuse effects throughout society. Those indirect effects extend far beyond the original impact of the risk event. Consequences include economic costs, regulatory actions, litigation, stigmatization, and changes in trust and confidence. They may increase or decrease risk itself. Stage 2 creates reactions such as calls for stricter regulations, market impacts, and a generalization of responses to other similar risks. Despite the potential stage 2 has for large economic, social, and policy impacts, the stage 1 relationships have been more studied and are better understood than stage 2 consequences (J. Kasperon et al., 2003).

Since its inception, the SARF has been applied to a large body of empirical work, both as a general framework and as studies that extend it (J. Kasperon et al., 2003). Slovic, Fischhoff, and Lichtenstein (Slovic et al., 1980; Slovic, Lichtenstein, & Fischhoff, 1984) first proposed that hazards found to have high dread/high unknown properties in psychometric studies have high signal value, an increased capacity to generate symbols and images that serve as warning signals and provide new information. A group led by Jeanne Kasperon further investigated risk signals in a study of articles about the Yucca Mountain nuclear waste repository in a local newspaper in Nevada. They found a dramatic shift in
discourse, symbols, and imagery associated with the growing depiction of victimization, distrust, fairness, and villainy that drew focus away from risk itself (J. Kasperson, Kasperon, Perkins, Renn, & White, 1992, cited in J. Kasperson et al., 2003). Beyond these studies, there has been little research on signal strength in risk literature (Breakwell, 2007).

In two studies of mass media coverage of Love Canal, Three Mile Island, nuclear power and chemical hazards, Mazur (1984, 1990) found that mass media are highly influential in determining which hazards receive the most attention. Mazur’s data indicated that the volume of news coverage can trigger amplification, heighten perception of risk, and push it toward opposition. He recommended that other researchers should distinguish between a news story’s content about risk and the image or signal the story conveys. However, Renn (1991) challenges this view, contending that other elements, such as content, format, and contextualization also matter.

Trust was not a factor in the original social amplification framework. The 2003 modifications to the SARF by J. Kasperson et al. added trust as a major pathway or mechanism in the second stage of the amplification/attenuation process. Trust is difficult to empirically demonstrate in social amplification/attenuation because there are countless communications happening among individuals, organizations, and institutions, each with a communicator and an accompanying level of trust (Breakwell, 2007). However, the asymmetry principle (Slovic, 1993) suggests that due to the ease with which trust is destroyed, amplification of negative events would quickly erode trust, making the process evident (Breakwell, 2007).
The SARF does not describe the processes that might underlie amplification or attenuation of risk in specific instances. The SARF needs to be combined with other theoretical models to advance the conceptual explications and develop such predictive capabilities (Pidgeon et al., 2003). Where risk communication is concerned, there is a need to learn about the influences of contexts, key actors, and issues from particular cases.

**Criticism of the SARF.** The SARF is not without controversy, and some of the main points of criticism are that it may be too general to test empirically, or that it does not offer any new or original insights (e.g., Rayner, 1988; Wåhlberg, 2001). However, many of these critiques have come from those who misunderstand its purpose (Breakwell, 2007). Proponents respond that the original intent was to bring competing theories and small-scale models into a single framework to provide structure, facilitate comparative interpretations, and stimulate new questions, which it continues to do (R. Kasperson, 1992; J. Kasperson et al., 2003). The SARF was never meant to be a theory that would provide testable and predictive relationships among its parts (Machlis & Rosa, 1990; Rosa, 2003). Instead, it was conceived as a conceptual framework that would serve to guide ongoing efforts to develop, test, and apply risk theories (R. Kasperson et al., 1988). Risk communication is a complex social process, and the SARF should not be expected to yield simple or direct predictions about which risks are likely to experience amplification or attenuation effects, or through what channels they might occur (J. Kasperson et al., 2003). Kasperson and colleagues assert that the SARF’s usefulness will ultimately be determined by its ability to achieve insights that can be subjected to empirical testing (J. Kasperson et al., 2003).
Rayner (1988) has expressed concern that the SARF might imply a realist perspective of risk, wherein the “real” risks are distorted by the social processes of amplification. However, those behind the SARF have taken the position that it has a fundamental social constructionist assumption (Breakwell, 2007; J. Kasperson et al., 2003). Social amplification and attenuation describe the processes of “signal interpretation, transformation, intensification, and dampening as the dynamics of risk consideration proceed iteratively in society” (J. Kasperson et al., 2003 p. 37). Changing the social knowledge about a risk creates a new functional reality (Breakwell, 2007). Transformations of a risk signal alter the responses to that risk and future communications about it. For example, there were 2,023 people killed in the terrorist attacks of September 11, 2001, and 16,037 other people were victims of murder and non-negligent homicide in the United States in 2001 (U.S. Department of Justice, 2017). The risk of death due to murder was almost eight times greater than for terrorism in that year, but the risk of terrorism was amplified. One of the responses to this heightened perception of risk was the formation of the U.S. Department of Homeland Security, which subsumed 22 pre-existing federal agencies and had a requested 2016 budget of $41.2 billion and close to 250,000 employees (U.S. Department of Homeland Security, 2015). Amplification and attenuation can produce significant stage 2 effects that can increase complexity, alter institutions, and transform risk.

The terminology of the SARF has been criticized for being imprecise (Breakwell 2007; Breakwell & Barnett, 2003). The term amplification in common use refers to the intensification of signals. This causes some confusion, since the architects of the SARF clearly intended to describe both attenuation and intensification of signals (J. Kasperson
et al., 2003). The metaphor of signal amplification/attenuation suggests that the modifications to messages are simple quantitative changes. In fact, the process is one of qualitative change and restructuring of the message through mechanisms such as volume, salience, reinterpretation, or elaboration (J. Kasper et al., 2003). Modifications can take different forms, particularly in the representations of risk at early stages, when the characteristics and qualities of the hazard have not been firmly established (Breakwell, 2007; Breakwell & Barnett, 2001).

Rationality

The SARF and cultural worldviews help explain the formation and diffusion of risk attitudes at the social level. In a democratic society, the governance of risk involves scientists, policy makers, and the general public. Some scholars have proposed that people employ different forms of rationality that are largely dependent on the social roles they occupy when evaluating risk (e.g., Garvin, 2001; Perrow, 1984; Throgmorton, 1991). Used in this sense, rationality is the way knowledge are created and applied. Variations in rationality are based on fundamental differences in their epistemological approaches (Garvin, 2001).

When acting as scientists, policy makers, or members of the lay public, people participate in different “interpretive communities” (Throgmorton, 1991 p. 153). Interpretive communities use their own analytical paradigms to recognize, create, validate, filter, and apply knowledge. Analytical paradigms also determine how uncertainties and conflicting evidence are resolved. These processes correspond with what Theresa Garvin (2001) calls the scientific, political, and social forms of rationality.
Each interpretive community has agreed-upon conventions, assumptions, and normative forms of discourse that they use to communicate and persuade (Garvin, 2001; Throgmorton, 1991).

The categorization of individuals as scientists, policy makers, or the general public can be problematic because there is a fluidity in the social roles that individuals occupy (Garvin, 2001). For example, an atmospheric scientist can publish her research results about climate risk, participate on a policymaking advisory board, and join a citizen’s group to prevent construction of a waste site near her home. At any given time, she may assume different social roles and invoke different rationalities. Furthermore, expertise in one field does not necessarily translate into scientific expertise in another. That same scientist may have extensive knowledge of her field, but know very little about groundwater pollution or mine safety risks.

Garvin (2001) recognizes that categorization can create artificial divisions, mask in-group differences, or between-group similarities at the individual level. Her research indicates that the groups themselves recognize these definitions and set themselves apart by using the differences. Despite the individuals’ variances, interpretive communities have idealized ways of generating information, arriving at a conclusion, and providing compelling evidence (Garvin, 2001; Throgmorton, 1991).

The three forms of rationality also have their own assumptions and conventions for communication. Rationalities can be recognized by the rhetoric and taken-for-granted knowledge contained in communications (Garvin, 2001; Throgmorton, 1991). The interpretation of rationalities in risk discourse can provide insight about differences in judgments and perceptions. Understanding how knowledge is obtained, what evidence is
accepted, what establishes legitimacy, and how information is used can lead to more
effective communication among scientists, policy makers, and the public (Garvin, 2001).

Garvin’s (2001) synthesis of the three paradigms of rationality are summarized below and
in Table 2.1.

Table 2.1

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Scientific Rationality</th>
<th>Political Rationality</th>
<th>Social Rationality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information sources</td>
<td>Scientific method</td>
<td>Available science and existing knowledge</td>
<td>Formal, social, and popular sources</td>
</tr>
<tr>
<td>Legitimization of supporting evidence</td>
<td>Scientific method</td>
<td>Political, social, and economic implications</td>
<td>Received from trusted sources, Relation to social and cultural realities</td>
</tr>
<tr>
<td>Resolution of conflicting evidence</td>
<td>Scientific method</td>
<td>Expedient, pragmatic</td>
<td>“Common sense,” fits with expectations of democracy, fairness</td>
</tr>
<tr>
<td>Approach to uncertainty</td>
<td>Probabilistic</td>
<td>Context-dependent</td>
<td>Polarized - certain or uncertain</td>
</tr>
<tr>
<td>Approach to knowledge</td>
<td>Specific and limited, objective</td>
<td>Political, contextual, instrumental</td>
<td>Tacit, experiential, personal, subjective</td>
</tr>
<tr>
<td>Use of knowledge</td>
<td>Added to cumulative knowledge</td>
<td>Applied to current context and situation only</td>
<td>Added to personal experience</td>
</tr>
</tbody>
</table>

*Note.* Adapted from Garvin, 2001

Garvin (2001) explains that the scientific rationality typically adheres to the
scientific method for both the generation of legitimate evidence and dismissal of
conflicting evidence. Estimates of certainty or uncertainty are expressed in probabilistic
terms. Complex issues are analyzed by compartmentalization. Knowledge is specific and
limited, and is built through the incremental accumulation of evidence. The scientific
rationality has been upheld as the legitimate, orthodox way of establishing knowledge
and “facts.” There is little acknowledgment of the historically contingent and socially constructed nature of science. Despite its idealized position, the scientific rationality is criticized by policy makers and the public. Policy makers see scientists as methodologically rigid, myopic in their perspective, and noncommittal. They perceive scientific rationality to be impractically slow, inaccessible, and too narrowly focused. The public is critical of scientists for their elitism, failure to communicate in accessible ways, and inability to provide unequivocal answers.

The political rationality is driven by the need for action and the struggle over ideas based on underlying values (Garvin, 2001). It accepts readily available information from science and other sources as instrumental knowledge. The legitimacy of that knowledge is evaluated in terms of its political, economic, and social implications. Evidence that is not politically expedient to acknowledge is dismissed. In political rationality, evidence and knowledge are tools for argument and persuasion.

Political rationality operates on the imperative to seek consensus, political feasibility, or social acceptability in the resolution of problems (Garvin, 2001). Complex issues are addressed on a need-to-act basis using the basic information necessary to make an informed decision. Issues tend to be time-sensitive, leading to pragmatic, expedient decisions. The policies that result are often context-specific solutions that address immediate problems but fail to address the long-term implications. Because policy decisions are context-dependent, they are not widely applicable. Consideration of uncertainty is likewise contingent upon context.

Scientists tend to see policy making as irrational, politically motivated, and focused more on expediency than scientific evidence (Garvin, 2001). The public believes
policy makers to be overly cautious, slow, and ineffective in response to public concerns. Although there is tension between scientists and policy makers, they share the perspective that the public reacts viscerally or emotionally. In turn, the public has lost faith in scientist's ability to solve problems, and does not trust policy makers to act in ways that protect public interests.

Scientific and political rationality often fail to resonate with the public. In social rationality, expert views are not automatically granted credibility. The trustworthiness of the sources is a more important factor than understanding of technical information. Scientific information must be deemed relevant to social and cultural considerations. The public obtains information from formal and non-formal sources, such as personal experience and social networks. Evidence is legitimated by relating it to social and cultural realities and it is dismissed if it fails to be considered common sense. Issues are conceptualized in a binary way as certain or uncertain. The knowledge that is produced by social rationality is tacit, experiential, and individual. It is added to the body of personal experience and applied to future understanding of the world.

While there can be shared definitions of knowledge and evidence among scientific, political, and social rationality, there can be contention arising from the alternative definitions of what is rational. Scientists, policy makers, and the public tend to use their own forms of rationality when communicating to other audiences. The failure to provide a convincing argument across the rationality divides can cause the communicator to appear incompetent, and the information presented impractical or illegitimate (Throgmorton, 1991). Learning how to bridge the gap can help reduce criticism and
misunderstanding that may produce more effective risk communication, management, and policy (Garvin, 2001).

Communication, Uncertainty, Trust, and Risk

In the early days of risk perception research, the focus was on differences between risk perceptions in expert risk assessments with the assumption that these “misconceptions” could be predicted and corrected if the root cause was found. Lack of public confidence in technical assessments prompted government and industry to turn to risk communication in an effort to reduce conflict and align expert and public views of risk. In government, science, and industry, it was widely believed that the problem came from a lack of scientific literacy and education on the part of the public (Breyer, 1993; Irwin & Wynne, 1996; Rayner, 2012; Renn, 2014). With this understanding of the problem, the obvious solution was to try to arm people with more information and knowledge through education efforts in communications and media.

This was termed the “deficit model” of risk communication. The intent was to educate and inform by making technical risk assessment information comprehensible. There was a general belief that if the lay public would listen to the facts, they would reach the same conclusions as the experts (Wandersman & Hallman, 1993). To help the public understand the magnitude of risk, one frequently advocated approach was to present comparative risk information for a variety of hazards using one dimension, such as death or decreased life expectancy (Slovic, 1987, 1996). The relative risk of activities such as driving or living near a nuclear power plant was expected to give the public perspective on the “real” levels of risk. These comparisons ignored many of the qualities
of risk that influence perceptions, and they produced risk statements bordering on the absurd, such as equating one hour of motorcycle riding to one hour of being aged 75 (Slovic, 1986; Sowby, 1965).

Another approach was to try to overcome the fact that people are bad intuitive statisticians by providing statistical information in a frequency format, couched as “one in 10 people” rather than “a 10% probability.” It was thought that presenting the information in a way that was more narrative would prompt people to think about risks differently, perhaps engaging the experiential system that responds to emotional and narrative information (Slovic et al., 2004). However, in experiments designed to test the effects of frequency information, the format was found to be subject to the affect heuristic and to influence judgments in ways that were not intuitive (Denes-Raj & Epstein, 1994; Slovic et al., 2004; Slovic, Monahan, & MacGregor, 2000).

There is very little evidence that the objectives of bridging the gap and reducing conflict were achieved, and extensive efforts to remedy information deficits and educate were deemed an overall failure (Finucane, Slovic, et al., 2000; Slovic, 1993). There are many reasons this might be true. Risk experts have often tried to communicate under the false assumption that “they and the public share a common conception and cultural heritage in the domain of risk” (Slovic, 1986, p. 407). Appraisals of risk are affected by variations in definition of “risk”, as well as other quantitative and qualitative characteristics of hazards (Fischhoff et al., 1984; Slovic, 1987). If experts are crafting messages based solely on risk as probability and magnitude, it is likely that they are communicating about the wrong aspects of risk to create a persuasive message for the public. Furthermore, such efforts may have been counterproductive. Attempts to resolve
risk controversies with technical information can lead to increased polarization and heightened conflict (Kahan, 2010; Kunreuther & Slovic, 1996).

The objectives of risk communication are often misdirected. Technical experts aim to communicate the extent of their expertise (Aven & Renn, 2010). The public, on the other hand, desires certainty and wants to know exactly what will happen. When risks seem intractable, people attempt to reduce anxiety by “making the risks seem either so small that it can be safely ignored or so large that it clearly should be avoided” (Slovic, 1986, p. 404). They want facts instead of statements of probability, and are made anxious by uncertainty.

One view is that risk communication should aim to help stakeholders and the public “arrive at a balanced judgment that reflects the factual evidence about the matter at hand in relation to their own interests and values . . . [by] provid[ing] them with all the insights they need in order to make decisions or judgments that reflect the best available knowledge and their own preferences” (Aven & Renn, 2010, p. 159). This statement makes the assumption that risk experts are equipped to know what insights will be needed. If the communications to the public about risk are focused on probabilities and magnitudes, not only are they difficult to understand, they do not have content necessary to provide affective context and meaning.

**Improving Risk Communication**

Research on the inverse relationship between perceived risk and benefit suggests that communication might be more effective if it aims to educate not about probabilities and magnitudes, but about prospective risks and benefits (Finucane, Alhakami, et al.,
Such content could incorporate important affective information for judgment and decision-making that aligns with social values. However, it would be important to understand the effects of emotions on risk perception before attempting to use them in this way. Such attempts have been known to backfire and have unexpected consequences (Breakwell, 2007).

Another perspective on risk communication is that it should be a persuasive message aimed at helping the receivers see hazards differently and change their mental models of the risks (Breakwell, 2007). Cultural Theory and cultural cognition theory state that it is not the properties of the risk itself, but one’s commitment to group identities and worldviews that determine the perception of risks. If this is correct, it is not the mental model but the social and cultural constructs of risk that should be the targets for creating changes in perceptions.

Much of the trouble faced in communicating about risk has been blamed on the complexity of science and the difficulty of disseminating information (Kahan, 2010). Evidence refuting the idea of a knowledge deficit as the root of differences in risk perception comes from a study assessing cultural polarization over climate change. Members of the public with the highest scientific literacy and technical reasoning were found to have the greatest cultural polarization over climate change, reportedly because they formed their beliefs according to their cultural interpretations rather than best available science (Kahan et al., 2012). People with greater knowledge and reasoning skills were better able to discover and use information to support their groups’ positions or to explain away evidence to the contrary.
According to the cultural cognition of risk theory, people react to scientific evidence about risk by endorsing a position that reinforces their connection to others who share their worldviews. Cultural and identity-protective cognition have been shown to cause people to interpret scientifically sound information in a biased way that reinforces their predispositions and can lead to polarization among groups with opposing values (Kahan, 2007; Kahan, Braman, Gastil, et al., 2007; Kahan et al., 2009; Kahan, Jenkins-Smith, & Braman, 2011). One of the cues that helps people decide whether to believe and trust scientific information is their judgment about the source of that information. Several studies by Kahan and colleagues have shown that the characteristics of risk communicators are important for acceptance of the information they deliver. Ordinary citizens believe experts to be credible when they perceive that expert to share their values (Kahan et al., 2010).

Communicating empirical evidence without regard to contextual cues, culturally-driven awareness of risk, or characteristics of the communicator is unlikely to lead to less conflict (Kahan, 2007). Cultural cognition theory suggests there are two ways that communication can help overcome cultural bias and mitigate public conflict over scientific evidence (Kahan, 2010). First, presenting information in a way that supports rather than threatens people’s existing commitments to worldviews helps them be more open-minded about information (Cohen, Aronson, & Steele, 2000; Cohen et al., 2007; Kahan, 2010). Second, diverse sets of experts advocating science can create an environment for unbiased consideration of scientific evidence (Kahan, 2010).

Other recommendations at the forefront of risk communication include persistence and an appropriate scope (R. Kasper, 2014b). Effective risk
communication requires sustained effort, a long-term view, and continued learning along the way to achieve successful outcomes. The scope must be broad enough to consider issues of concern and unexpected notions about a risk that might create resistance.

Communicators face significant hurdles in crafting effective risk messages. They must be conscious of and understand their own biases. They need to be educated on harmful effects and negative outcomes of potential risks (Árvai, 2014; Savadori et al., 2004). Their messages should communicate in ways that engender trust, and they must understand and communicate about scientific uncertainty to a public that is often not receptive and misunderstands this fundamental principle of science. These two dimensions, trust and uncertainty, have plagued risk communication from the beginning, and continue to be problematic (R. Kasperson, 2014b).

**Uncertainty**

Uncertainty is a fundamental element of risk. Characterizing and conveying uncertainty is an inescapable part of risk communication (R. Kasperson, 2014b). Although acknowledging uncertainty is a standard practice in science, it is extremely disliked by both the public and decision-makers (R. Kasperson, 2014a). Uncertainty creates anxiety, and the public often resents scientists and policy makers for the anxiety they provoke by discussing uncertainty (Slovic et al., 1979). According to Prospect Theory, risk outcomes that are viewed as probable are given less consideration than results that are deemed certain (Kahneman & Tversky, 1979). Casting doubt on the certainty of outcomes is a common strategy to undermine contradictory information in risk conflict and communication (Breakwell, 2007).
There are many types of uncertainties involved in risk. In a technical risk assessment, there can be uncertainty about the outcome, parameters, models used to determine risk, applied knowledge, simplifying assumptions, and unknown inadequacies often referred to as “unknown unknowns” (Riesch, 2013, p. 42). Risk communicators must make important decisions about what type of uncertainty is appropriate for their audience and how to effectively communicate about it (R. Kasperson, 2014a, 2014b). Scientific knowledge gives prominence to a limited number of defined uncertainties and has a tendency to leave out or simplify intractable uncertainties, often leading to a loss of public confidence (Wynne, 1992).

Little is understood about effective communication about uncertainty (Breakwell, 2007). Admission of uncertainty by experts has been found to increase trust for some while at the same time decreasing trust for others (Schapira, Nattinger, & McHorney, 2001; Johnson & Slovic, 1994). Uncertainty can be made public through several channels (Breakwell, 2007). In a proactive explanation, the risk managers voluntarily explain uncertainties. Reactive explanations come after calls for information from risk managers. Uncertainty can be revealed when it is disclosed or proclaimed by agents outside the risk-managing institution. Emergent uncertainty is a type of uncertainty inferred by the public, rather than expressly stated by scientists and policy makers (Breakwell, 2007; Breakwell & Barnett, 2003). It develops in situations such as when the assessments of experts’ conflict, implying that there is a high degree of uncertainty about a risk. The meanings the lay public makes of these certainties are important, as they often lead to distrust.
Trust

Trust has long been a problem for risk communicators, in part because of the general dislike for uncertainty. A long-standing climate of distrust among the public, industry, and risk managers has limited the effectiveness of risk communication efforts (Slovic, 1993, 2000a; Slovic, Flynn, & Layman, 1991). It has been suggested that trust is more fundamental to risk conflict resolution than is communication (Slovic, 1993).

In situations when knowledge is limited, it becomes more important to rely on trustworthy sources (Savadori et al., 2004). Trust facilitates the political system, and it helps to reduce conflict over risk (J. Kasperson et al., 2003). For instance, in France the risks associated with nuclear power generation are as high as in the United States, but risk perceptions are very different in France. The reason for this is the difference in trust that citizens place in their government and nuclear experts (Slovic, 1993; Slovic, Flynn, Mertz, Poumadère, & Mays, 2000).

In a landmark study about trust and risk perception, Slovic (1993) detailed the importance of trust to the perception of risk in decision-making in a democratic society. Foremost was his assertion that there is an asymmetry of trust. Trust is fragile. It is typically created quite slowly but can be destroyed instantly. Once damaged, can be extremely difficult to rebuild. Slovic calls this the asymmetry principle, and he uses it to explain why negative events are more visible or noticeable than positive ones. Trust-destroying events tend to be specific, well-defined incidents that are more visible or noticeable than trust-building events. Trust-destroying events carry much greater weight and demand more attention than positive events. Positive events are often ill-defined, fuzzy, or indistinct, and consequently carry little weight in shaping attitudes and
opinions. Furthermore, sources of negative news are deemed more credible than sources of good news.

Once distrust is established, it tends to be perpetuated and reinforced (Slovic, 1993). Lack of trust drives people to avoid the kind of context and experiences that would help them overcome distrust. Initial trust or distrust biases future interpretations and reinforces prior beliefs. This lends itself to one of the paradoxes of trust and risk communication. The same message or event can invoke trust in some, while at the same time provoking distrust from others. For instance, the nuclear accident at Three Mile Island in 1979 could be seen as a result of untrustworthy risk managers. On the other hand, it could be viewed as successfully averted disaster resulting from strategic risk prevention and management (Slovic, 1993).

In the United States, the legal system contributes to the problem of public trust. In our highly litigious society, experts are pitted against each other in contested positions on risk (Slovic, 1993). This creates the public perception of uncertainty and diminishes public trust in scientists, policymakers, and risk managers.

Mass media have also been implicated in misinformation, distortion, and public overreaction to risk (Slovic, 1986). In addition to content, the volume of media attention to a hazard can influence public attention and perception of risk (Mazur, 1984). In the Social Amplification of Risk Framework, media plays a significant, although not necessarily the central role in the amplification and attenuation processes (R. Kasperson et al. 1988; J. Kasperson et al., 2003). Studies found that different forms of media showed different levels of dramatization and types of bias in their reporting, implying that they would have different amplification/attenuation effects (Freudenburg, 2003; McCabe &
Fitzgerald, 1991). Mass media have the ability to filter, change the context, organize, order, and frame information about risks (J. Kasperson et al., 2003). However, the media interacts with other elements of social processes, contributing to the framing and social construction of risk in complex and difficult to determine ways (J. Kasperson et al., 2003; Vaughan & Seifert, 1992).

**Summary and Future Directions of Risk Perception Research**

The science of risk perception began with a desire to explain how the public created multiple and diverse understandings of risk and why those conceptions do not align with the measurements of expert risk analysts. Reducing the public’s resistance to risky activities was important to scientists and policy makers who believed that irrational perceptions of risk were impeding the progress of science and societies. The early objectives were to close the gap between these views, and to find ways to predict and prevent discrepancies between public and expert assessments of risk.

Revealed preference studies were a first attempt at those goals, with questions about how safe is safe enough for society to accept risky activities. Psychometrics and Cultural Theory followed as the dominant approaches for understanding risk perception.

The psychometric paradigm established an effective method for measuring risk perception. This line of research provided firm evidence that experts and the lay public perceive risk differently. The two-factor model of dread and unknown risk was groundbreaking at the time, allowing researchers and policymakers to understand prevailing social perspectives on risk. The psychometric paradigm remains an important
and well-established empirical method for testing new hypotheses and relative risk comparisons.

Cultural Theory and cultural cognition theory offer accounts of risk perceptions in terms of culture and worldviews. While the psychometric paradigm was focused on measuring perceptions, Cultural Theory was seeking to understand the origins of risk from an anthropological perspective. Cultural Theory purports to explain who perceives what risks and why there are differences among groups. Psychometrics and Cultural Theory are still important, but over the past few decades they have given way to the theories of affect and cultural cognition as they take the lead in explorations of the perception of risk.

Kahneman and Tversky’s work on framing was particularly helpful in understanding the effects that presentation of information has on judgment and choice. The discovery of heuristics, particularly the availability heuristic, advanced the work on cognitive processes involved in risk perceptions. Heuristics highlighted the contrast between intuitive and deliberative decision-making. The inclusion of heuristics in risk research connected it to another body of work about reasoning and cognition that proposes that humans have two processing systems for making decisions and judgments. Dual-process theory incorporates cognitive and affective theories to describe the processing and judgment of risk at the individual level. It recognizes that individuals have both a deliberate, rational mind and one applying heuristics and intuition. The selective attention to risks and what sometimes appears as non-rationality are addressed by dual-process theories.
The emotional and intuitive factor, or affect heuristic, is a powerful but not fully understood force in risk perception. Affect may augment other heuristics if it is indeed a primary response. There is much work to be done on affect, particularly in investigating the feeling of risk beyond positive and negative valence, to determine what effects specific emotions may have on perception of risk.

Cultural cognition theory is a recent offshoot of Cultural Theory. As such, Cultural cognition of risk makes modifications and additions to Cultural Theory that have been supported with psychometric data. Whereas some empirical evidence for Cultural Theory exists, the studies supporting cultural cognition are stronger and better developed. Cultural cognition theory provides a more complete accounting of the fatalist/hierarchical individualist worldview, and it allows for individual flexibility in strength of affiliation with cultural types. It provides evidence that even neutral information and evidence to support a position can backfire due to identity-protective cognition and biased assimilation of information, which can ultimately lead to increased cultural polarization. Finally, it suggests ways in which communication can be made more effective. Strategies for communication improvements will need careful development and may need to be done on a case-by-case basis. Cultural cognition theory holds promise for re-establishing public trust and improving the credibility of science in the public dialog on risks. The application of cultural cognition to persistent cultural disagreements on risk may help reduce polarization and minimize conflict in much needed ways.

Social amplification is a robust framework linking all these approaches together. When risks arise, social agents and institutions generate and transmit context and values alongside information. This gives information social meaning in ways that statistics and
probabilities cannot. Communicators transform and filter the information, thereby amplifying or attenuating the message. The SARF provides conceptual guidance to researchers and brings together diverse findings and theories into a unified structure that describes how the social construction of risk occurs. Amplification and attenuation are the better understood parts of the processes the SARF describes. The secondary processes of the SARF—the ripple effects that drive changes in things such as policy, stigmatization, and trust—need deeper investigation. Dramatic changes in mass media and the rise of digital and social media will present new challenges and opportunities for research in risk and communication, including the SARF.

Social amplification is based on communication as the mechanism for the amplification, attenuation, transmission, and evolution of risk knowledge. Jasanoff (1998) proposes that an approach to understanding risk through discourse may provide new insight. She recommends that debates about risk leave the realist/constructivist and expert/non-expert dualities behind. Instead, there is more to be learned from the discursive and political processes that societies use to frame risk problems, determine authority, grapple with uncertainty, and create public trust. Jasanoff’s discursive model views knowledge about risk as socially constructed, while at the same time emphasizing the role of professional and analytic practices in shaping public perceptions of risk. Examining perceptions of risk through discourse can reveal how risk policy and decision-making is determined by both formal and informal ways of knowing. There may not be a consensus on risk, but discourse can help us learn how we can and sometimes do arrive at pragmatic decisions to accept certain versions of truth about hazards. This is a necessary
step in finding our way toward socially accepted policies that are reasonably representative (Renn, 2001).
CHAPTER 3

DISCOURSE AND FRAMING: THEORIES AND METHODS

Energy development decisions often create highly charged situations rife with disagreements over knowledge, rationalities, and priorities, frequently accompanied by scientific uncertainty and risks. These are aptly described as *wicked problems*—challenges where stakeholders bring fundamentally different worldviews, values, beliefs, and experiences to their understanding of the issues, and the range of possible solutions is contingent upon the formulation of the problems (Conklin, 2006; Rittel & Webber, 1973). The social and cultural aspects of energy that lead to divergent views of its associated risks and benefits are complex and complicated. In order to reduce or manage the discord over energy development in more productive ways, we must find ways to understand energy as a social and cultural issue (Strauss et al., 2013). These are challenges that require new approaches, such as post-normal science (Funtowicz & Ravetz, 1992) or post-positivist approaches (Barry, Ellis & Robinson, 2008), to help create sustainable human energy practices (Ravetz, 2006).

Although risk perception research has origins in conflict over civil nuclear power, there is a need to increase efforts to understand the intersection of energy and social sciences (Sovacool, 2014). In a review of energy scholarship, Benjamin Sovacool (2014) found that social science in energy research is “underutilized, and perhaps unappreciated” (p. 1). In the sample of articles Sovacool evaluated, energy research not only neglected social science methods and tools (present in only 12.6% of the sample), it lacked interdisciplinary perspectives (Sovacool, 2014, p. 8). Incorporating human-centered
research methods into energy research can provide much needed descriptive, explanatory, and predictive expertise (Lutzenhiser, 1992). Discourse analysis was one of several methods that Sovacool (2014) recommended to help fill these gaps in understanding of important human facets of energy risks. Public policy scholar Sheila Jasanoff (1998) similarly suggests a discursive approach to perceptions of risk in order to better organize and implement policies for managing risk.

A discourse analysis is “a careful, close reading that moves between text and context to examine the content, organization and functions of discourse” (Gill, 2000, p. 188). Discourse analysis can be used to uncover the ways in which social reality is produced (Phillips & Hardy, 2002). It encompasses a wide range of approaches to the language and context of messages, from the analysis of word choice to historical systems of power and knowledge. The ways in which information is selectively presented, known as framing, can be studied as part of discourse. Discourse and frames are both part of the production of socially and culturally situated knowledge.

**Discourse and Framing**

In its broadest sense, discourse is an act of communication. Originally seen as consisting of language in use, discourse now includes non-linguistic communicative acts, such as symbols, gestures, dress, images, sounds, etc. that reflect intentions, ideas, relationships, and identities (Gee, 2011). Instances of communication connect to larger-scale interrelated sets of communications (known as discourses, plural), which are produced within social and historical contexts (Gee, 2011, 2014; Phillips & Hardy, 2002). The ways we use discourse are “inseparable from who we are and the different social
groups to which we belong” (Jones, 2012, p. 2). As such, discourse is a useful tool for investigating social knowledge, identities, and processes.

From a discourse perspective, language is understood to be ambiguous and unstable, changing and dependent on context for its meaning (Jones, 2012). However, language has not always been thought of in this way. Up until the 20th century, the study of language tended to assume words had fixed meanings and served functional purposes of neutrally transmitting information. The conception of discourse and the practice of discourse analysis are relatively recent introductions (Jaworski & Coupland, 1999).

Discourse analysis is an approach that emerged in many disciplines around the same time. It grew from the need to study the social processes of discourse in light of a new functional understanding of language. Because of its diverse origins, discourse analysis is a broadly defined and applied research method. This leads to some disagreement about what discourse analysis is and what can or should be studied. However, in all its forms, discourse analysis is considered to be the study of language in use. Discourse analysis is not the search for the hidden or deeper meanings within speech or texts. Instead, discourse analysis seeks to explore the processes of giving meaning to ideas, objects, and events.

Framing is complementary to discourse analysis and is has been important in the study of risk perceptions and decision making. Framing is the way individuals and groups organize, conceptualize, and communicate about a situation, activity, problem, or the world. As such, framing is a function within discourse. Framing can reveal underlying assumptions in discourse, and the ways in which frames are used contribute to the social construction of social phenomena (Scrase & Ockwell, 2010). Entman (1993) states that
“to frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation” (p. 52). By their nature, frames selectively exclude information, and those absences are also informative.

In a competitive social and political environment, frames are used to promote a pre-determined outcome (Reese, 2010). The use of framing as a rhetorical device to create a particular perspective can be intentional or unintentional (Kuypers, 2010). Frames have been shown to have effects on support or opposition to an activity, perceptions of risk, and other beliefs (Cacciatore, Scheufele, & Shaw, 2012; Gamson & Modigliani, 1989; Hart & Nisbet, 2012; Kühberger, 1998). For example, Gamson and Modigliani (1989) found that over time, the media and public portrayals of nuclear power shifted from a progress frame to one of a runaway technology. Older individuals with greater exposure to the frame of progress were likely to be ambivalent about nuclear power, while younger participants who were more familiar with the runaway frame were more likely to be opposed.

In resource decisions, debates are often compromised because the actors involved do not share an understanding of the problem at hand (Adams, Brockington, Dyson, & Vira, 2003). This aligns with research on the psychometrics of risk, which found that expert and layperson’s assessments of risk were based on different sets of factors, including knowledge, assumptions, values, preconceptions, and priorities (Slovic, 2000b). When stakeholders’ conflicting interpretations are revealed, debate can become more productive and conflicts more easily resolved (Adams et al., 2003). Communications
about risk can be designed to reduce polarization and have broader appeal when the perspectives of the public are taken into account (Kahan, 2012b).

Because risk communicators often have a difficult time predicting the public’s reaction to a risk, an important first step in improving risk communication is to discover how groups and sub-groups in society frame the risk problem and think about the hazards they face (Cvetkovich & Earle, 1991). In a telephone survey on risk framing, George Cvetkovich and Timothy Earle (1991) found that risk communicators may frame risks more narrowly than the public. They concluded that communicators, particularly those focused on technical assessments, often incorrectly assumed that risks are the products of physical characteristics and health consequences of a hazard.

Analysis of discourse in real-world situations reveals the discursive structure of a debate in ways that may not be apparent to the participants (Hajer & Versteeg, 2005). Factors influencing perceptions and various strategies to amplify or attenuate certain aspects of energy risk can be explored through discourse and problem framing. Discursive texts can expose the underlying assumptions and taken-for-granted knowledge people use when talking about risk. These include representations of energy and risks, what is right or good, what is valued, and who should make risk decisions.

Discourses and framing of risk implicitly or explicitly give accounts of perceived causal factors, responsible parties, risk bearers, motives, and consequences. These can indicate who or what is vulnerable to risk, who is perceived to have power, how the author feels affected by risk, or potential gains and losses for different actors. The descriptions of risks make the connections between knowledge and action that are particularly important. Framing and discourse analysts claim that the ways in which a
problem is defined set the stage for a limited range of possible solutions (Dryzek, 2013; Phillips & Hardy, 2002; Reese, 2010). For example, if flooding is seen to be a problem of water in the wrong place, the solution is to build dams, levees, and reservoirs to control water. On the other hand, if flooding is seen as human activities occurring in hazardous places, it follows that the solution is to limit use and occupation of flood-prone areas.

**Discourse and Change**

Theories of discourse analysis posit that discourse both reflects changes in social conditions and creates them, often simultaneously (Burr, 1995). Discourses exist in relationship to each other. As a consequence, changes in one often cause other discourses to change, emerge, or die out (Gee, 2011).

Social perspectives on discourse and framing share the premise that if social dimensions of a problem are constructed and transmitted through language, then language also has the potential to change them. However, change does not come easily. There is a tension that exists among individuals or groups attempting to create change. Resistance comes from individuals and institutions, and in the form of established practices of societies and cultures. Change in the ways we talk, think, and solve problems at a societal scale can happen, but it is often slow to occur.

Changes in language can influence perceptions and acceptance of risk, and are at times intentionally used to such effect. In environmental discourse, *swamps*, which elicited images of dangerous creatures, biting insects, and mysterious gasses, have been recast as *wetlands* that provide habitat and clean water (Dryzek, 2013). Cacciatore et al. (2012) compared the use of the words *biofuels* and *ethanol*. They found that people
responded to biofuels more favorably, but also that their ideology was a significant factor in the difference between participants’ perceptions. Evensen, Jacquet, Clarke, and Stedman (2014) found that the term *fracking* invoked greater feelings of risk than *shale gas development*, leading to their recommendation that energy companies attempt to define it more narrowly or avoid the term if possible.

**Intertextuality.** Another way for discourses to undergo change is through intertextuality. The ways in which authors incorporate or respond to other texts is an element of discourse analysis broadly referred to as intertextuality. Intertextuality is frequently used as an aspect of analysis, although the details of different analysts’ meanings may vary (Fairclough, 1992b; Gee, 2011, 2014; Jones, 2012; Jorgensen & Phillips, 2002; Wood & Kroger, 2000).

Intertextuality can be direct quotations, rebuttals, or citation of other texts and discourses, or it can be allusion to them in more subtle ways (Gee, 2011). Allusions include indirect quotes or borrowing from shared social knowledge. In this way, intertextuality can be shorthand for frames and can facilitate certain communicative and historical contexts (Fairclough, 1992b). For example, the phrase “an eye for an eye” references harsh biblical justice, while “life, liberty, and the pursuit of happiness” evokes a democratic ideal of freedom and self-determination.

Combining elements from different discourses is a way to create change in individual discourses, social knowledge, and the cultural world (Jorgensen & Phillips, 2002). It can introduce new ideas from outside the expected discourse, such as evaluating gang violence in terms normally used to discuss epidemics. Incorporating new or unexpected modes of speech, such as using medical terminology to create authority or
using slang to appeal to certain groups, is also considered a form of intertextuality (Gee, 2011, 2014).

Intertextuality can be new supporting information brought to a debate, or the reference can be a response to or critique of another text. Even when the purpose is to argue against other perspectives, intertextuality serves to recognize and reify the existence of competing discourses. Repetition and reference to other texts can intensify those messages. These types of cross-references are important in the development and differentiation of discourses, and can be seen as strategies to promote change (Fairclough, 1992b; Jorgensen & Phillips, 2002).

**Discourse and the Environment**

One area in which discourse analysis has been used to provide important insight is environmental policy and activism. The growing awareness of environmental risk and subsequent wave of environmentalism that held public attention during the 1960s and 1970s came at the time discourse analysis was emerging as a new form of social research. Novel ways of understanding language in use gave rise to the idea of the socially constructed character of nature and the environment (Evernden, 1992). As social science became a significant part of the conversation over environmental policy, scholars began to view scientific knowledge of nature and the environment as a “socially constructed interpretation with an already socially constructed natural-technical object of inquiry” (Bird, 1987, p. 255).

By the early 1980s, scholars were employing discourse analysis to characterize environmental rhetoric. Discourse was an effective way to discover how language
promoted particular meanings and attitudes about the environment in the public consciousness for both historical and contemporary environmental issues (e.g., Farrell & Goodnight, 1981; Opie & Elliott, 1996; Oravec, 1984). Researchers found that where the environment is concerned, “what we say is what we see” (Cantrill & Oravec, 1996, p.1). Their analysis helped identify where the terms of environmental debate had originated, how they had evolved, what risks were considered, and how discourse functions in environmental conflicts (Hajer & Versteeg, 2005). Discourse and framing analysis provided a way to understand the conflicts and cultural values associated with nature (Dryzek, 2013; Herndl & Brown, 1996).

Neil Evernden (1992) traced the concept of nature in Western thought back to Greek philosophy, where it was given the name *phusis*, a word that came to be known as “everything” (p. 20). By giving nature, now commonly called the environment, a name, it was made into an object to examine and describe. In the Aristotelian tradition, nature was seen as the essential principle of change. It was the antithesis of the world’s unchangeable things: the gods and mathematics. The Christian tradition expanded on the Aristotelian ideas and transformed them, making god the creator of nature and nature the servant of god. Nature was eventually set in juxtaposition with humanity, making the “domination of nature…not only a right but an obligation: nature is to be overcome, not preserved” (Evernden, 1992, p. 19).

Beginning in the 18th century, the mandate to conquer nature began to give way to conservation-oriented perspectives (Evernden, 1992). As humans gained greater mastery over nature, it was no longer an obstacle to overcome and transcend. The study
of nature became both a way to understand god and to create a prosperous society through the lavish use of resources (Toumey, 1996).

The 20th century brought the view that “the whole of nature has become imperiled through profligate waste and human mismanagement” (Evernden, 1992, p. 3). Although there had been earlier concern with aspects of what is now referred to as the ‘environment,’ the social construct we now recognize by that name depends on the historically and culturally specific conditions of an industrial society (Dryzek, 2013). Without a belief in the human ability to destroy nature, there would be no reason to believe it needs to be saved.

Nature and human perceptions of it create a complex interactive system. The relationship between humans and nature is conditioned by the social exchange of information (Harari, 2015; Van der Leeuw & ARCHAEOMEDES Research Team, 2000). Communication can not only alter the shared knowledge of a society, it can also lead to changes in environmental states and divergent perceptions about nature.

Saunuer Van der Leeuw and the ARCHAEOMEDES Research Team (2000) described the effects of information exchange on social and environmental systems in Epirus, Greece. Following World War II, the construction of new roads permitted frequent travel and communication between previously isolated villages in the region. New ideas and economic opportunities began to change village life. Traditional agriculture and grazing in the uplands decreased as the villagers’ patterns of living and working led them to relocate into the valleys. Scrub vegetation overgrew mountain fields and pastures. These changes are perceived by some, particularly urban dwellers, as a return to “natural” wilderness, but many local people perceive them as degradation of the
environment. The altered landscape is socially constructed in drastically different ways that depend on ideological and geographic positions.

Concepts such as wilderness, preservation, conservation, environmentalism, and sustainability are imbued with the perception of risks to things, places, and ideas we value. Discourse analysis has shown the importance of public perceptions of environmental risks and documented how discounting or ignoring perceptions has caused communication and conservation efforts to falter (Cantrill & Oravec, 1996; Herndl & Brown, 1996; Waddell, 1998). Evernden (1992) has argued that our failure to “save the earth,” is, at the core, a matter of lack of discursive consensus over nature and the risks to it, as well as a failure to recognize that nature is both a social entity and a physical one.

**Discourse and Energy Risk**

Environmental discourse work can point the way for the analysis of energy and risk. Although energy and environmental risks share a great deal of common ground, the social and cultural construction of energy-related risks has not been similarly explored. There is considerable overlap in energy and environmental risks, but there are also important differences between the constructs of energy and nature. For instance, nature is conceived as existing outside the human sphere (Evernden, 1992), while energy is deeply embedded within it (Rupp, 2013). Given the need to understand energy from a social perspective, discourse analysis has the potential to create better understandings of energy in the same way it has for the environment. In risk theory, the Social Amplification of Risk Framework (SARF) integrates risk theories into a descriptive model for the
circulation and communication of risk information. The SARF presents a logical structure for examining risk theory with a social constructionist and discursive perspective.

**Discourse and the Social Amplification of Risk Framework.** The SARF is a model of an iterative process of change driven by communication (see figure 2.4) (Burns et al., 1993; R. Kaspersion, 1992; R. Kaspersion & Kasperson, 1996; R. Kasperson et al., 1988; Pidgeon et al., 2003; Renn, 1991). In the SARF, information about a risk is communicated and circulated through social interaction. In their discourses of risk, individuals, groups, and institutions filter information and create feedback. The information about a risk is changed and, in whole or in part, amplified or attenuated through language and actions. Content, form, and functions of communications change the risk, and the evolution of the risk changes the discourses about it. The meaning and impacts of a risk ripple outward, starting with those who are first affected and eventually reaching the entire society. Effects can take many forms, for instance, financial impacts, regulatory actions, loss of trust, or organizational changes. Those effects, in turn, create new risks that re-enter the SARF process. In this way, discursive change occurs at multiple scales as individual and social scale discourses are influenced by, and exert influence on each other.

**Origins and Historical Development of Discourse Analysis**

Discourse analytic approaches have developed independently within a wide range of disciplines, with correspondingly diverse backgrounds. Various authors credit George Orwell, Aristotle, Cicero, Kant, and Plato (e.g., Demeritt, 2002; Hammersley, 2003; van Dijk, 1985; Wilson, 2001). These accounts often lack clarity in their theoretic lineage,
and many origin stories appear to have been largely constructed post-hoc (Blommaert, 2005). There are, however, some traceable intellectual developments that paved the way for the practice of discourse analysis.

**Saussure and Structuralism**

The study of language long assumed that words provided a neutral reflection of the world (Jorgensen & Phillips, 2002). The Socratic concept of mimesis, the idea that the true essence of a thing is imitated in the sounds of language, was challenged at the turn of the 20th century by Ferdinand de Saussure (Joseph, 2012). He argued instead that words are not determined by the things they represent. Saussure’s theory emphasized the arbitrary nature of the relationship between the word or symbol that is the signifier and the concept that is the signified, together referred to as a sign (Bouissac, 2010).

Saussure described language as having two levels, language as a system, langue, and language in use, parole (Bouissac, 2010). Parole was dismissed, as it was thought to be so inconsistent and imprecise that it was impossible to study (Jorgensen & Phillips, 2002). Saussure believed that parole did not create change in the overall system, and was therefore inconsequential to the structure of language (Kress, 2001). As a result, the field of linguistics that followed became the study of the institution, structure, and system of language (Bouissac, 2010).

Saussure argued that within a system of language, signs have stable, unchanging relationships to each other, thereby giving language its fixed structure. The meanings of a sign is produced by its position relative to other signs, and from its situated use (Bouissac, 2010; Jorgensen & Phillips, 2002). Linguists following the Sausserian
structuralist notion of language did not completely ignore the social contexts of language, but concentrated on the stable meanings it presumed.

**Wittgenstein and Word Games**

The late work of Ludwig Wittgenstein, published posthumously in 1953, proposed that language should be understood in terms of its practice. It was a reversal of his earlier view of language as a system embodying well-defined signs and rule-bound constructions that defined “good” and “bad” use of language. In renouncing his earlier positivism, Wittgenstein said, “It is interesting to compare the multiplicity of the tools in language and of the ways they are used, the multiplicity of kinds of words and propositions, with what logicians have said about the structure of language,” (Wittgenstein, 1953, translated in Proops, 2001, p. 384). He is credited with turning scholarly attention to the study of language in use (Bhatia, Flowerdew, & Jones, 2008; Gergen, 1999; Potter, 2001).

Wittgenstein explained language use through the metaphor of people playing with a ball. Sometimes the game has set rules. At other times, there are no shared rules, and everyone improvises the game as they go along. In these word games, “[w]hat is basic to our speaking is not the knowledge of certain rules, but rather the fact that we have learnt to act in certain ways” (Hertzberg, 2010, p. 46). The idea of studying language-in-use was important to the shift from the emphasis on what Saussure termed langue to the inclusion of the study of parole.
The Turn to Language

These theories of language led to an important precursor to the study of discourse, variously referred to as the “linguistic turn,” or the “discursive turn.” It was motivated by Wittgenstein’s work, which produced a fundamental realignment toward the role of language in society. The discursive turn represents a shift from thinking of language as purely representational to a view of language as having variable, changeable, and contextual meanings.

Although the discursive turn began in the 1950s, it did not become a major force in social sciences until the 1980s (Wood & Kroger, 2000). The first social science disciplines to recognize the role of language were those concerned with social practices (Bhatia et al., 2008). Early pioneers in the turn toward language were influenced by structuralism, but were increasingly interested in the role of language in social structures and interactions. Language was no longer regarded as a neutral reflection of the world, thanks to emerging critiques of positivism, modernism, and structuralism (Gill, 2000; Jorgensen & Phillips, 2002).

There was wide agreement that knowledge is accessed through language, but less was known about how knowledge is created (Jaworski & Coupland, 1999). Language began to be understood as playing a role in constituting reality rather than merely representing it. The linguistic turn encouraged a bottom-up conception of language use and situated meanings rather than a top-down model that imposes rules and conventions of language (Gee, 2014).
**Poststructuralism**

Both structuralist and poststructuralist linguistic traditions claim that it is through language that one has access to the world (Jorgensen & Phillips, 2002). They also share the stance that language is dependent on situated meanings. In the late 1960s, scholars such as Roland Barthes, Jacques Derrida, and Michel Foucault, who had previously subscribed to structuralism, began to critique the theory for its positivist and deterministic views.

Poststructuralism rejected the distinction between Saussure’s levels of language and disputed the stability of the systems of signs (Jorgensen & Phillips, 2002). For Saussure, the meanings of words were created by their difference from other words, and those differences produced stable meanings. Poststructuralists agreed that difference gives meanings to signs, but argued that the relationships are inconsistent, temporary, and dependent on context (Burr, 1995). Instead of ignoring or rejecting the inconsistencies, poststructuralists embraced the variable nature of words. This acceptance allowed for explanations of change in language meaning and use, something that was difficult to account for in structuralism (Jorgensen & Phillips, 2002).

**Foucauldian versus Habermasian Approaches to Language**

Although the linguistic turn influenced a wide variety of scholarly thought, ideas about how to study discourse did not converge. Conceptions of discourse have been described as having taken two distinct directions, following either the ideas of Jürgen Habermas or those of Michel Foucault (Flyvbjerg, 1998; Richardson 1996). Habermas’ ideas of “ideal speech” are normative conditions describing how communication should
be done, whereas Foucault’s discourse approach was to describe how discourse actually occurs (Flyvbjerg, 1998; Stahl, 2004). These theories are complementary but fundamentally different (Stahl, 2004). For Habermas, the more rational argument should prevail in conflict, while Foucault saw power as the determining factor. Habermas came to be associated with discursive approaches to linguistics, while Foucault is credited as one of the most influential figures in the origins of social sciences approaches to discourse (Burr, 1995; Jorgensen & Phillips, 2002).

Foucault’s work has been criticized and modified, but it remains an important reference point (Jorgensen & Phillips, 2002). The issue on which virtually all discourse theory breaks from Foucault is the dominance of discourse. Foucault’s model allowed for only one knowledge regime at a time to exist as “truth” (Foucault, 1977/1995; Jorgensen & Phillips, 2002). Contemporary discourse theory acknowledges that at any time there can be multiple discourses competing for recognition as truth. Discourse analysts commonly recognize that discourses vie for legitimacy by providing interpretations that give alternate versions of social meaning to the world (Jorgensen & Phillips, 2002).

**Social Constructionism**

Social constructionism was another significant development for discourse analysis. Social constructionism posits that knowledge and identities are created through the effects of language, rather than viewing language as an accurate representation of a state of objective reality (Burr, 1995; Gergen, 1999; Harré, 2001). Social constructionism was heavily influenced by French poststructuralist theory, symbolic interactionism, and ethnomethodology (Burr, 1995; Jorgensen & Phillips, 2002). Peter Berger and Thomas
Luckman’s 1966 publication, *The Social Construction of Reality*, is recognized as the foundational text for this theoretical and epistemological perspective. While discourse analysis is the dominant approach to research in social constructionism, it is not the only one (Jorgensen & Phillips, 2002). Other research methods and techniques have characteristics similar to discourse analysis but do not claim to be discourse analysis.

Vivien Burr (1995) draws from Kenneth Gergen’s (1985) early work to suggest that there are four basic premises of social constructionism. The first is a critical approach to taken-for-granted knowledge (Burr, 1995). In contrast to a positivist approach that takes certain knowledge as given, Burr cautions that assumptions about the world and the categorical definitions that are applied to it should be closely examined. Knowledge and information about what appear to be objective truths are products of socially constructed meanings and representations of the physical world (Burr, 1995; Jorgensen & Phillips, 2002). These constructs become reified as objective features of society or the material world (Hammersley, 2003). For example, the commonly held belief that technology can solve society’s problems or the notion in traditional economics that suitable substitutes can be found as resources become scarce are types of taken-for-granted knowledge that can affect energy development choices.

The second premise of social constructionism is the historical and cultural specificity to the ways we understand the world. The unique circumstances of place and time create understandings of objects and events that are subject to a society’s values, needs, history, technologies, etc. For instance, whales, which were once seen as an energy resource, are now considered intelligent social creatures in need of protection.
The third premise is the recognition of the link between knowledge and social processes. The everyday practices of social interactions create knowledge, construct commonly held truths, and often attempt to transform what is understood about the world. From a social constructionist perspective, this applies to informal channels such as personal interactions and social media, and also to the formal knowledge production of peer-reviewed science and education. People make competing claims to truth and appeals to reason based on knowledge that is socially created and transmitted. Peak oil and resource limits are matters that are contested at multiple scales and through a variety of knowledge-generating activities, such as interpersonal argument, agenda-driven science, and international politics.

Finally, Burr (1995) suggests that knowledge and social action are interdependent and contingent on social understandings. Discourses make some forms of action possible and legitimate. At the same time, discourse inherently limits the ability to act strategically because “all ways of seeing are also ways of not seeing” (Phillips & Hardy, 2002, p. 16). For example, if someone subscribes to the position that political unrest in oil producing countries is a threat, they may vote against initiatives to ban hydraulic fracturing or urge politicians to open up drilling in the Arctic.

Social constructionism has been criticized for the implication that if all human knowledge is contingent upon language, there can be no identities or material foundations to the world. The majority of social constructionists do not adhere to this extreme interpretation (Burr, 1995). Rather, knowledge and identities may be contingent in principle, but are relatively inflexible and rule-bound in terms of identities that can be assumed or statements that can be treated as meaningful (Jorgensen & Phillips, 2002).
The material world exists, but social relations occurring through discourse give it meaning.

**Early Discourse Analysis**

The term *discourse analysis* was reportedly coined by the linguist Zellig Harris in 1952 (Jones, 2012). At the time, the field of linguistics was occupied with the structures and rules of language, using sentences as units of analysis. Harris challenged linguists to move beyond merely describing texts. He sketched out two significant shifts necessary for such a change. The first was to view discourse as language beyond the sentence, making it the focus of study. The second was for linguists to begin relating language to culture (Harris, 1952). Harris’ essay did not spur immediate change, but some linguists eventually began to move in that direction.

In 1962, J. L. Austin published his classic work *How to Do Things with Words*. Like Harris, he felt that the study of language needed to expand and include more than structure and rules. Austin argued that the way language is used and the ways social standards and practices shape language were important topics for philosophers. Over time, Austin’s views on discourse were taken up in various fields, including sociology, psychology, anthropology, literature, communications, education, political science, history, and journalism, although those lines of inquiry did not necessarily originate with linguistics and philosophy.

Discourse analysis emerged as a distinct field beginning in the 1960s. Because discourse analysis developed at the boundaries and intersections of disciplines, it often stands in opposition to more traditional methods, particularly hypothetico deductivism.
The first task of early discourse analysts was to establish the study of language in use as a legitimate topic for investigation (Jaworski & Coupland, 1999). Researchers produced functional descriptions of everyday discourse that resisted the dominant views and practices within their disciplines while emphasizing the importance of context to the study of language in use (Jaworski & Coupland, 1999). Those studies addressed the use of language in the disciplines of linguistics, philosophy, and logic, but none came to be recognized as an “established tradition of research” (Jaworski & Coupland, 1999, p. 50). Consequently, there is sometimes contention among scholars over the meaning of discourse analysis, how it should be done, and what should be analyzed (e.g., Antaki, Billig, Edwards, & Potter, 2003; Edwards, 1999; Gill, 2000; Potter, Wetherell, Gill, & Edwards, 1990).

**Approaches to Discourse**

The multiple functions of saying, doing, and being are the practices of language that differentiate discourse from the mere transmission of information (Gee, 2011). Definitions of discourse vary, but all have two things in common; they agree that discourse is fundamentally language in use, and that it does not neutrally reflect the world. Discourse analytic theories reject the realist or positivist approach to language as solely representative or descriptive (Gill, 2000). Discourse is understood not merely to
describe or refer to those phenomena, but to be socially constructive of them by way of
the language used (Wood & Kroger, 2000).

Though many of the definitions of *discourse* tend to align with certain
methodological approaches and theories, there are some broad definitions that are useful
starting points. Discourse can mean all forms of talk and writing (Gilbert & Mulkay,
1984). Discourse can be seen as “more than just language use: it is language use, whether
speech or writing, seen as a type of social practice” (Fairclough, 2014, p. 28). It can be
understood as the process and medium of “human meaning-making” (Wetherell, Taylor,
& Yates, 2001 p. 3). Schiffrin, Tannen, and Hamilton (2001) explain that definitions fall
into three primary categories: “(1) anything beyond the sentence, (2) language use, and
(3) a broader range of social practice that includes nonlinguistic and nonspecific instances
of language” (p. 1). The ways in which discourse is defined—whether as a noun, verb
and social practice, or some combination thereof—contribute to the questions,
approaches and choice of materials studied.

Discourse analytic approaches tend not to be bounded by set methods, lines of
inquiry, or topics. Some attempts have been made to draw boundaries and create
“schools” to differentiate techniques, yet despite their differences, they tend to be
compatible (Burr, 1995). Scholars often draw sharper lines between non-discursive and
discursive perspectives than among discursive approaches (Jaworski & Coupland, 1999).
Rather than approaching discourse as a deductive, hypothesis-driven research endeavor,
discourse analysts firmly reject this sort of positivism in favor of an inductive approach.
Discourse Analysis in Use

The basic assumptions a researcher holds about discourse and the topic of study are important factors in discourse analysis. Phillips and Hardy (2002) refer to these assumptions as the researcher’s philosophy. The choice of discourse analysis as a method reflects a strong constructionist epistemology. Beyond this, the researcher’s philosophy helps define the approach taken in any given study. The assumptions need not remain the same when a researcher undertakes different studies. Within the context of a research program the researcher’s philosophy “can and should explore different theoretical assumptions as a way to broaden their contributions to the field” (Phillips & Hardy, 2002, p. 63). Other considerations of an analysis include the definition of the object of study, existing literature, theoretical influences, and practical considerations such as availability of data. In discourse analysis, questions are often driven by the initial exploration of the research materials in combination with the theoretical and philosophical orientation of the analysts (Phillips & Hardy, 2002; Potter, 1996b, 1996c).

Some researchers address their disciplinary topics through discourse, but a great deal of discourse analysis is interdisciplinary. At times, this leaves approaches with indistinct boundaries and makes them difficult to label. What makes an approach discursive is “not the method itself but the use of that method to carry out an interpretive analysis” (Phillips & Hardy, 2002, p. 10).

Discourse analysis is differentiated from other studies of language by the objectives of investigations. Where many qualitative methods explore the meanings within language use, discursive methods examine the production of meaning through the use of language. Discourse analysts examine texts “in their own right, rather than seeing
them as a means of ‘getting at’ some reality which is deemed to lie behind the discourse” (Gill, 2000, p. 174). This means that discourse analysis requires new and different questions, and reformulation of traditional ones (Gill, 2000; Potter, 1996b).

Discourse analysts freely borrow, blend, and build upon discourse analytic techniques, and they frequently incorporate other qualitative methods (Gee, 2011, Phillips & Hardy, 2002). Used in this way, interdisciplinary analysis can provide complementary insights into complex social phenomena (Phillips & Hardy, 2002). Diverse approaches to discourse analysis have not coalesced in a standard set of practices. Instead, it become less bound to prescribed methods or procedures as its use grows.

**Discourse and research questions.** Discourse analyses tend to emphasize either language or context. The former focuses on linguistics, grammar, and the communicative functions of talk and text (e.g., how participants know how to interpret a conversation). The latter emphasizes ideas, issues, and the social functions of language (e.g., how racism is supported through the use of language) (Bhatia et al., 2008; Gee, 2014; Phillips & Hardy, 2002). For example, discourse linguists and conversation analysts emphasize texts in their examinations of the structural properties of language-in-use, turn-taking, implied meanings, communication sequences, and how people interact over meaning (Jaworski & Coupland, 1999). At the other end of the spectrum, Critical Discourse analysts are more concerned with the ways dynamics of power produce and reproduce inequality through everyday language use (Phillips & Hardy, 2002).

Socially-oriented discourse work stresses the importance of discourse beyond the use of language as a force that shapes the social order and individuals’ interactions within
society (Jaworski & Coupland, 1999). When discourse is seen as a social practice, it lends itself to explorations of the social identities the authors are attempting to construct, the values and beliefs they are promoting, and how these fit into the larger social structure (Jones, 2012). Social approaches are used at larger scales to examine how and why certain meanings are produced, how categories are constructed and differentiated, and how their boundaries are held in place (or not) (Phillips & Hardy, 2002; Wood & Kroger, 2000).

**Researcher philosophy and research objectives.** Language is used to accomplish things, such as pronounce two people married, name a ship, make promises, referee a game, or place a bet (Austin, 1962; Gee, 2011). From this perspective, language is oriented toward actions and outcomes, in contrast to perspectives that view language as an abstract system of reference (Potter et al., 1990). More than a mere communicative event, language in use “has the capacity to make politics, to create signs and symbols that shift power balances, to render events harmless or, on the contrary, to create political conflict” (Hajer & Versteeg, 2005, p. 179). Discourse can be seen as the “fundamental medium for action… through which versions of the world are constructed and made urgent or reworked as trivial and irrelevant” (Potter & Hepburn, 2008, p. 275). When language is seen this way, discourse analysis explores what people are trying to accomplish through communication, and how we know what that is.

When analysis focuses on “how people use [language] in real life to do things such as joke and argue and persuade and flirt, and to show that they are certain kinds of people or belong to certain groups” (Jones, 2012, p. 2), questions turn to construction of identities of self and others. Language allows people to take on different social identities,
and to switch between them. Discourse can call upon specific social languages, i.e., “talking the talk” of doctors, lawyers, experts, politicians, or everyday people (Gee, 2011, p. 2). Assuming a discursive identity can be used to invoke power or authority, create belonging, make claims to truth, or align with ideologies. These identities are performed, constructed, and enacted through discourse, and are dependent on context, occasion, and purpose (Blommaert, 2005). Identities are often constructed in combination with other semiotic devices, such as dress, objects, actions, gestures, etc. (Gee, 2011).

Discourse can be self-replicating, “an ensemble of ideas, concepts and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices” (Hajer & Versteeg, 2005, p. 175). Those practices can include such established institutions as democracy, deliberative policy-making, and the scientific method. This perspective on discourse lends itself to questions about how discourses are created, are reified, how they come to be accepted as “truth” or “common knowledge,” and how those systems of knowledge keep them in place.

It is possible for multiple discourses to exist simultaneously, competing for dominance and acceptance as truth. In this sense, the plural form is often used to reflect these competing accounts and meanings. Discourses can be seen as particular ways of representing the world, which are often created and identified by their differences from other discourses (Jorgensen & Phillips, 2002). Thus, discourses can be understood as “an interrelated set of texts, and the practices of their production, dissemination, and reception” (Phillips & Hardy, 2002, p. 3) or a “set of categories and concepts embodying specific assumptions, judgments, contentions, dispositions, and capabilities” (Dryzek &
Niemeyer, 2008, p. 481). Competing discourses become readily apparent in high-conflict issues such as climate change or evolution, where positions come as tightly packaged sets of beliefs, and there is disagreement about what constitutes supporting evidence. This view of discourse leads to questions about underlying assumptions, how arguments are rhetorically constructed, and how they respond to other discourses.

Some researchers view discourse as “language reflecting social order but also language shaping social order, and shaping individuals’ interaction with society” (Jaworski & Coupland, 1999, p. 3). From this perspective, not only do people use discourse, discourse also uses people (Potter et al., 1990). Ways of talking can create identities, social relations, and understandings of the physical world, but very importantly, talk also limits the range of possible identities, relationships, and knowledge (Jorgensen & Phillips, 2002). This line of inquiry can help reveal how discourses limit understanding and lock us into patterned ways of thinking.

Linguist and discourse analyst Paul Gee describes discourse in terms that have become shorthand for the two endpoints within the range of views. Gee refers to instances of language-in-use or any stretch of spoken or written language as little “d” discourse (Gee, 2011). Gee uses the term Big “D” Discourse for “social languages…[that] are varieties or styles of language used to enact specific socially situated identities and activities (practices) associated with those identities” (Gee, 2011, p. 201). Using Big “D” Discourses is about being a certain kind of person. When people use little “d” discourse, they participate in Big “D” Discourse. Those individual instances of discourse contribute to the larger process of building, maintaining, or changing social meanings and knowledge.
Big “D” Discourse includes other symbolic and semiotic communications. In Gee’s (2011) view, Big “D” Discourse represents “ways of combining and integrating language, actions, interactions, ways of thinking, believing, valuing, and using various symbols, tools, and objects to enact a particular sort of socially recognizable identity” (p. 29). Multiple Big “D’s” can be achieved at once, creating overlapping and hybrid Discourses. These Big “D” Discourses are too “elusive and veiled” to be studied directly (Jaworski & Coupland, 2014). Instead, they must be investigated through use of styles and varieties of language, where they are manifested in texts that can be empirically studied.

**Texts for analysis.** Discourse analytic traditions differ in their objects of analysis, and the types of communications subject to discourse analysis have broadened over its development. Discourse analysis is no longer limited to speech and written language. It is the tradition of discourse analysis to refer to all forms of data as texts. Some analytic approaches to discourse require certain types of texts, while others are more flexible. There are currently three broad categories of data to which discourse analysis techniques are applied: transcriptions of spoken language, written texts, and multimodal communications.

Instances of written and spoken language are the traditional materials for discourse analysis. Written texts have included literature, letters, journalism, law, and public statements. Verbal discourse, recorded and transcribed in fine detail to capture the complexity of speech, has included public speeches, interviews, focus groups, and conversations. The data can be prompted by the investigators, as with interviews and focus groups, or they can be naturally occurring. Naturally-occurring texts are those
discursive events which would have occurred whether or not the researcher was present (Wetherell et al., 2001).

Over time, discourse analysis was found to have application to other non-linguistic communication modes as systems of making meaning in a social context. People use behaviors and symbols to enact personal or group identities or to generate certain messages (Gee, 2011). A wide range of communicative methods is available, such as images, music, architecture, gestures, gaze, expressions, dress, colors, fonts, charts, and graphs. These non-linguistic forms are the subjects of multimodal discourse analyses. Multimodal analysis takes into account how different communicative modes interact in discourse. It holds that people are always doing multiple things at once, and analysis combines speech acts with non-linguistic texts.

Classification of Discourse Analysis

In the early 1980s there were many loosely related forms of discourse analysis, most with some degree of reliance upon linguistics (Brown & Yule, 1983). By 2000, there were reportedly more than 57 distinguishable approaches (Gill, 2000). Different discourse perspectives tend to have specialized topics and spheres of operation (Wetherell et al., 2001). Availability of data, diversity of research topics, and disciplinary background make it necessary for analysts to adopt, adapt, and combine techniques and theories from other disciplines and discourse approaches (Gee, 2011; Phillips & Hardy, 2002). The result is a great number of interdisciplinary studies conducted using synthetic or hybrid methods and techniques for analysis and interpretation of results. These studies rarely fall neatly into types, and there are few strictly defined schools of discourse
analysis. (Jaworski & Coupland, 1999). With the exception of the approaches that have more formalized frameworks, there is a fluidity in the analytic practices. Discourse analysis continues to branch out into new territory, rather than converging as a single method.

Discursive approaches to research are more similar to each other than to the non-discursive approaches of a given discipline (Jaworski & Coupland, 1999; Potter, 1996b). This does not mean that there is full agreement over what discourse is or how it should be analyzed (e.g., Antaki et al., 2003; Jones, 2007). In spite of those differences, most discourse analysts take an inclusive view. They see the variety of analyses as enriching the discursive approach and the phenomena they study through multiple viewpoints and perspectives (Jaworski & Coupland, 1999; Jorgensen & Phillips, 2002).

Jaworski and Coupland’s classifications. There is no universal classification system for styles of discourse analysis, but Jaworski and Coupland (1999) offer a useful and wide-ranging taxonomy of discourse analytic traditions. Their approach to categorization will provide the outline for the following summary of discourse analytic practices. Jaworski and Coupland caution that while such a framework is necessary, it is likely to overstate the degrees of difference. Developments and changes happen quickly in discourse analysis, making categorization difficult and also potentially restrictive (Blommaert, 2005).

Pragmatics and speech act theory. Following Wittgenstein’s ideas about objective-oriented speech, the pragmatics of language is used to study how people interpret and respond to the words of others (Jones, 2012). It assumes that people use logic and context to resolve ambiguities inherent in language. In 1955, Austin began
investigating the power of language and how the interplay of utterances and social circumstances allows people to do things with words (Austin, 1962). His material consisted of fabricated utterances, not natural language in use. He created examples of speech to demonstrate how performance, interpretation, and meaning can vary with context.

Austin developed the theory that language is a form of action, a way of doing things with words, that he termed *performative speech acts* (Austin, 1962). This theory states that communication not only serves to share ideas, it also brings about a change in the social environment. Not all speech acts have validity. The speaker must meet certain cultural criteria and have recognized authority, such as holding an official position to perform a recognized marriage. Although Austin’s theory preceded social constructionism, he did advance the idea that language use plays a role in social reality (Jaworski & Coupland, 1999).

John Searle (1969) introduced the concept of *indirect speech acts*. Through indirect speech acts, conversants communicate more than is actually spoken by relying on their mutually shared background information, along with rationality and inference on the part of the listener. Indirect speech acts allow for layers of meaning beyond those explicitly stated in the conversation, and permit listeners to make sense of conversation when the literal meaning of an utterance is not relevant.

Speech act theory analysis was limited to increasingly detailed inventories of rules and types until H. P. Grice (1975) proposed that there is a conversational logic that differs from formal logic (Jaworski & Coupland, 1999). According to his *cooperative principle*, talk exchanges are cooperative efforts among rational participants that follow
conversational maxims about what can and should be said (Grice, 1975). Grice’s work led to the understanding of inference as the principal means for generating meaning in conversational discourse (Jaworski & Coupland, 1999).

These approaches have been criticized for providing only descriptions rather than explanations of communication, and for neglecting to account for non-cooperation in communication (Jaworski & Coupland, 1999). However, there is a renewed interest in speech acts with analyses that take into account notions of performance and performativity in discourse. These ideas suggest that identity is dependent on how we talk, rather than vice-versa (Cameron, 1997).

**Ethnographic approaches.** Ethnomethodology is an offshoot of sociology, inspired by social psychology and anthropology (Bhatia et al., 2008). It originated as a radical critique of the methods of social and scientific approaches. The ethnography of communication grew from reactions to the linguistic theories of Chomsky and the formalism he initiated (Jaworski & Coupland, 1999). Dell Hymes was one of the critics who objected to the emphasis on grammatical rules of language. Together with his colleague John Gumperz, Hymes redirected linguistic inquiry toward a communicative competence that included both knowledge and use of language (Keating, 2001). In place of sentence-level analysis, Hymes’ study of language emphasized the social aspects of communication and the rules of speaking within a community (Hymes, 1972; Jaworski & Coupland, 1999).

Ethnographic-based discourse is used to learn how members of a group conceive of and operate within their mutually constructed world through their situated language use and other symbol systems (Smart, 2008). Ethnography of communication has several
basic units used in analysis (Carbaugh, 2007). A *communication event* is a culturally
bounded sequence of acts that have a beginning and an end. They are patterned parts of
everyday social life for participants, and are understood by socially formulated norms or
rules about them. A *communication act* is the combination of a social communicative
action and its interpretation. These are interactions that contribute to communication
events. The specific setting and scene for communication is a *communication situation*.
Communication situations are less rule-bound than communication events and do not
require the same specific sequences of acts or activities. Groups of people who share at
least a minimal set of rules for using and interpreting communication practice are
considered *speech communities*. Communities conduct themselves through speech and
action in certain situations and places through patterned ways of speaking. As culturally-
dependent styles of communication, they establish membership in a community.

By acknowledging that “language practices are not only culturally specific, but
are a central locus for the creation and transmission of culture” (Keating, 2001, p. 22),
ethnomethodology was important to the development of social constructionism. Although
it is not always considered to be discourse analysis, the ethnography of communication
has had a strong influence on discourse analysis due to its emphasis on contextual,
historical, and cultural details of interactions (Jaworski & Coupland, 1999).

*Conversation analysis.* Conversation analysis has its origins in sociology and has
been influenced by ethnomethodology, although it is closely aligned with linguistic
approaches to discourse (Jaworski & Coupland, 1999; Jones, 2012). This method of
studying talk in interaction is considered by some not to be discourse analysis, but a
closely related research method (Potter, 1996b; Wooffitt, 2005). Conversation analysis is
an evaluation of conversational sequence, structure, and turn-taking that produces
descriptions of the procedural rules people use to interpret and respond in their sequences
of interaction (Jones, 2012). Connecting conversation analysis to the organization of
social interaction can demonstrate how those rules reflect and reinforce social
organization and institutions (Jaworski & Coupland, 1999).

Conversation analysis uses transcribed recordings of everyday use of language to
identify social actions performed by the speakers. It requires close attention to detail in
the transcription and analysis of spoken language, including hesitations, pauses, repairs,
inflections, and interruptions. Turn-taking in spoken language is of central importance,
although other social actions, such as the opening and closing of conversation, topic
shifts, and handling of disagreement are also considered (Jaworski & Coupland, 1999).
Analysis reveals the tacit reasoning procedures and socio-linguistic competencies of the
speakers. Structures of talk produce and reproduce patterns of social interaction. Those
patterns provide valuable insight into relations between conversation participants, an
individual’s position within institutional structures, and the organization of society.

A somewhat controversial assertion came from Emanuel Schegloff, one of the key
figures in conversation analysis. He argued that context is relevant and consequential
only to the extent the interactants orient themselves to it, as evidenced by the content of
the conversation (Schegloff, 1991). This has led to the primary criticism of conversation
analysis, that it neglects important social contexts.

**Discursive psychology.** Discursive psychology is the application of discourse
analysis to social psychology, with strong connections to conversation analysis and
ethnomethodology. The primary objective of discursive psychology is to conduct
“empirically grounded exploration of how psychological themes are handled and managed in discourse” (Edwards, 2005, p. 271). It focuses on the influences of social interaction on individuals and the resulting processes of social and cultural reproduction and change (Edwards, 2005; Jorgensen & Phillips, 2002). Discursive psychology is among the more coherent and well-defined discursive methods (Jaworski & Coupland, 1999). Discursive psychologists have also made significant contributions to social constructionism (Burr, 1995).

Discursive psychology is used to examine topics typically addressed in psychology, although the central concern is not the internal psychological condition of the individual. Instead, discursive psychology delves into how individual people use discursive resources to create identities and representations of the world (Edwards & Potter, 2001). People use discourse rhetorically as a form of social action; analysis therefore focuses on rhetorical rather than linguistic organization of text and talk (Jorgensen & Phillips, 2002).

For data, discursive psychology relies mainly on transcriptions of spoken language in naturally occurring situations. Whereas psychology approaches speech as a description of mental states and perceptual experiences, discursive psychology views discourse as performative and action oriented (Edwards & Potter, 2001). A speaker’s description of events or actions offers one of many possible versions, and reflects the intent to construct a particular understanding.

Discursive psychologists Jonathan Potter and Margaret Wetherell frequently use the term interpretive repertoire in reference to social and cultural discourse. They define interpretive repertoires “discernible clusters of terms, descriptions and figures of speech
often assembled around metaphors or vivid images” (Potter & Wetherell, 1995, p. 89).

Interpretive repertoires are flexible stylistic and grammatical resources people use to construct versions of reality and identity.

Practitioners of discursive psychology are highly critical of the prevalent statistical and experimental methods commonly employed in psychological studies (Edwards & Potter, 2001; Harré, 2001; Jaworski & Coupland, 1999; Potter, 1996b). They argue that traditional research methods cannot capture the contexts and complexities of talk, although those aspects are essential to the meanings people make of their interactions (Harré, 2001). Furthermore, discursive psychologists object to psychology’s view of language as a simplified behavior (Potter & Wetherell, 1987).

Discursive psychologists also take issue with attitude research, particularly Fishbein and Ajzen’s theory of planned behavior (Ajzen, 1991; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1977). Detractors argue that models pay insufficient attention to the variability and contingency of attitudes, and lack the ability to connect an individual’s different attitudes to each other (Potter, 1996a; Potter & Wetherell, 1987). For discursive psychologists, variations in talk contradict the idea that attitudes reflect underlying cognitive processes and stable structures (Edwards & Potter, 1992). They argue instead that attitudes are constituted through social activities (Jorgensen & Phillips, 2002).

**Interactional sociolinguistics.** In his work on ethnography of communication, Gumperz (1977a, 1978) observed that different dialects created differential power. This prompted him to develop interactional sociolinguistics as a way to study language as actions that are influenced by the interactional contexts in which they are embedded (Gordon, 2011). This approach to the study of communication centers on face-to-face
encounters, combined with an ethnographic component of observation and interaction (Jaworski & Coupland, 1999). Interactional sociolinguistic analysis is accomplished through audio or video recording of speakers in naturally-occurring interactions, detailed linguistic transcription of conversations, micro-analysis of conversational features, and sometimes post-recording interviews.

Gumperz theorized that signaling mechanisms such as tone, inflection, rhythm, and syntax are *contextualizing cues*, and that listeners recognize and interpret them through their own culturally-shaped knowledge (Gumperz, 1977a). Interactional sociolinguistic analysis has many similarities to conversation analysis, but interactional sociolinguists place stronger emphasis on socio-cultural and situational contexts. Researchers use interactional sociolinguistics to explore the functions of language and gain insights into the ways individuals “build and maintain relationships, exercise power, project and negotiate identities, and create communities” (Gordon, 2011, p. 67).

Interactional sociolinguistics has helped create a contemporary, constructionist understanding of identity (Gordon, 2011). Other discourse work has been influenced by interactional sociolinguistics, and it has introduced the public to academic ideas about language through popular non-fiction (e.g., Tannen 1986, 1990, 1994).

Gumperz’s observations about language, power, and culture helped define a speaking technique known as conversational code switching (Gordon, 2011; Gumperz, 1977b). Speakers who are adept in more than one language, speaking style, or dialect can alternate between languages or modes within the context of a single conversation (Blom & Gumperz, 1972). Conversational code switching can be used to signal group
Gumperz extended ethnography to examine how contextualization cues and conversational inferences help guide understanding of interactions. Much of this work deals with cross-cultural aspects of interactions, focusing on how people from different cultures may share grammatical knowledge of language but interpret and contextualize speech in different ways. These miscommunications and misinterpretations result in the production of different understandings from the same utterances (Gumperz, 1982). The work of Erving Goffman is closely related to that of Gumperz. Goffman (1974) used the term *frames* for the interpretive cues that conversants use to understand or disambiguate communications. This use of framing is closely linked to interactional contexts and settings. For instance, an arm gesture could be interpreted to be a greeting, an attempt to hail a taxi, or a request to speak. The context allows one to understand its meaning. Like Gumperz’s contextualization cues, frames are metamessages about how to categorize or interpret a message.

The work of Goffman and Gumperz was the basis for Penelope Brown and Stephen Levinson’s politeness theory (Brown & Levinson, 1987). Politeness theory attempts to explain how and why people communicate strategically rather than following rule-bound practices that some theories of language would require. It accounts for deviations from maximally efficient communication and why people don’t always say what they mean (Jaworski & Coupland, 1999).

**Narrative analysis.** Narrative was one of the first discourse genres to be studied in linguistics. The study of story-telling has broad application in other research
methodologies, but is also used within discourse analysis. Narrative analysis is the study of factual or fictitious accounts of events in the past, present or future. Narrative is a way for people to enact important aspects of their identities and relations with others. It helps people to comprehend the world and present their interpretation of it to others (Jaworski & Coupland, 1999). Discursive analysis of narratives is the exploration of the ways people make sense of the world through stories.

There are several different modes of discursive narrative analysis. The first is a structural approach that describes the functions of talk in a story. Until the 1980s, analysts were interested in identifying and defining universal characteristics of narratives (Meister, 2014). Such formal and semantic work arose from structuralist assumptions (De Fina & Johnstone, 2015). Despite their apparent differences, stories were presumed to be the same on an abstract level. William Labov and Joshua Waletzky (Labov, 1972; Labov & Waletzky, 1967) described the functional and structural parts of a story, including the requirement for a story to have at least two sequence-dependent narrative clauses. Narrative clauses are events that are consecutive and order-dependent, such that changing the sequence would alter the meaning of the story.

Although Labov and Waletzky’s model was an important move away from a purely referential view of language, it was criticized for exclusive focus on the storyteller and an absence of consideration for interactions or context (De Fina & Johnstone, 2015). In reaction to this reductive perspective, a second approach emerged that evaluates narratives in their interactional contexts, understanding them to shape and be shaped by their settings and audience. This type of analysis can show how identities are revealed through self-expression and self-representation in narrative. In a discursive analysis of
narrative, it is important to attend to where identities and practices are affirmed through narrative and where they are contested (Edwards, 1997).

On a social level, communities have shared stories and shared ways of telling stories. They are embedded in social practices that can be revealed through narrative analysis. In some contexts, ways of telling a story may be tightly controlled, such as in a courtroom or a newspaper story (De Fina & Johnstone, 2015).

The types of data subjected to narrative analysis have become more diverse. Although Labov was strict about the use of verbal monologues as texts, narrative analysis is now applied to multimodal forms of discourse, including music, pantomime, pictures, new media, and other non-linguistic communication (Jaworski & Coupland, 1999).

Narrative analysis has the potential to address important contemporary questions such as who has rights to tell a story, who owns or controls a story, and how those rights and ownership are determined (DeFina & Johnstone, 2015).

**Critical Discourse Analysis.** Critical Discourse Analysis (CDA) is one of the few approaches that is thought of as a formal style of discourse analysis. CDA is a linguistically oriented approach with an interest in social problems and inequality (Blommaert, 2005). Norman Fairclough, Ruth Wodack, Teun van Dijk, and Paul Chilton were leaders in the development of CDA. Although there are theoretical differences among practitioners, the goals of CDA are consistent. All CDA maintains a commitment to criticism of power and an explicitly left-wing political position, asserting that “language is an ingredient of power processes resulting in, and sustained by, forms of inequality” (Blommaert, 2005, p. 2).
Critical approaches that question objectivity, hidden meanings, and values are common in discourse analysis. However, CDA goes beyond the scope of other critical forms of discourse analysis by prioritizing concern with the social construction of ideology (Jaworski & Coupland, 1999). When an ideology becomes dominant in discourse, it has the capacity to become naturalized, or to appear as non-ideological common sense (Fairclough, 1995). Such naturalized discourse reinforces power relations, dominance, and discrimination (van Dijk, 1993). The central focus of CDA is analysis of “the way social power abuse, dominance, and inequality are enacted, reproduced, and resisted by text and talk in the social and political context” (van Dijk, 2001, p. 352.).

CDA primarily uses spoken and written language as texts, although it can be extended to other modes and practices of communication (Fairclough, 1993). However, Fairclough clarifies that CDA is not only the analysis of texts; he sees it as “part of some form of systematic transdisciplinary analysis of relations between discourse and other elements of the social process” (Fairclough, 2010, p. 10). Practitioners of CDA use discourse analysis to generate an ideological critique of social power and oppression with the stated intent to create social change (Jaworski & Coupland, 1999; van Dijk, 1993). CDA proposes reconstructing or reconceiving the world in a way that is more justifiable and fair by producing knowledge that has the potential to contribute to righting or mitigating social wrongs (Jorgensen & Phillips, 2002).

This approach was developed for and has been applied to problems of contemporary capitalist societies and social changes linked to the pervasive effects of economic forces (Fairclough, 2010). This has made CDA a controversial approach. Some charge that it imposes an ethnocentric late modern and post-industrial model on the
world, neglecting the circumstances in which a text is produced or the many ways in which it can be read (Blommaert, 2005). Analysts are indicted for projecting their political biases and prejudices onto the data (Schegloff, 1997; Widdowson, 1995). In effect, this replaces one ideological frame with another, and displaces the voice of the participant with the explanation of the researcher (Blommaert, 2005). The entire practice of CDA has been condemned for assuming that language users are uncritical communicators, and that by doing so, CDA reifies discourse and produces a distorted view of the workings of society (Jones, 2007). Despite these criticisms, CDA is a widely-recognized approach used to provide important insight into complex social problems.

**Phillips and Hardy’s varieties of discourse analysis.** Phillips and Hardy (2002) maintain that an analyst must make several choices in conducting an analysis of discourse. The objects of study, philosophical orientation, goals, theoretical considerations, and practical concerns of research influence the design of a study. The object of analysis and the source of data can be interdependent, as with conversation analysis. Data type and availability constrain to some degree the method of analysis. For example, interactional sociolinguistics analysis must have interactions to analyze, and narrative analysis must have narratives in the texts.

Analysis can adhere to one of the discourse traditions described above or can blend theories and analytic strategies in *multiperspectival* research. Multiperspectival work combines elements from different discourse theories and methods, and sometimes includes non-discourse analytical perspectives (Jorgensen & Phillips, 2002). Discourse analysis tools and strategies are often transformed, adapted, and combined as they are put into practice (Gee, 2011). Such blending can produce diverse types of knowledge about a
phenomenon, broaden understandings of discourse, and can also make contributions to other theoretical literatures (Phillips & Hardy, 2002). Combined approaches need to be mindfully selected based on the ways they will work together, their similarities, and their differences (Jorgensen & Phillips, 2002).

Phillips and Hardy (2002) describe discourse approaches using two dimensions. Their format for classifying discourse analysis is shown in Figure 3.1. The first dimension is the focus of the level of analysis, which varies from texts to social context. On the second dimension, studies of discourse can range from critical (focusing on dynamics of power) to constructivist approaches (focusing on description of social processes) (Gee, 2014; Phillips & Hardy, 2002). In application, discourse analytic studies exist in the continuous space of these definitions, with all four elements considered to some extent.

The map Phillips and Hardy use is better suited to identifying the styles of individual studies than for labeling the analytic methods available. For instance, interactional sociolinguistic studies can range from critical to constructivist in approach, but holds focus on the textual end of the spectrum. CDA is the only quadrant that strictly aligns with the discourse analytic approaches described by Jaworski and Coupland (1999).
Studies in the social linguistic analyses quadrant tend to concentrate on social artifacts through “a close reading of the text to provide insight into its organization and construction, and also to understand how texts work to organize and construct other phenomena” (Phillips & Hardy, 2000, p. 22). Here, discourse is seen as a process of individual discursive microdynamics that produce the social world (Phillips & Hardy, 2002). The quadrant labeled interpretive structuralism is also primarily constructivist, but aims toward understanding contexts and the larger social perspective, rather than microanalysis of individual texts. These studies can help examine macrochanges in broad discourses over time. Interpretive structuralism is concerned with the ways discourses and contexts come into being and the possibilities for action and knowledge that are

*Figure 3.1. Varieties of Discourse Analysis. Map of varieties of discourse analysis. Adapted from Phillips and Hardy (2002) and Gee (2011, 2014).*
created or eliminated by those constructs. Individuals may be seen to draw from scripts and play roles defined by popular culture. Power is not a central concern in interpretive structuralism.

The two analytic approaches concerned with power are CDA, described earlier, and critical linguistic analysis. CDA focuses on the discursive creation of systems and structures of unequal power that create the contextual space for social interactions. Critical linguistic analysis is concerned with the dynamics of power surrounding the text. This form of analysis pays close attention to the ways language presupposes and reinforces social and structural inequalities, such as passivity in verbs used for women, or the assumption that people of certain races might be better at math or more predisposed to crime (Phillips & Hardy, 2002). These discursive elements can reveal how the process of social construction is tied to power relations at a level of individual interactions.

Clearly, there are limits to the compatibility of data, theories, analytic methods, and philosophical orientations. For some studies, objects of analysis and research questions can be selected in advance, with the data and analytical process designed to accommodate them. At times, the availability of data or a setting creates an unexpected opportunity to design a study to generate new insights. In any study, the elements of a discourse analysis need to be adjusted and tailored to suit the overall objectives.

**Framing**

The study of framing is a language-based analytic technique that shares the same basic theoretical foundations as discourse analysis (Johnson-Cartee, 2005). It begins with the premise of language as a shaping force in knowledge, beliefs, perceptions, and action.
Just as a visual frame selects a certain view, language is also used to systematically emphasize certain aspects of an issue and minimize others. Where risk is concerned, frames “determine what evidence is seen as relevant for coming to decisions about the risk, and they will determine also what courses of action are seen as appropriate” (Breakwell, 2007, p. 93). Frames help people locate, perceive, identify, and label the world, and to structure their experience of it (Goffman, 1974). Frame analysis is a way of investigating that organization.

Framing, like discourse, is a widely-applied term with a range of views about what frames are and how they should be studied. Perspectives include frames as a tool for discourse analysis (Gee, 2014); mechanisms consisting of words, symbols, phrases, and presentation styles that exert selective influence over perception (Druckman, 2001b); and metacommunications that allow people to make sense of information and interactions (Tannen, 1993). Most fundamentally, framing reduces ambiguity and simplifies understanding. The use of frames can be intentional and calculated, or they can be unconscious parts of everyday speech and action. Either way, they always produce a simplified version of the world (Entman 1993).

Theories of frames and framing have been developed and applied in fields such as linguistics, artificial intelligence, mass communication, psychology, economics, sociology, rhetoric, and political science, often in overlapping ways. This diversity has generated criticism that framing is not a coherent approach (Entman, 1993). Others argue that drawing liberally from available theories of framing can lead to a comprehensive view of frames and framing, rather than producing fragmented findings and isolated research agendas (D’Angelo, 2002).
Theories and Approaches to Analysis of Frames

Gregory Bateson’s essay, “A Theory of Play and Fantasy” (1955), is the basis for psychological perspectives on framing. He observed monkeys at play and theorized that they used behavioral metamessages to communicate a *play frame* to differentiate actions that could otherwise be interpreted as aggression. This conception of framing has led to questions about the psychological processes that can explain framing effects and the mechanisms by which they work (Chong & Druckman, 2007). Approaches based on Bateson’s perspective of frames define them as psychological phenomena that contribute to sense-making (Gordon, 2015).

In contrast, Goffman, who played a role in the development of interactional sociolinguistics, considers frames to be primarily social and situational (1974). He relied heavily on the work of Bateson, as well as that of William James and Alfred Schulz, in his book *Frame Analysis* (Goffman, 1974). This landmark work is widely accepted as the starting point for social perspectives on framing. Goffman proposed that frames allow people to filter, locate, perceive, identify, and label their world, thus rendering meaning, organizing experiences, and guiding actions. Frames call on shared information, metaphors, and stereotypes, which are all part of larger cultural constructs.

Goffman’s theories of frames and microanalysis of linguistics were sparsely applied until the mid-1980s, when they were carried forward by Deborah Tannen (1993). Whereas Goffman viewed frames as cultural properties invoked by communicators, Tannen came to use frames in a more individualized, cognitive way. She saw frames as interacting with an individual’s knowledge schema, which she defines as a combination...
of Goffman’s cultural knowledge with personal expectations and experiences (Tannen, 1993). Her work uses face-to-face interactions to study what people are doing in their speech and interactions and how participants indicate shifts in their intent through linguistic and non-linguistic cues. Tannen has also examined how participants’ existing knowledge and expectations within a situation can create conflict, and how that conflict is managed (Tannen & Wallat, 1987).

**Thought frames and communication frames.** Social framing, particularly as part of sociolinguistic studies of face-to-face interaction, consists of the signals that speakers and receivers use to understand what is going on in a conversation. Sometimes referred to as *thought frames* or *cognitive frames*, they are the representations, interpretations, and simplifications that are used in an individual’s mental process (Druckman, 2001b). The analytic focus is on the construction of the frame and the interaction between the content and narrative that links it to social knowledge (Reese 2010).

Thought frames are different from *communication frames*. Communication frames are properties of the communication itself, rather than the individual’s internal understanding of the situation or event (Gordon, 2015). A communicator’s choice of frame can reveal what the speaker sees as relevant to an issue (Gamson & Modigliani, 1989; Druckman, 2001b).

Analysis of communication frames focuses on the selection, emphasis, organization, and presentation of information (Druckman, 2001b). Communication frames can serve four functions. They define problems, diagnose causes, make moral
judgments, and suggest remedies (Entman, 1993). A single sentence may perform one or more of these tasks, although many sentences perform none of them.

Thought frames and communication frames are both variations in emphasis or salience, although they are separate objects of analysis (Druckman, 2001b). Thought frames center on what an individual is thinking, while communication frames focus on what a speaker says. The two types of frames are interconnected. Communication frames shape thought frames through the psychological influences of a frame on an individual, known as framing effects, (Druckman, 2001b). In a constructionist view, the individual’s interpretation, when communicated, becomes part of the larger scale framing process, often crystallizing and upholding the meanings of frames (Reese, 2010; Van Gorp, 2007).

**Micro and macro level frames.** Framing can be studied at both the micro and macro levels. At the micro-level, frames are the ways individuals bring their life experiences, social interactions, and predispositions to their interpretation of communications to create framing effects (Gamson & Modigliani, 1989). In social interactions, a micro-level frame is a relational concept that draws from knowledge, experiences, and expectations to allow people to communicate and interpret what they are doing in interactions (Tannen, 1993).

Functioning at the macro level, frames are packages of images, metaphors, catch phrases, moral appeals, stereotypes, and signs that hold shared meanings. This type of frame offers a condensed set of symbols such that the entire frame can be represented in shorthand (Gamson & Modigliani, 1989). In socially-oriented framing, macro-level analysis presumes frames to be connected to culture rather than the individual.
Individuals use frames by drawing from a cultural stock of frames that is part of the collective knowledge that is persistent and slow to change (Goffman, 1981).

**Communication studies of framing.** A large body of work in communication framing consists of studies of journalism, political communication, and mass media communications (D’Angelo & Kuypers, 2010; Scheufele, 1999). Media framing, when studied as a dependent variable, is known as *frame building*. Like discourse analysis, frame building examines the production of frames as they are evident in communication. Frame building over time often results in one frame becoming dominant in discourse, either because it resonates with the public, it fits with media practices, or because it is sponsored by elites (Scheufele & Tewksbury, 2007).

Media frames can also be evaluated as independent variables, in which the psychological effects of frames are measured as outcomes (Druckman, 2001b). This approach is referred to as *frame setting*, and it is used to reveal effects on individuals and media agendas. To study framing effects, researchers use surveys, focus groups, interviews, and experimental methods. Such work often compares effects or preferences for terms (e.g., global warming or climate change). Frame setting is where risk and studies of framing have had significant overlap, particularly in Daniel Kahneman and Amos Tversky’s (1984) application of frames. Their experiments demonstrated how wording creates positive or negative associations with strong effects on risk preferences.

Frame setting and frame building studies of frames are informative for understanding communication effects and can provide supporting information for discursive studies. However, they take a positivist, realist approach to language. As such, they do not fit well with the constructionist approach to framing and discourse analysis.
**Decision frames.** Kahneman and Tversky’s work stimulated research on the positive and negative affect, or valence, of decision frames which in turn has led to the description of different types of frames (Chong & Druckman, 2007; Levin, Schneider, & Gaeth, 1998). Levin, Schneider, and Gaeth (1998) contend that the ways in which valenced frames are used are not homogenous. They describe three distinct types of framing strategies for presentation of choices. Each has different effects, mechanisms, and consequences.

**Risky choice frames.** Equivalence, or risky choice frames are different portrayals of logically equivalent information in a decision problem (Druckman, 2001a; Levin et al., 1998). The way in which such a choice is worded can portray an option either as a gain or as a loss. This type of framing affects risk preference, measured by comparison of preference among risky choice options. This was demonstrated by Kahneman and Tversky in the Asian Disease problem, as described in Chapter 2. (Kahneman & Tversky, 1984; Levin et al., 1998).

Risky choice frames systematically make risk-seeking or risk-avoidant choices more appealing. The valence of a risky choice is part of the psychological value function of Prospect Theory. Positive valence (e.g., framing as a gain, such as lives saved) creates a preference for risk avoidance, while negative valence (e.g., framing as lives lost) promotes a preference for the risk-seeking choice. Replication studies of Kahneman and Tversky’s equivalence frames have produced mixed results (e.g., Bohm & Lind, 1992; Fagley & Miller, 1987, 1990; Kühberger, 1995; Levin & Chapman, 1990; Miller & Fagley, 1991; Schneider, 1992; Takemura, 1994; Wang, 1996), although Levin et al.
(1998) report that studies with different outcomes significantly deviated from the original operational definitions and theoretical concepts Tversky and Kahneman used.

**Attribute frames.** In contrast to risky choice frames, attribute frames do not involve comparison between options, nor do they necessarily deal with manipulations of riskiness (Levin et al., 1998). This type of frame influences an individual’s evaluation by emphasizing certain characteristics of an object or event. Impacts of attribute frames are measured by comparison of attractiveness ratings.

Positive or negative framing of a single attribute has been found to have a valence-consistent effect on favorability in studies across disciplines and topics (Levin et al., 1998). Attribute frames cause people to attend to information differently. This type of framing is most recognizable in the ways percentages are used, such as in the statement of percent fat or lean in ground beef (Levin & Gaeth, 1988), or how probabilities in medical treatments are presented (Wilson, Kaplan, & Schneiderman, 1987). Attribute framing can be complicated because valence is not always perceived in the same way. Individual values and preferences may create positive valence for some people or groups, while the same frame could be perceived as negatively valenced for others. Elements of risk are not necessary for this type of framing effect, but they can be applied to evaluations of gambles, as in chances of winning or losing.

**Goal frames.** Goal framing is a type of manipulation designed to influence the evaluation of a given situation or behavior. The objective is to persuade an individual to adopt the goals that the message framer desires. Goal framing directs attention to the outcome of making the desired choice or behavior, or the consequences of not doing so (Levin et al., 1998). When the emphasis is on the benefits or gains, the valence is
positive. Negatively valenced frames are those focused on potential for loss. In goal framing, both positive and negatively valenced frames seek to promote the same end result, but with different persuasive methods. The effects of goal framing can be measured by comparing rates of adoption of the goal behavior with non-goal choices.

Goal framing is more complicated than risky choice or attribute framing because more than one aspect of the message can be manipulated (Levin et al., 1998). Frames advocating a certain choice emphasize consequences of taking the desired action or not taking the action. Each of those choices can be described in several ways. In positive framing, the outcome of goal behavior can be framed as either obtaining a gain or avoiding a loss. The choice not to take the desired action can be framed as forgoing a gain or suffering a loss. Furthermore, in lieu of the non-action alternative (doing nothing), a substitute action can be discussed. In all cases, the desirability or undesirability of the action or event has already been established by the framer. The objective of goal framing is not to change the perceived valence of the action or event, but to influence the persuasive power of the message. Figure 3.2 illustrates these variations on goal framing. Figure 3.3 gives an example of goal framing when the objective is to select the option of going to sleep.

Levin et al. (1998) report that studies comparing positive and negative goalframes show that portraying a loss if action is not taken (Outcome D in Fig. 3.2) tends to have a stronger impact than other frames. This may have some relationship to anticipated regret found in risk perceptions, and is in harmony with Tversky and Kahneman’s findings on loss aversion (Kahneman & Tversky, 1979, 1984; Tversky & Kahneman, 1981, 1986,
The effect may also be due in part to a negativity bias, in which people have a tendency to pay more attention to negative information than to positive (Meyerowitz & Chaiken, 1987).

**Figure 3.2.** Goal Framing with Positive and Negative Valence. All frames promote the same desired goal behavior (Action X). The negative frame has two possible variations: to not take the desired action (Action not-X), or to take an alternative action (Action Y). Adapted from Levin, Schneider, and Gaeth (1998).
Conducting Analysis of Discourse and Framing

There is no prescribed set of steps, or “off-the-shelf” method for conducting analysis (Gee, 2011, 2014; Gill, 2000; Phillips & Hardy, 2002; Potter, 2004). According to Johnathan Potter and Margaret Wetherell (1987), “there is no obvious parallel to the well-controlled experimental design and test of statistical significance” (p. 168). Only a few scholars provide a rough outline of steps as a general guide for analysis. They tend to do so with caution and disclaimers that there is no universal approach (e.g., Gee, 2011, 2014; Gill, 2000; Phillips & Hardy, 2002).

As a starting point, selection of materials for study and development of research questions are interdependent. While the research questions may precede a strategy for

Figure 3.3. Example of Goal Framing with Positive and Negative Valence. All frames promote the same desired behavior, the choice to go to sleep. The negative frame has two possible variations: to not take the desired action (not sleep), or to take an alternative action (watch television). Adapted from Levin, Schneider, and Gaeth (1998).
data collection, oftentimes texts present a researcher with an opportunity to explore a social phenomenon of interest (Phillips & Hardy, 2002; Wood & Kroger, 2000). Because research questions seek to discover processes without imposing categories and assumptions on the data, discursive approaches rarely begin with a hypothesis (Gill, 2000; Potter, 1996b; Potter & Wetherell, 1987). The claims or hypotheses the researcher makes about the data are, in a sense, an objective of the analysis, and thus come later in the process (Gee, 2011). The researcher’s philosophical orientation, theoretical influences, creativity, and desired contribution are used to formulate the beginning research questions (Phillips & Hardy, 2002).

The texts for analysis can be any materials that include talk, text, or other semiotic devices. Naturally occurring materials are those generated from day-to-day actions that would have taken place and occurred in the ways they did whether or not the researcher was involved (Phillips & Hardy, 2002; Wood & Kroger, 2000). These types of materials show how people naturally orient toward a setting or situation, allowing researchers to investigate situated practices without introducing bias in the process of data collection (Potter, 2004). Researcher-instigated materials can be collected through interviews, focus groups, or other interventions. While researcher-instigated materials can concentrate on certain topics or themes and provide some standardization to the data, naturally occurring texts are often preferred as more closely representing the object of inquiry (Phillips & Hardy, 2002; Potter, 2004). Naturally occurring data can come from myriad sources. They can be written, audio recorded, or non-verbal texts. They can be newly gathered for research, or assembled from archival sources. Some forms of data require transcription of texts, particularly those for conversation analysis and interactive types of analyses (Gill,
The transcription of talk is a detailed, specialized process that should detail the finest features of speech, including pauses, intonation, inflections, breath, etc. while avoiding introducing bias (Ochs, 1979).

After data are collected, there must be a decision about which texts, or parts of texts should be used for analysis (Wood & Kroger, 2000). Sampling of texts and sample size depend on the specific research question (Phillips & Hardy, 2002). Quantification of content can be used to aid in the selection of a sample, but should be used carefully to avoid riding roughshod over meaning or attempting to count the uncountable (Wood & Kroger, 2000, p. 139). The quality of analysis does not depend on the number of texts and there are no inherent boundaries to text selection (Potter & Wetherell, 1987). Successful studies can concentrate on a single text if the intent is to show fine-grained effects of language. There is no statistical test of validity of discourse analysis, thus there is no test for adequate sample size (Wood & Kroger, 2000). Where the objective is to explore a variety of discourses or frames, the sample size must be sufficient to address the research question (Phillips & Hardy, 2002; Potter & Wetherell, 1987; Wood & Kroger, 2000). As a study proceeds, it may be necessary to make adjustments to the sample size (Wood & Kroger, 2000).

The task of the researcher is to generate an analysis that contributes to an understanding of how people use language, not to create an exhaustive catalog (Phillips & Hardy, 2002; Wood & Kroger, 2000). Therefore, the notion of saturation is different for discourse analysis than for other methods. Saturation is reached when the researcher has obtained sufficient data to make and justify an interesting argument about the phenomenon of interest (Wood & Kroger, 2000).
The stages that follow data selection are iterative processes in which steps blur together, and it may be necessary to return to earlier steps to refine the questions or collect more data (Potter & Wetherell, 1987). Skeptical reading of texts begins once data are collected and prepared. This phase requires a suspension of taken-for-granted knowledge and assumptions (Gill, 2000). Gee (2014) refers to this as a process of making the familiar strange. Reading should consider structure, organization, and functions of discourse, such as how texts are organized to make them persuasive. Initial ideas about the data are developed, and samples and research questions are often refined throughout this step (Wood & Kroger, 2000).

Inductive coding of texts follows. This is a pragmatic process distinct from analysis (Potter & Wetherell, 1987). In coding, the goal is “not to find results but to squeeze an unwieldy body of discourse into manageable chunks” (Potter & Wetherell, 1987, p. 167). Coding is guided by the research questions and knowledge gained from the initial reading (Gill, 2000). Throughout this step, codes continue to change and become more sophisticated. Coding should be inclusive rather than reductive, with borderline cases and outliers included (Potter & Wetherell, 1987). The focus of coding is on the process of participation in social construction of the analytical target (Gill, 2000).

When data have been coded, analysts seek out patterns in the data, noting both consistencies and variability (Potter & Wetherell, 1987). This analysis must take into account contexts, historical understandings, settings, authority, power, and identity (Gill, 2000). Consideration should be given to the stakes and interests of social actors, and the ways discourse is designed to undermine competing alternatives (Potter, 2004). Different analysts recommend numerous tools and techniques for analysis, many tailored to
specific traditions of discourse or types of inquiry. Analytic strategies are combined, modified, adapted, or developed as necessary to accomplish the objectives of the study (Phillips & Hardy, 2002; Gee, 2011, 2014; Gill, 2000; Wood & Kroger, 2002).

At this point, analysts begin to form hypotheses about the functions and effects of language based on evidence in the texts (Gill, 2000; Jorgensen & Phillips, 2002; Potter & Wetherell, 1987). This stage is often messy, leading to dead ends and requiring flexibility and iterative refinements. Researchers must remain reflexive and self-critical about their own presuppositions and sensemaking (Potter & Wetherell, 1987). The objective of analysis is to generate an understanding of the functions and meanings of the discourses (Gill, 2000). Analysts should seek out and present patterns of differences and commonality in the data (Potter & Wetherell, 1987; Wood & Kroger, 2000).

**Presenting Results**

Writing a report of discourse analysis is a final step in analysis, as it requires discussing and demonstrating the claims produced throughout the process (Wood & Kroger, 2000). In presenting research results, description and evaluation are not separate activities (Gill, 2000). Findings are contained within and supported by the descriptive process. Discourse analysis does not set out to identify universal processes because discourses are always dependent on contexts. Analysis should maintain its commitment to interpretation of discourse as how people orient to the topic of interest, rather than treating discourse as matters of essence or cognitive processes (Wood & Kroger, 2000).

Discourses are not finite categories waiting to be discovered within texts or speech. Instead they are generated by researchers as they evaluate how people use
language. As such, discourses can never be exhaustively described (Phillips & Hardy, 2002; Wood & Kroger, 2000). Furthermore, the reflexivity of the research process requires that the language used by the researchers be recognized as constructing rather than documenting reality. The research process is itself historically situated and culturally bound. The interpretations and representations produced through research are not the sole possibilities for understanding the data (Nikander, 2008). Although they are inherently subjective, analytic claims need to be well explained, justified, and plausible (Wood & Kroger, 2000).

Traditional notions of validity that presume that research strives to capture the “real” world do not apply to discourse analysis (Gill, 2000; Phillips & Hardy, 2002; Potter, 1996b, 2004). In discourse analysis, the epistemological premise is that there is no one “real” world to discover (Phillips & Hardy, 2002). The epistemological and ontological basis of discursive approaches is that of social construction, wherein the world has shifting and multiple meanings. Absent a goal of achieving a description of a stable reality in the world, validity cannot be measured in conventional ways (Phillips & Hardy, 2002). Reliability in the sense of repeatability of research is an unsuitable check for work that is interested in generating multiple and disparate interpretations of a situation (Wood & Kroger, 2000). Instead, there are different ways of warranting the claims of discursive work.

Linda Wood and Rolf Kroger (2000) have recommended that discourse analysis be warranteable to the extent it is both trustworthy and sound. They state:

[T]rustworthy claims are those that can be depended upon not only as a useful way of understanding the discourse at hand, but also as a possible basis for understanding other discourse, for further work, and so on
(because they are derived from accountable procedures, are systematic, etc.), whereas sound claims are solid, credible, and convincing (because they are logical, based on evidence, etc.). (p. 167)

These are inherently qualitative judgments that are not tied to particular measures. The manner in which the analyst meets these criteria is dependent in part upon the nature of the claims. Some aspects of warranting are done by the analyst, some by the reader, and some by both. Discourse analysis gives greater prominence to reader evaluation than is found in many other research methods (Potter, 1998).

One of the most effective ways of warranting analysis is through transparency. Analytic claims must be supported by evidence drawn from the texts (Potter & Wetherell, 1987). Jonathan Potter (1998) describes the co-construction of validity between the researcher and the reader:

One of the distinctive features of discourse research is its presentation of rich and extended materials in a way that allows the reader to make their own judgements about interpretations that are placed along side of them. This form of validation contrasts with much traditional experimental and content analytic work where it is rare for ‘raw’ data to be included or more than one or two illustrative codings to be reproduced. (p.11)

Most successful work relates to other studies or theories in some way, building upon, adding insight to, or providing checks on previous research and theories (Phillips & Hardy, 2002). Arguments must reflect the participants’ orientations and situated meanings (Potter, 2004). Results should give coherence to discourse, showing how discourse fits together and accounting for deviant cases (Potter & Wetherell, 1987).

Finally, conclusions of discourse analysis should be novel, fruitful, or interesting (Phillips & Hardy, 2002; Potter & Wetherell, 1987; Wood & Kroger, 2000).

While discourse analysis does not use statistical measures for warranting analytic claims, such as group averages, aggregates, inter-rater reliability, or statistical
significance, quantification can be used in limited ways (Schegloff, 1993; Wood & Kroger, 2000). As a tool in pre-analytical work or as a support for descriptions, numerical expressions may be useful in describing the number and frequency of certain features of discourse (Wood & Kroger, 2000). Non-numerical quantitative expressions (e.g., massively, overwhelmingly, regularly, ordinarily, commonly, rarely, many, few) operate as informal quantification as an experience or grasp of frequency rather than a count (Schegloff, 1993; Wood & Kroger, 2000). These sorts of terms are used to report “a characterization of distribution full though tacitly informed by the analytic import of what is being characterized” (Schegloff, 1993, p. 119).

Finally, discursive work must be reflexive. Analysts must be aware that, just as language of the discourses constructs certain realities, the language of the researcher also constructs a version of the world. Any approach to research, from the questions posed to the methods and techniques brought to bear, shapes the outcomes. Empirical data are mediated by interpretation, social processes, and social practices that produce “knowledge” (Phillips & Hardy, 2002). Reflexive research must acknowledge that it is itself culturally and historically situated. Just as discourse itself is bound to conditions of time, culture, knowledge, and context, so, too are the interpretations of discourse. The products of analysis should not be reified. The categories, classes, and patterns that are interpretations of the data by one analyst may be different through the eyes of another with different theoretical background, discursive approaches, interests, and orientation to the texts. The claims of an analyst must be robust and demonstrated with the texts, logical and coherent, but they are always but one version of possible interpretations, not a discovery of an objective truth.
Discourse and Framing Approaches Applied to Three Case Studies on Energy and Risk

Much of the extant framing and discourse analyses of energy tends to be oriented toward policy language itself. Although the intent of those studies may be to clarify the underlying assumptions upon which policy is made, they do little to develop an understanding of risk perceptions as one of those assumptions. The purpose of the case studies examined here is to explore perceptions and rationalities of risk as they are constructed and framed in public discourse on energy.

To this end, three case studies on energy development decisions are used to explore the discourses and frames related to perceptions of risk. Cases are separate in time, while related by nature of their location (mainly in the state of Colorado) and their consideration of unconventional and controversial technologies for extraction of fossil fuels. The influences of time and shifts in context can provide contrast, highlighting differences, similarities, and changes in the construction, amplification, or attenuation of risk.

There are a few primary assumptions made in undertaking this study, which constitute what Phillips and Hardy (2002) would consider the researcher’s philosophy. First is a constructionist stance toward language and risk. This is accompanied by a material realist perspective that objects and limits exist in the physical world, and that some things about the nature of that world can be understood on the basis of empirical evidence3 (Jorgensen & Phillips, 2002). Those material realities are given meaning

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3 This stands in contrast with some constructivist perspectives that assert the world is entirely discursively constructed (e.g., Laclau & Mouffe, 1985).
through discourse. Second is the assumption that energy quality, supply, and use pose a serious challenge to modern societies. Third is the assumption that perceptions of risk are important to understand, for reasons that include the additional information they bring to decision-making and public policy and because of their potential for conflict and polarization.

Analysis of discourse and framing provide the method for these case studies on energy development. The object of study is perception of risk as expressed in public discourse. Theories of risk perception discussed in Chapter 2 are applied in the interpretation and analysis. The SARF is adopted as the functional model for the application of risk theory to the social construction and transmission of knowledge through discourses of risk.

The texts for all three cases in this research are archival materials from publicly available documents and newspapers. Accordingly, the analysis is a content-based analysis of written texts. Two genres are considered: public comments in environmental impact statements and mass media newspapers. These cases take place within a broad context democratic participation in policy governing energy development in the United States. These cases are narrowly defined in terms of time and data; therefore, analysis focuses on how discourse and framing are influenced by context, rather than vice-versa.

The way discrete narratives “hang together” can provide evidence for the shared social discourses in these cases of energy development decisions. Whether or not individuals personally subscribe to the positions expressed in their texts is not the concern of this study, nor is the objective to find hidden, deeper meanings in the texts. Instead, the construction of social meaning through language use is the focus. An
individual’s participation in public discourse is understood to be an attempt to amplify, attenuate, or alter certain conceptions of risk in order to influence the social constructs of “common knowledge” and “truth” about energy-related risks.

Following the two-factor map of analytic approaches to discourse analysis from Phillips and Hardy (2002) (see Figure 3.1), this research falls on the constructionist side of the spectrum. Some aspects of analysis, such as interpreting metaphors, rhetoric, and situated meanings, emphasize the context of language use, the quadrant Phillips and Hardy refer to as interpretive structuralism. Other parts of analysis, such as word choice, frames, and intertextuality require closer attention to text and cross into social linguistic analysis. Elements of ethnography are incorporated to provide an account of the discourses “used by the members of a social group to construct a particular shared version of reality” (Smart, 2008, p. 58) in relation to cultural worldviews and rationalities.

Specific tools and techniques used in analysis are described in the following chapter on Methods. The case studies and analysis are discussed in Chapters 5, 6, and 7. In these chapters, discourses are described and applicable theories of risk are discussed. Chapter 8, Conclusions, is a second order analysis that summarizes and compares the case studies and discusses change over time.
CHAPTER 4
METHODS

The concept and design of this research emerged from and was guided by previous work on discourse and energy development. The prior study was an analysis of news media discourse on an application to use water resources in oil shale development in Colorado (Taylor, 2013). Findings indicated that perceptions of risk influenced support for dedicating water to this form of unconventional energy production. The present study was designed with the objective of further exploring the intersections of risk perceptions and energy.

Three cases were selected for this analysis by virtue of their relationship to the first study and their spatial proximity to each other. Two case studies are based on Oil Shale and Tar Sands Programmatic Environmental Impact Statements for energy resources on public lands in Colorado, Utah, and Wyoming. The first of these was conducted in 2008, and the second in 2012. Public input was solicited as part of the decision-making processes. Those public comments presented an opportunity to build upon the previously conducted work by focusing on perceptions of risk in the letters to the agency conducting the environmental review. The third case comes from urban areas of Colorado near the oil shale and tar sands regions. Three municipalities, Boulder City, Lafayette City, and the City and County of Broomfield, placed ballot measures before voters in 2013. The initiatives were designed to prohibit hydraulic fracturing (commonly
called hydrofracking or fracking\(^4\) of oil and gas wells and associated activities in cities and designated open space lands.

With the Social Amplification of Risk Framework (SARF) as a process model for the social construction of risk, this research began by focusing on certain parts of the framework. Figure 4.1 highlights those components of discourse in the SARF originally targeted in these case studies. The study data are direct communications that were submitted to government agencies or published in mass media as efforts to inform or persuade other people. Letters and articles were generated as part of social processes and organizational responses that included news reports, public announcements, grassroots activism, and advocacy groups’ calls for participation. In these case studies, people used language as a particular form of political and social action. In doing so, they participated in a collective process of construction, amplification, and attenuation of certain messages about risks. The texts have been used to explore shared meanings, knowledge, and perceptions of risk in social contexts.

The discourses, frames, and content of the texts do not stand alone. They are facets of an ongoing process of constructing historically and culturally contingent knowledge that is embedded in particular contexts. The circumstances leading to these cases were produced through previous cycles of social amplification of risks. Those iterations helped create outcomes such as the National Environmental Policy Act, the Energy Policy Act of 2005, prior Environmental Impact Statements, safety regulations, and

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\(^4\) The words *frack, fracking, and fracked* are the terms in common usage in public discourse and throughout the texts. Therefore, they will be used to refer to the technique so as to align with the language and meaning constructed by the authors.
Figure 4.1. The Social Amplification of Risk Applied to Case Studies.
public activism, land preserves, and lawsuits. Countless other factors, including economic
growth, geopolitical tensions, and market demand, helped shape public knowledge and
perceptions of risk. In turn, the decisions made in these three case studies contribute to
the context for subsequent debates on risk and energy.

Description of Case Studies and Data Sources

Case Study 1 - 2008 Programmatic
Environmental Impact Statement

The most recent wave of interest in oil shale development traces back to the
passage of the Energy Policy Act of 2005 (42 U.S.C. §15801). This act required the
Department of the Interior to enter into leases on certain federal lands for research,
development, and demonstration of oil shale and tar sands (OSTS) extraction
technologies. It also mandated a wide-ranging Programmatic Environmental Impact
Statement (PEIS) for the expansion of OSTS leases. The PEIS was to consider the most
promising public lands in Colorado, Utah, and Wyoming in preparation for commercial-
scale production. Responsibility fell to the Bureau of Land Management\(^5\) (BLM), which
prepared the PEIS as required by the National Environmental Policy Act of 1969 (NEPA)
(42 U.S.C. §4321 et seq.). In accordance with the NEPA rules and guidance, federal
agencies must allow for public comment on PEIS drafts prior to a final decision\(^6\).

\(^5\) The Bureau of Land Management is an agency within the Department of
the Interior. The BLM is responsible for the management of public lands and mineral resources.

\(^6\) Public comment was solicited during the scoping processes for the
PEISes. Scoping comments were published only in summary, and are not
available in their original form. For this reason, only comments on the
draft PEISes are suitable for these analyses.
A draft of the PEIS was made publically available December 21, 2007. The release of the draft initiated a public comment period originally set to end on March 20, 2008, but later extended to April 21, 2008 (72 Fed. Reg. 72702, 2007; 72 Fed. Reg. 72751, 2007; 73 Fed. Reg. 17375, 2008). Comments were accepted by mail or electronic submission. Attendees at public meetings held in February 2008 were given the opportunity to provide comments in writing or electronically, but no oral statements were accepted.

Letters and comments came from all 50 states, the District of Columbia, and some foreign countries. Individuals, state agencies, local governments, federal agencies, businesses, and non-government organizations were among those submitting comments. More than 100,000 submissions were form letters from organized campaigns. The BLM recorded 2,023 comments it deemed to be unique. Those unique comments were published as part of the Final Programmatic Environmental Impact Statement (BLM, 2008b). This set of BLM-filtered submissions provide the data upon which the case study of discourse, framing, and content is based.

In 2008, a final Record of Decision in the first PEIS was issued, making more than 2 million acres available for OSTS development (BLM, 2008a). A coalition of environmental groups sought to block OSTS leasing through legal action (Colorado Environmental Coalition v. Salazar). In February 2011, under a new presidential administration and agency leadership, the parties reached a settlement wherein the Department of Interior would conduct a new PEIS. The BLM agreed to include new information and to consider plans that would provide greater protection for species of concern.
Case Study 2 - 2012 Programmatic Environmental Impact Statement

In April 2011, the BLM began preparing a new PEIS on oil shale and tar sands as agreed upon in the settlement of the lawsuit challenging the 2008 Record of Decision (Colorado Environmental Coalition v. Salazar). Described as a “fresh look” at land-use allocation decisions, the PEIS was to incorporate new information and to determine if oil shale and tar sands leases should be focused on lands with fewer conflicting uses (BLM, 2012c). The BLM considered only the lands that had been made available for leasing by the 2008 PEIS, approximately 2,000,000 acres for potential oil shale development, and 431,000 acres for tar sands in Colorado, Utah, and Wyoming.

Once again, a draft was presented to the public with a call for public input. Notices of Availability of the Draft PEIS were published in the Federal Register in February 2012. (77 Fed. Reg. 5513, 2012; 77 Fed. Reg. 5833, 2012). The period for public comment opened on February 3, 2012 and continued through May 4, 2012. Written comments were submitted to the BLM at meetings, by mail and online. Oral comments were not accepted. The website for the 2012 PEIS includes an archive of 635 public comments (BLM, 2012b). These public comments from the 2012 PEIS serve as the data for the second case study.

Case Study 3 - 2013 Colorado Ballot Measures

On November 5, 2013, the ballots of several Colorado municipalities posed questions to voters on initiatives to restrict fracking for oil and gas. Three cities have been used in the 2013 Colorado Ballot Measures (CBM) case study. Boulder, Lafayette,
and Broomfield are within 20 kilometers of each other. They sit at the western edge of Weld County, the largest oil and gas producing county in Colorado.

In 2012, voters in the neighboring city of Longmont passed a similar initiative that prohibited fracking and the storage or disposal of fracking waste within city limits. As a consequence, the State of Colorado, through the Colorado Oil and Gas Commission (COGCC), and the Colorado Oil and Gas Association (COGA) joined together in a lawsuit to overturn the amendment to the city charter. Their lawsuit against Longmont was pending during the 2013 election cycle (Colo. Oil and Gas Ass’n v. Longmont).

The proposal to impose local fracking regulations sharply divided citizens and politicians. The oil and gas industry weighed in with strong opposition, and aided groups against the measures with money, attorneys, and consultants. The authority of local governments to make fracking rules was contested, with Colorado Governor John Hickenlooper leading the fight against municipal bans on fracking. He had made his intent to sue to overturn any bans widely known.

The measures passed with clear majorities in the cities of Boulder and Lafayette, (Denver Post, 2013a, 2013c). Preliminary results on election night showed Broomfield’s measure failing by a margin of 13 votes, although some ballots remained to be counted (Denver Post, 2013b). Official figures later released indicated passage by a margin of 17 votes. An automatic recount was triggered amidst legal appeals on procedures. In December the results were certified, passing the measure by 20 votes of the 20,702 votes cast (City and County of Broomfield, 2013).
Data for this case study were obtained from searches of the LexisNexis database, which supplied 368 potential texts for this case study. The majority of these were from locally-based newspapers. Texts included news reporting, opinion, and editorial articles.

**Similarities and Differences Among the Cases**

These three cases have characteristics that provide similarities in overall context, but they also have important contrasts. In some respects, they are decisions of the same type. All three are debates about whether a practice of energy production should be allowed within certain areas, rather than proposing specific energy developments in particular locations. They are also decisions about the commercial development of unconventional fossil fuels. For both fracking and OSTS, the technologies and practices of production were associated with a high degree of public uncertainty about the risks involved.

All of these cases took place when energy prices and demand were high and were expected to continue to rise. Growing global consumption, particularly among the increasingly affluent populations in China and India, was cause for concern over competition for oil. The three cases also took place in a context of the U.S. War on Terror and apprehension about political stability in the Middle East.

Colorado is the setting for all of the cases, although the OSTS PEISes also included areas of Utah and Wyoming. The OSTS cases cover sparsely-populated, mostly rural areas on the western side of the Rocky Mountains. The CBM case took place on the more urbanized eastern side of the Rockies, where population densities are higher. There
is no spatial overlap between the OSTS area and the fracking case study, but the locations are less than 300 km apart.

The two OSTS cases consider the same resources in the same area four years apart, but they differ in several important ways. The intent of the first PEIS was to identify and open up lands that could be leased for energy development with acceptable levels of environmental impact. The 2012 PEIS sought to determine whether some lands should be closed to leasing, and whether the terms of leases should be changed. This effectively changed the overarching question posed in the PEIS from “Where is OSTS development an acceptable risk?” to “Where are the risks of OSTS development too great?”

The 2008 and 2012 PEISes were conducted during different presidential administrations and Secretaries of the Interior. The 2008 PEIS took place under President George W. Bush and Secretary Dirk Kempthorne. In 2012 the PEIS was conducted under President Barak Obama’s administration and Interior Secretary Ken Salazar. The final 2008 PEIS documents were published in September and the Record of Decision finalized in November 2008, just as the global financial crisis began. The comment period and final decision for the 2008 PEIS took place before the crash, when the economy was growing, optimism was high, and energy prices were at their pre-crisis peak. By 2012, the economy was beginning to recover, although unemployment rates and energy prices both remained high. These factors provide valuable contrasts for evaluating risk perceptions under different political and socio-economic circumstances and changes over time.

The types of property rights and land ownership differed in the case studies. The land considered for OSTS development was public land under the management of federal
agencies. OSTS extraction activities can occur on private lands, but they were not covered by the PEISes. In the CBM case on fracking, regulations would cover activities taking place on private and city-owned land. Under Colorado law, a property owner may allow oil and gas wells on their land without consulting with or obtaining the consent of their neighbors. The issue was further complicated by the fact that subsurface mineral rights may not be owned by the same entity holding title to surface rights. A land owner can be obligated to provide access to subsurface resources. Thus, fracking activities can impact private property owners without notice or consent.

The decisions in the case studies were made at different scales, by different decision-makers, and through different processes. For the PEISes, the final decision was to be made by a central authority at a national level with millions of acres involved. In contrast, the ballot measures were decided by a distributed democratic process at a local level. The land area under the jurisdiction of the cities totaled less than 100,000 acres.

Accounting for all the differences in context would be impossible, but these are significant factors that have been explicitly or implicitly acknowledged in the discourses. One of the most important characteristics shared by all of the texts is one not embedded in the content, but in the nature of the texts themselves. They are all responses to real-world policy decisions, captured through the written use of language at the time they occurred.

Data Collection, Screening, and Preparation

The data used in these case studies come from publicly available records and archives. All materials were obtained from online sources as electronic documents. The
sources and formats of the data differed in each of the cases, and required different
treatment prior to analysis. For the large datasets in the 2008 and 2012 PEISes, samples
of the data were selected. For the 2013 Colorado fracking study, texts were not sampled
but some non-relevant texts were eliminated from the data set. The process used for
sample selection in the PEIS cases follows the data collection and preparation
descriptions.

2008 PEIS Data

The BLM conducted initial screening of the comments it received for the 2008
PEIS. In their review, the BLM compared submissions against a set of representative
form letters. If the comment was original, or if the form had been modified to the extent
the BLM considered it unique, it was treated as an individual letter and published as part
of the final PEIS documents (BLM, 2008b). Duplicate copies of unaltered form letters
were not published. The BLM (2008b) reported that it deemed few of the more than
100,000 campaign letters it received to be unique, although exact numbers were not given
(p. x). The high frequency of form letter language found during the sample selection
process for this study indicates that many submissions based on campaign letters were
not considered to be forms by the BLM.

Unique comments from the 2008 PEIS were included in Volume 4 of the Final
PEIS (BLM, 2008b). This volume is a single document in a PDF image format, which
made it necessary to create separate PDF files for each of the 2,023 comments. The text
recognition function in Adobe Acrobat was used to convert images to machine readable
text format. Nine texts in handwritten form were transcribed into text documents. Only written language texts have been included in the dataset.

2012 PEIS Data

The BLM, through Argonne National Laboratory, maintains a website dedicated to the OSTS PEIS archives (BLM, 2012a). The comments the BLM determined to be unique for the 2012 PEIS are available for download as PDF files. The 635 records in the archive includes multiple copies of co-authored letters. Once the duplicates were eliminated, 572 texts remained. Of the 572 documents, thirty-six contained handwritten comments and were transcribed into text documents. Three of the handwritten comments were text added to preprinted postcard forms. For these, only the original handwritten segments were included as public submissions.

Some campaign letters were submitted in bulk by the sponsoring organizations via the online portal, while others were sent directly to the Bureau electronically or by mail. The BLM did not include the direct submissions in the public comment database, but they are available separately on the PEIS website. Fifteen of the 572 online submissions were documents from advocacy groups. Those 15 records contained more than 150,000 copies of form letters. Although members of the public could alter or add to the form letters, the content was unchanged in the vast majority and if changes were

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7 One text in the 2012 PEIS was a pictorial illustration of the four alternatives the BLM was considering. Without other graphic texts to form a basis for interpretation, this text was not used. Political cartoons, drawings, or photographs associated with the ballot measures were unavailable in LexisNexis archives, and were not part of this analysis.
made, they were usually minor⁸. Comments submitted by the public directly to the BLM offered a source of richer and more diverse data on discourses of risk. The 15 campaign files were eliminated, leaving 557 texts prior to sampling.

**2013 CBM Data**

For the CBM case study, data were obtained from the LexisNexis database using searches for the terms *fracking, hydrofracking, hydraulic fracturing, Colorado, Lafayette, Broomfield,* and *Boulder.* Longmont was included because the nearby Colorado city was involved in lawsuits over fracking bans. Searches were restricted to newspapers, with dates from May 1, 2013 to December 31, 2013, inclusive.

The terms and dates cast a broad net for articles that related to the fracking bans. Initial searches produced 368 potential texts. After cursory screening for content about fracking in Colorado, some texts were eliminated, leaving 341 as the initial data set. Additional articles were excluded from analysis in later stages due to their limited content about risk. However, some of those excluded texts were useful in providing context for interpretation of the discourse and framing.

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⁸ For example, of the 1,851 forms submitted by The Wilderness Society, only 115 (approximately 6%) contained any changes from the original. Among the 19,686 National Wildlife Federation submissions, 68 (0.3%) contained alterations. Quantitative analysis of the 39,395 copies of Defenders of Wildlife letters indicated that of the approximately 3% with changes, around one third were shortened versions of the original form. Analysis of Colorado Environmental Coalition letters showed that deletions of form text accounted for more than half the changes. The changes made to campaign form letters could provide interesting data for a future study.
Sample Selection for PEIS Case Studies

For the PEIS cases, it was necessary to select a manageable sample of texts that enabled focus on perceptions of risk. In discursive work, samples do not need to be random or representative, nor is there an optimal sample size (Jorgensen & Phillips, 2002). Selection of texts for analysis should instead focus on inclusion of a broad range of perspectives on the topic of study.

To begin screening the raw data, PDF files were previewed and sorted. Comments were sorted according to author type, with the following categories: public comments, industry, governments and tribes, schools, and NGOs/associations. The numbers or texts in each of these categories is shown in Table 4.1. In the two PEIS cases, only the comments submitted by the public were selected as texts for analysis.

Table 4.1
Author Types

<table>
<thead>
<tr>
<th></th>
<th>2008 PEIS</th>
<th>2012 PEIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Companies</td>
<td>51</td>
<td>27</td>
</tr>
<tr>
<td>Governments and Tribes</td>
<td>26</td>
<td>49</td>
</tr>
<tr>
<td>NGOs and Associations</td>
<td>59</td>
<td>53</td>
</tr>
<tr>
<td>Schools</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Public</td>
<td>1885</td>
<td>427</td>
</tr>
<tr>
<td>Bulk Campaign Letter Submissions</td>
<td>--</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>2023</td>
<td>572</td>
</tr>
</tbody>
</table>
Sample selection and analysis were conducted using MAXQDA Analytics Pro 12 (hereafter MAXQDA). This software package can be used to perform both qualitative and quantitative analysis. MAXQDA was used to facilitate sample selection, reading, coding, analysis, quantification, and overall data management. Data were loaded into MAXQDA in separate projects, one for each case study. This allowed discrete analysis of each case. The software allows for some user-defined items, such as word lists and codes that can be used across projects.

When working with a large dataset, quantification of data is helpful in selecting a sample (Wood & Kroger, 2000). MAXQDA’s quantitative functions were used to produce comprehensive word counts of all texts in both projects. These word frequency tables served two purposes at different stages – in early stages for sample selection and later to assist in data analysis. To facilitate sample selection, word frequency results were used to create a list of words that could suggest the perception of risk. Risk-related meaning was verified in the texts, and words were then recorded in a table referred to as a dictionary.

A MAXQDA dictionary is a list of words that can be hierarchically structured and used for automated searches and coding. Searches based on the dictionary can find partial matches, but for some words that are parts of other words (e.g., bust in combust or taint in uncertainty), exact search terms were used. Words were included in the dictionary list with the intent to balance between capturing the range of conceptions of risk and producing a sound interpretation of the content of the message. The dictionary was then used to automatically code all public comments for risk-related words.
The second use of word frequency tables was to begin building a stop list to simplify future searches and analysis. Stop lists are sets of words to be ignored during searches and quantitative analysis. The program has standardized lists that can be applied, and user-defined lists can also be created. Stop lists are used to exclude words that often do not carry important content, such as articles, prepositions, or pronouns. Those types of words can be useful in discovering patterns, style, and tone, but typically do not form the basis of a discourse (Jones, 2012). Words and word combinations, such as names from online submission form fields (e.g., name, address, state, etc.), parts of mailing addresses (e.g., Argonne National Laboratory, Sherry Thompson, and Project Manager), and document titles (e.g., Draft Programmatic Environmental Impact Statement) were added to the stop list. This list helped to make search results more manageable and concise.

Another MAXQDA quantitative tool searches for word combinations of user-specified lengths. In using this tool to explore the data, it became apparent that there was a great deal of content from form letters included in the comments. Strings of words matched the large-batch campaign letter submissions, and other forms that had been directly submitted by the public came to light.

Repeatedly-used wording that matched language from campaigns was coded as forms. Not all repetitive strings came from forms. Some phrases from the PEIS documents themselves, such as “Colorado, Utah, and Wyoming” and “oil shale and tar sands” were not coded as form language. Terms in common use such as “global climate change,” “renewable energy source,” or “coal-fired power plant” were also not coded as form language.
To maximize original, risk-related content for analysis, the preliminary sample of texts was based on these screening codes. In the first stage of sampling, texts were filtered for the presence of risk-related word codes. Next, texts with entire sentences drawn from form language or multiple short strings of form language were then removed from the set to generate the final sample. The selection process yielded a sample of 622 of the 2008 PEIS comments and 212 of the 2012 PEIS comments. These samples provided plentiful material for analysis.

**Screening Texts for 2013 CBM Case Study**

All 341 texts were included in the early stages of reading and coding for the CBM case study. Texts were sorted by location published, in-state and out-of-state. State and local newspapers account for 320 texts. In newspapers outside the area, 21 stories covered the initiatives.

After the initial reading, 61 articles were found to be either duplicates or did not hold content suggesting risks from fracking. Those texts were removed from the dataset. Of the 21 out-of-state articles, nine were among those eliminated for lack of relevant content, and the remaining 12 only reported the outcomes of the elections. They contributed little new information about perceptions of risk among those participating in the elections. Consequently, only articles from in-state newspapers were used in the analysis. Some articles had multiple topics, and for these, only the content addressing fracking or the ballot measures was included in analysis.

The first reading found responses to articles that were not part of the original search results. Three of the referenced texts were found to address fracking at the state
level but had not mentioned the three municipalities specifically. Because those texts were included as part of the discourse on local fracking measures, they were deemed to be relevant to the construction of knowledge and risk in local matters. Those articles were incorporated into the dataset. Two of the archival files contain multiple opinion pieces. These were treated as individual texts, which added five opinion articles to the final count. The final data set used in analysis for the CBM case study consists of 276 texts, with 132 opinion letters and editorials, and 144 news and information articles.

**Software and Data Limitations**

It is important to note some limitations of the data and the computer assisted analysis tools. The original texts contained spelling and typographical errors that cannot be recognized by the word frequency and word combination tools in MAXQDA. The text recognition of documents in image format also introduced a level of error. For PDF documents, MAXQDA does not always recognize separate lines as continuation of sentences. This inhibits the identification of word strings in sentences.

While these create a minor degree of error in the quantification of data, the quantitative analysis is only a tool to support the qualitative analysis. Quantification is not the objective of this study. The reading, manual coding, and analysis were conducted using the original PDF documents and transcriptions, which avoid the software’s text recognition errors. Linguistic context and interpretation of meaning compensated for mistakes in grammar, typographical errors, and word choice (e.g., ladder instead of latter).
Coding and Analysis

The selection of several analytic tools preceded coding and analysis of data. They were not applied until later stages, but early selection guided the development of inductive coding. Four main steps comprised the analysis conducted in this case study. Analysis began with a close and skeptical reading of the texts. Reading was followed by inductive coding, analysis of coded text, and write-up of results. Although presented as separate phases, these analytic activities were not always distinct from each other. As the work progressed, reading, coding, and analysis were cyclical and iterative. Coding aimed to provide material for qualitative analysis, and was thus guided by the qualitative tools described below. Quantitative assessments supported the analysis, and their use follows the description of qualitative analysis. The write-up of findings is in itself a final analysis where claims are presented alongside examples to support the interpretation and evaluation of the discourse.

Qualitative Tools for Analysis

The analytic tools and techniques used in this study were chosen to concentrate on the social constructions of risk and to explore the making of social, cultural, and political meanings. In the terminology used by Phillips and Hardy (2002), this analysis gives more attention to contexts than to the linguistic and grammatical structure of texts, although those elements of discourse always play a role in analysis and interpretation. Three closely related discourse analytic tools—storylines, situated meanings, and figured worlds—were selected to guide the interpretation, coding, and analysis of the texts. The application of these tools is charted in Appendix A.
Because the objective of the texts is to inform and persuade, the goal framing strategies described by Levin, Schneider, and Gaeth (1998) provide a way to examine arguments and assumptions in the discourse. Garvin’s (2001) rationalities and the cultural worldviews of Cultural Theory and cultural cognition theory were used to interpret the shared values, assumptions, and ideological paradigms associated with discourses of risk. Goal framing, worldviews, and rationalities were applied as discourse analytic tools for interpretation of storylines based on risk and decision-making theories.

**Storylines.** Maarten Hajer (1995) developed an approach to environmental discourse analysis that relies on storylines. He described these storylines as “narratives on social reality… that provide actors with a set of symbolic references that suggest a common understanding” (Hajer, 1995 p. 62). The use of storylines serves to reduce the complexity and fragmentation of arguments. They become tropes or figures of speech, so well-known in social discourse that small elements can invoke the larger narrative.

Storylines have power and become accepted because they “sound right” (Hajer, 1995, p. 63) and fit with other sets of social and cultural knowledge.

John Dryzek (2013) has applied and expanded on Hajer’s storylines in his own work. Dryzek lists four elements that construct storylines and can be used to describe and differentiate discourses:

- Basic entities whose existence is recognized or constructed.
- Assumptions about natural relationships.
- Agents and their motives.
- Key metaphors and other rhetorical devices (pp. 17-20).
These elements are well-suited to descriptions of knowledge and discourses of risk. They can be used to clarify what is perceived to be at risk, what the potential harm is, and where the threat originates. Acknowledging a risk means that humans see causal connections and can take action to influence or prevent undesirable outcomes (Renn, 1992). There is a limited set of possible solutions created by the problem descriptions in the storylines of risk (Dryzek, 2013; Entman, 1993). It follows that a shift in a narrative of risk can create a new range of solutions to the problems identified within it.

Storylines are useful as interpretive and analytic tools, and they also facilitate the application of theories of risk perception. Storylines may present a risk in a way that promotes particular reactions, such as affective responses, heuristic-based judgments, or cost/benefit evaluations. Assumptions about natural relationships can indicate adherence to cultural worldviews, preferred values, or ideals. Entities and agents recognized in discourse identify who and what is believed to be at risk, who gains from a risk, and who has standing in the decision-making process. Descriptions of agents and their motives can inject moral and ethical judgments. Metaphors and rhetorical devices can call upon shared knowledge, prompt heuristic thinking, and call for ideologically-driven interpretations.

**Figured worlds.** Gee (2011, 2014) provides a wide-ranging set of 28 analytic tools for discourse analysis. Although many are designed for linguistic or text-based approaches, some are useful for social and contextual analysis. Gee’s figured worlds tool bears similarity to storylines in that it emphasizes understandings of natural relationships. A figured world is a simplified mental construct that represents what is taken to be normal, typical, or appropriate, “the way things should be” (Gee, 2014, p. 176). Figured
worlds allow people to go about their everyday business without needing to consciously think about everything going on. A figured world can reveal the taken-for-granted knowledge of the way the world works, and the cultural, social, and historical contexts necessary for analyzing discourse (Burr, 1995; Gee, 2014).

Figured worlds can vary widely, depending on settings, cultures, or social groups. They often make certain social and institutional arrangements invisible to individuals who subscribe to them. To evaluate figured worlds, Gee (2014) suggests that researchers:

Ask what typical stories of figured worlds the words and phrases of the communication are assuming and inviting listeners to assume. What participants, activities, ways of interacting, forms of language, people, objects, environments, and institutions, as well as values, are in these figured worlds? (p. 177)

**Situated meanings.** One of the post-structuralist premises is that words can have multiple and variable meanings. The context-dependent meanings of words in use can provide information about the assumptions and intentions that underlie discourses (Gee, 2011). Where multiple meanings are possible, an opportunity for misunderstanding and conflict arises. Situated meanings can be literal or figurative in nature, and interpreting them is often contingent upon knowledge of the context in which they occur. The situated meanings tool can help tease out the fourth of Dryzek’s storyline elements, the key metaphorical and rhetorical devices. It is important to recognize that communicators and receivers of a message may perceive the context in different ways, and would not necessarily share the same interpretations of words and phrases (Gee, 2014).

**Goal framing.** While discourse and content help to identify what the author is attempting to do, frames can reveal how they are doing it. The majority of the texts in these cases present arguments or report on attempts to persuade decision-makers to make
a preferred choice about risks. Because the objective is to influence the decisions of others, the goal framing approach described by Levin, Schneider, and Gaeth (1998) is used for analysis of the argument. Goal framing can help clarify how risks are constructed in ways that define and limit the possible solutions. By framing the problem in a certain way, the desired conclusion becomes the logical outcome.

Goal framing reveals assumptions about changes and risks in the future. It adds a time dimension that is not present in Prospect Theory. Goal framing requires the decision maker to evaluate a choice based upon a reference point in the future. Some frames assume that the future will be worse than the present without the desired choice. Others frame the future as good, with the wrong decision making it worse. Positive and negative goal frames are based on how a decision will be a gain or loss from where one will be rather than a reference point in the present. The evaluation of goal frames relies on the categorizations of outcomes illustrated in Figure 3.2 in the previous chapter.

Cultural worldviews and rationality. The accounts of risk perceptions in competing storylines provide insight into the authors’ shared assumptions, problem definitions, and meaning-making. Cultural worldviews and forms of rationality present theoretically-based structures for interpretation and comparison of discourses. Rationalities and worldviews were not used to classify individuals or texts. Instead, the purpose was to understand the cultural ideals and analytical paradigms that are called upon in discursive processes of meaning-making and communication.

Worldviews. The four worldviews that originated in Cultural Theory have been refined and modified in the development of cultural cognition theory. In this study, the analysis and classification of the worldviews of the storylines was based on instruments
developed by Dake and Wildavsky (Dake, 1990, 1991, 1992; Wildavsky & Dake, 1990) and by Kahan and colleagues (Kahan, 2012b; Kahan, Jenkins-Smith, & Braman, 2011). The Cultural Theory attitudes toward nature from Thompson et al. (1990) were also instrumental in associating worldviews with discourse. Statements relevant to this research were drawn from these approaches to differentiating among ideologies. They were incorporated into a single chart of cultural worldviews, shown in Figure 4.2. Once a storyline was characterized, this chart was used to discern the underlying group/grid orientations associated with the discourse.

**Rationalities.** Garvin’s (2001) description of the epistemological differences among scientist, policy makers, and the public structured the evaluation of rationalities. Scientific, political, and social rationalities rest on different assumptions about what constitutes legitimate knowledge and evidence in discussions about risks. Table 2.1, Analytical Paradigms, from Chapter 2 maps out important characteristics of different rationalities. This table was used as a tool to evaluate the underlying approaches to knowledge in discourses.

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9 Because the Fatalism worldview was not well addressed by Dake and Wildavsky, the description of the Hierarchical Individualist/Fatalism quadrant relies heavily on cultural cognition theory.
Rationalities in discourse are also evident in the conventions and styles of languages. Certain forms of logic and ways of using language tend to be associated with particular social roles and their claims to truth and facts (Gee, 2011). Different types of social languages are used to enact identities and signal belonging to a particular group. Social languages can be used to invoke positional authority (e.g., as a scientist, petroleum engineer, or doctor) or to represent belonging to a certain group (e.g., legal professionals, politicians, or local residents). A discourse’s approach to knowledge and information is supported by the style, evidence, and conclusions of its arguments. Intertextual references, where they occurred, were useful for interpreting rationality. They demonstrated sources of knowledge and acceptance or rejection of their legitimacy.

**Reading and Coding**

A close reading of texts followed data collection, data preparation, and sample selection. One objective of skeptical reading is to evaluate the assumptions and taken-for-granted knowledge that the authors and readers must hold in order to make meaning of the content (Gill, 2000). This first reading provided familiarity with the texts and was used to explore and understand their construction, organization, and functions.

After the initial reading stage, inductive coding began. Coding of texts is an ongoing iterative process that breaks texts into manageable segments and provides organization for the data. Inductive coding is guided by the discourse, rather than predetermined codes applied in predetermined ways (Wood & Kroger, 2000). Codes were structured around the topic of risk and guided by the discourse analytical tools used
to identify important words and text segments that will support the analysis in later stages.

In this type of qualitative inquiry, the use of multiple coders can be problematic (Meadows & Morse, 2001). Multiple coders may not have the same theoretical background, knowledge of the literature, or intimate knowledge of the texts. Multiple coders cannot be used reliably in discourse analysis (Wood & Kroger, 2000). Therefore, only one coder was used.

In the texts for the CBM case study, news reports frequently included multiple points of view in a single article, which were represented through quotes, paraphrasing, or reports of actions. Some of the news and opinion articles discussed several topics in a single article. For those texts addressing multiple issues or points of view, only fracking-related segments were selected for coding. Segments of text that represented views or actions of different people were coded separately. Positions on OSTS development and fracking regulation were identified and coded. Texts and text segments were loosely grouped, based on assumptions in the discourse, the actions they favored, and the risks identified.

New codes were introduced and the existing ones were modified, refined, and reorganized during repeated passes of readings and coding. In early stages, codes included such categories of interest as entities (e.g., economy, environment, government), agents (e.g., industry, BLM, activists), and threats (e.g., pollution, destruction, disease). Search tools were helpful in finding repeated use of important words and phrases. The ability to search for individual words, strings of text, and keywords in context was particularly beneficial, given the large size of the datasets. Some of these searches were
autocoded to create lists and tables that could be cross-referenced against other codes or used for quantification.

Additional form language was discovered in the PEIS cases through this process, and those texts were removed from the samples. Some texts contained language that suggested risk perception, but contained insufficient detail about risks to interpret critical meaning-making\textsuperscript{10}. Ambiguous comments that could not be grouped as part of a discourse or storyline were placed in an “unassigned” category. Other texts in the unassigned category included statements of anger at the web form or were attempting to sell products or services.

Once texts were initially grouped, coding addressed more subtle features of their shared discourses. Persuasive arguments, language use, and structure of texts were observed and coded. The initial organization of codes and texts supplied the basis for early stages of storyline development and description. New codes to help clarify storyline elements, basic assumptions, rationalities, and worldviews were developed during the later stages of coding. The fine-tuning of codes continued as work shifted into the analysis stage.

The objective of discourse analysis is not to reach saturation by identifying all possible categories (Phillips & Hardy, 2002). In discourse analysis, the endpoint comes when data are sufficient to support a number of interesting, well-grounded arguments that

\textsuperscript{10} For example, in the statement “Stop the destruction of public lands,” it is not clear whether the BLM is the agent responsible for activities that destroy public lands, or if the implication is the BLM has responsibility to stop other agents from doing so. In contrast, the sentences “Stop allowing the destruction of public lands,” or “The BLM must stop destroying public lands” supply the information about the parties thought to be responsible for the risk to public lands and the assumed role of the BLM.
represent the phenomena of constructive uses of language (Wood & Kroger, 2000). After the initial round of close reading and coding, the selected sample of 2012 PEIS texts was validated by a check of all 2012 PEIS texts that were not coded for risk words. While some of the non-sample texts could be interpreted to represent perceptions of risk, the sample texts provided sufficient coverage of the range of discourses and constructs of risk. In this sense, the sample had achieved saturation. Random checks of the 2008 PEIS texts indicated saturation in this respect as well.

**Analysis of Coded Data**

Repeated cycles of reading and coding eventually led into analysis of coded texts. In this stage, the tools described above were used to explore the texts and the accounts they created. Storylines, figured worlds, and situated meanings were the starting point for analysis. Storylines were named according to their narratives of risk, and the storyline names have been used to represent the various discourses in the chapters that follow.

Analysis of coded data involved searching for patterns and variability, both within groups of texts and among them. Interpretations were grounded in case-specific contexts that are outlined in the chapters for each case study. Where necessary, new codes were introduced, discourse-oriented groupings were reevaluated, and codes or texts were reclassified.

Preliminary interpretations of the data suggested ways that discursive elements (agents, entities, rhetoric, figured worlds, etc.) contributed to an understanding of risk and worked together to define common sense and legitimate knowledge. These ideas were tested against the textual material and modified or revised when necessary. Sometimes
this required a return to coding and interpretation to produce a revised hypothesis, which was again tested against the texts.

Storylines were sketched out, based on shared narratives of risk. Evaluation of worldviews, rationalities, and goal frames followed the development of the storylines. These aspects of a discourse show how people justify their perceptions of risk and establish reasonable actions. Judgments about the worldviews, rationalities, and goal frames of a storyline relied heavily on the understanding of agents, motives, rhetoric, assumptions about relationships, and figured worlds.

Cultural worldviews and rationality were present to different extents in the case studies. Cultural worldviews were prominent in the PEIS cases, while rationality was more evident in the discourses of the CBM. In the PEIS cases, the cultural worldviews expressed in a given discourse were found to be fairly consistent, and rationality was variable. In the CBM case, the sources, legitimation, and application of knowledge tended to be similar within a discourse, while the worldviews were mixed or indiscernible. Therefore, the analysis and discussion for the PEIS cases addresses worldviews, while the CBM case study concentrates on rationalities.

The texts in a storyline do not necessarily present a unified perspective. Individual authors may draw from or combine multiple accounts of risk. Sometimes they agree with core elements of a discourse but challenge some of the other parts. These discrepancies are often attempts to shift a discourse. Authors may even share some ideas with discourses in opposition. For example, one can simultaneously hold the view that foreign oil poses a national security risk (an argument frequently made by those who advocate for domestic energy production) and be opposed to oil shale, tar sands, and fracking.
developments. However, it is the social construct of risk in a discourse, not the individual’s attitude that is the objective of inquiry.

**Use of Quantitative Tools**

In discursive work, quantitative tools cannot replace the analytical process, but they can reveal patterns of associations in words and concepts that may otherwise go unnoticed (Jones, 2012; Wood & Kroger, 2000). The information provided by quantitative measures can make the analytical process more evidence-based and generalizable, especially when working with very large data sets (Jones, 2012). In this research, quantitative tools were used to scrutinize the content of the texts, to represent it in descriptive ways, and to supplement qualitative analyses.

Quantification was used to explore the data and assist in coding for all case studies. However, for the CBM case study, word counts were found to be of limited use due to the nature of the data. Texts were both statements written in the authors’ own words and third-party reporting on the words and actions of others. Authors of opinion texts that refuted the claims of others often repeated the statements of opposing positions. Most news reports represented multiple points of view, which were often summarized, restated, or condensed, and not presented in the original words. When direct quotations were used, they included interjections and attributions necessary to reporting.

This is not problematic for analysis of discourse because the meanings and functions of words are interpreted in those contexts. It does complicate quantification, which can be distorted by the content-only isolation of words from context and meaning.
Therefore, quantitative measures have not been included as part of the discussion for the CBM case study.

Quantitative analysis of content for the PIES cases included word counts, presence, and frequencies. During storyline development, quantification centered on key content words. These are the words—primarily nouns, verbs, and adjectives—that are relevant to finding evidence of discourses (Jones, 2012). Key content words were used to confirm the importance of themes, to differentiate among discourses, and to establish the shared elements of discourses. Tables of key content words are included in the OSTS chapters that follow.

In a sense, quantitative analysis was somewhat tautological. Classification of discourses was based on differences in language and content, and then quantification of content was used to confirm the existence of the categories. However, the lists of key content words were generated after the texts were grouped into discourses, and proved useful in verifying the topical concerns of a discourse and ensuring that important content had been addressed.

Word combinations were used in similar ways. Repetitive phrases found in most texts (such as “draft programmatic EIS” and “Bureau of Land Management”) and perfunctory phrases from submission forms (e.g., “Thank you for your comment” and “your comment number is…”)) were added to the stop list to make other analyses more meaningful. Interesting or unusual phrases prompted further analysis. Word combinations helped identify phrases employed to invoke certain images or reliance on taken-for-granted knowledge.
Lexical word searches, searches for words in context, word combinations, and Boolean searches were used as tools to code the data. For example, when a particularly interesting word or phrase was found in a text, searches could be used to discover other instances of its use. Boolean searches could discover words and phrases such as “land management” that did not co-occur with “bureau” (thus avoiding Bureau of Land Management), or “environmental” without “impact statement” to locate discussions of environmental harm rather than of mentions of the title of the PEIS. Lemmatization is a MAXQDA function that searches for multiple forms of a word, such as all forms of a verb. This was useful in consolidating searches and collecting instances of language that represented similar ideas. For instance, destroy, destroyed, and destroying could be discovered and compared with a single search.

Word tree analysis is an analytic function that allows an interactive view of how words are used in context. Due to the large amount of data, this tool was applied to subsets of the data to aid in discovery of patterns. A word tree created from a subset of 2013 CBM data is shown in Figure 4.3. It shows the different phrases surrounding the words “oil and gas.” The tool allows the user to move forward and backward through the sequence of language. Separate windows show words in blocks of text to ensure the words and phrases are interpreted in context.
Writing up and Final Analysis

Writing up a study is more than merely reporting on results; it becomes the final stage of analysis. Throughout this process, the descriptions and evaluations of discourses were clarified and refined. It provided an opportunity to highlight the differences, similarities, and changes in discourses that distinguish them from each other. It also underscored the ways discourses compete by attempting to preempt or respond to in ways that refute and attenuate the risks expressed in other narratives.

The descriptions of discourses that follow align with Dryzek’s (2013) storyline approach in combination with the figured worlds and situated meanings tools from Gee
For the PEIS cases, worldviews are discussed, whereas the rationalities of the discourses are described for the CBM case. Because each discourse seeks to convince the reader to adopt a desired point of view and make a certain decision, the dominant goal framing strategies in the storyline are briefly outlined. For each storyline, seven elements are discussed:

- Storyline overview
- Entities constructed through discourse
- Agents and their motives
- Metaphors, rhetoric, and situated meanings
- Assumptions about natural relationships and figured worlds
- Cultural worldviews or Rationality
- Goal Framing

Descriptions and analysis have been supported with excerpts and extended passages from the texts. Hepburn & Potter (2003) recommend that materials should be presented “as carefully and completely as is feasible given constraints of space and time” (p. 22). Validity of the analysis can be supported by allowing the reader to make their own evaluations (Gill, 2000). This process of providing material for readers’ assessment, sometimes referred to as warranting (Wood & Kroger, 2000), is used to establish the reliability and trustworthiness of the analysis.

Examples from PEIS texts have been taken from the comments as written, with no correction for spelling and grammatical errors. In the CBM excerpts, minor adjustments to punctuation and capitalization have been made for direct quotes taken from news
articles. Excerpts from PEIS documents are referenced by year, 2008 or 2012, followed by the ID numbers assigned by the BLM. Newspaper texts are referenced by publication and publication date. Publications are represented BC for the Boulder Camera, DP for the Denver Post, DTC for the Daily Times-Call in Longmont, BE for the Broomfield Enterprise, and GT for the Greeley Tribune. If more than one article appeared on a given day, that number is followed by a lower-case letter. Letters for publications on the same date are randomly assigned. Statements from different individuals in the same article appear as separate bullet points. Letters for publications on the same date are randomly assigned. Excerpts are presented in bulleted format as follows:

- “Continuing to rely on the oil imports from the middle east and other OPEC countries puts our economy at risk.” (2008-234)
- “I think there is just a lot of hype and hysteria and the city council is only really hearing from one side.” (DC 06.02.2013b)

The authors of the 2008 and 2012 PEIS comments had the option to request that their name and address be withheld from the public record, but few chose to do so. While the comments are publicly available and the majority of them contain identifying information, individual names and identities were not material to the analysis. Therefore, only document numbers have been for attribution used rather than names.

In the CBM case based on newspaper texts, publication dates have been used as document numbers. The inclusion of identifying information in newspapers conforms to the policies of the publications. In instances where an author or news source is a public

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11 For example, a sentence appearing as “The world needs energy, obviously,” he said, is quoted as The world needs energy, obviously.
figure, those individuals may be named in the analysis. These include politicians and spokespersons for organizations. In a few cases, citizens’ names have been used because of the high-profile role they play in certain events.

The primary focus of this study is the qualitative analyses of discourse, framing and content. Quantitative analysis was used and has been included for the PEIS cases to support the descriptions of discourses. However, there is no statistical significance stated or implied through this quantification.

This work takes a constructionist stance in order to examine how risks are discursively formulated and framed in public participation on energy development decisions. It represents shared, socially constructed perceptions of risk through amplification and attenuation in public discourse. Analysis has taken into account the contemporary contexts, with efforts to interpret the texts according to the meanings the authors wished to communicate.

It is important to note that there are several things this research is not designed to do. It does not compare expert assessments and perceived risks. There is no determination of “real” levels of risk or judgment of the validity of risk evaluations. Results do not evaluate the internal cognitive processes of individuals. The texts were created to inform or persuade, but are not sufficient to achieve a reliable assessment of any person’s knowledge, experiences, or internal states. Instead, these case studies are approached as the observation of many individuals collectively participating in the construction of multiple accounts of risk in particular social and cultural contexts.
Each of the three following chapters presents a single case study. Analysis across case studies, including comparison, discussion of overall themes, and evaluation of change, is part of the final chapter on conclusions.
As the end of 2007 approached, the United States was facing growing concern over energy prices, the security of energy supply, and the implications for national security. Worldwide, energy prices had been climbing for several years. At $179 per barrel in December 2007 (adjusted 2000$), oil had more than doubled its December 2003 price of $78 (World Bank, 2015). In spite of the cost of energy, the world’s energy consumption was increasing (International Energy Agency, 2015). Per-capita energy use in wealthy countries was decreasing, but this was offset by growing use in low- and middle-income regions, such as East Asia, the Pacific, the Middle East, and North Africa, as shown in Figure 5.1 (World Bank, 2016).

In response to fears of increasing prices, tightening supply, and competition between the United States and the rapidly-industrializing nations, the U.S. Congress had passed the Energy Policy Act of 2005 (42 U.S.C.§ 15801). The Act tackled the energy problem from multiple angles. It incentivized alternative energy development with tax credits, funded research for clean coal and biomass, exempted hydraulic fracturing chemicals from environmental regulations, guaranteed loans for nuclear power, encouraged drilling in the Gulf of Mexico, and required the Secretary of the Interior to complete a Programmatic Environmental Impact Statement (PEIS) for commercial leasing of public lands for oil shale and tar sands resources in Colorado, Utah, and Wyoming (see Figures 5.2 and 5.3).
Oil shale and tar sands (OSTS) are appealing resources due to their abundance. The lands in Colorado, Utah, and Wyoming hold the largest known oil shale deposits in the world. Mid-range estimates projected 800 billion barrels of recoverable oil, triple the proven reserves of Saudi Arabia (Bartis, LaTourrette, Dixon, Peterson, & Cecchine, 2005). Canada had successfully developed a commercial tar sands industry in the early 2000s, and it was hoped the deposits in Utah would allow the same opportunity\textsuperscript{12}. Tar sands in Utah were estimated to contain 12 to 19 billion barrels of oil (BLM, n.d.b).

\textsuperscript{12} Utah tar sands are not the same as the Canadian deposits, and require development of different extraction technology.
Figure 5.2. Oil Shale Deposits in Colorado, Utah, and Wyoming. Public Domain. BLM, 2012a.
Figure 5.3. Special Tar Sands Area in Utah. Public Domain. BLM, 2012a.
The task of completing the PEIS fell to the U.S. Bureau of Land Management (BLM), a division within the Department of the Interior. The BLM, with assistance from Argonne National Laboratory, quickly drafted the PEIS, as stipulated in the Energy Policy Act of 2005. The Draft PEIS proposed several possible plans for consideration. On December 21, 2007, the BLM issued a call for public comments.

In December 2007, the U.S. economy was still experiencing much of the optimism and growth of the early 2000s. The housing market had peaked in 2004-2006 and was beginning to cool (Joint Center for Housing Studies of Harvard University, 2008), but the prices of commodities continued to rise as shown in Figure 5.4 (World Bank, 2015). In the United States, the average cost for a gallon of gasoline—an ever-present reminder of energy prices—had risen from $1.49 per gallon in December 2003 to $3.02 in December 2007 (EIA, 2017b). The national unemployment rate was 5%. In Colorado, Utah, and Wyoming, unemployment was even lower at 4.1%, 3%, and 2.1%, respectively (Bureau of Labor Statistics, 2017a; 2017b). The global economic crash was still nine months in the future.

**History of Oil Shale**

This was not the first time the U.S. government had looked to oil shale resources as a solution to energy concerns. In 1916, land in Colorado and Utah was set aside as part of the Naval Oil Shale and Petroleum Reserves (NOSPR) to supply oil to the U.S. Navy in states of emergency. Research and development activities took place at Anvil Points, a
Figure 5.4. Selected Commodity Index Prices, 1960-2014. Data from World Bank, 2015.
45-acre site outside Rifle, Colorado. A first oil shale boom took place between 1918 and 1925, but declined when conventional oil fields were discovered in California, Texas, and Oklahoma (Doyle, 2008; Shell Oil, 2007).

In the 1950s, interest in oil shale production was renewed, and a plant was operated for 18 months near Parachute, Colorado. It shut down in 1961, in part due to price uncertainty (Shell Oil, 2007). Between 1964 and 1972, another operation was built and produced oil but was closed due to high costs (Andrews, 2006; Shell Oil, 2007).

In 1971, President Nixon requested that the Secretary of the Interior initiate a leasing program for the nation’s oil shale resources. That call led to an environmental impact statement conducted between 1971 and 1973 for a prototype oil shale program. In response to the 1973 Arab oil embargo and the energy crisis it caused, the Naval Petroleum Reserves Production Act was passed into law in 1976 (Public Law 94-258). It authorized full commercial development of the Reserves under management of the Department of Energy (DOE). Throughout the 1970’s plans and attempts for industrial-scale production failed (Shell Oil, 2007).

In 1980, the Energy Security Act dedicated $14 billion in funding for synthetic fuels, sparking a new wave of interest in oil shale. In 1981, Exxon started a new project near Parachute, Colorado. On May 2, 1982, a day referred to as “Black Sunday,” the project was abruptly shut down, putting 2,600 people out of work and throwing the local economy into a tailspin (Doyle, 2008, Gulliford, 2010; Haefele & Morton, 2009). The closure was blamed on high costs and low demand for oil.

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13 Anvil Points was listed as a Superfund site under the Comprehensive Environmental Response, Compensation, and Liability Act. Cleanup began in 2008 and ended in 2012.
The synthetic fuels program was shut down in 1985, and in the late 1990s, the NOSPR were no longer seen to be contributing to national defense. The NOSPR lands in Colorado were transferred to the BLM and the NOSPR unit in Utah was deeded to the Northern Ute Indian Tribe (DOE, n.d.c). Oil shale is a difficult resource to exploit, as evidenced by the inability to bring it to market despite more than 100 years of interest.

**Impacts of OSTS**

Scientists at the Rand Corporation (Bartis et al., 2005) state that land disruptions will be the most significant impact of an oil shale industry. They report that all other land uses and flora and fauna at development sites will be displaced for at least a decade (Bartis et al., 2005). Over a 40-year production period, it was anticipated that approximately 31 square miles per million barrels/day production would be impacted, depending on the methods of production used (DOE, n.d.b).

Historically, energy prices and water needs have been barriers to commercial OSTS production. The OSTS deposits are in an arid, drought-prone region. Each barrel of oil produced from oil shale requires 1-12 barrels of water, with five barrels of water as the estimated average (U.S. Government Accountability Office, 2010). The total water requirements for an industry producing 2.5 million barrels per day range from 105 to 315 million gallons per day for extraction (DOE, n.d.a). Water needs to accommodate anticipated population growth associated with such an industry could demand an additional 58 million gallons per day (DOE, n.d.a).

The expense of producing OSTS requires high energy prices in order to be viable. When prices have dropped, the industry has abandoned efforts for large-scale production.
A large part of the expense of producing oil from OSTS is the energy required for heat to extract and refine petroleum products. Producing energy from oil shale is far more energy intensive than producing from conventional resources (Cleveland & O’Connor, 2011). Tar sands in Canada return approximately 5 units of energy for every unit invested (Gupta & Hall, 2011). Oil shale net yield is likely to be around four times the energy inputs (Gupta & Hall, 2011), although without a commercial industry this is difficult to measure.

A more recent concern is that the energy inputs are generated from fossil fuels. As a consequence, OSTS emissions are 1.2 to 1.75 times those of conventional liquid fuels (Bartis et al., 2005; Cleveland & O’Connor, 2011). The high carbon outputs of OSTS make efforts to develop them particularly contrary to efforts to reduce the impacts of climate change.

**Impacts on communities.** Communities dependent on extractive industries suffer from “boom-and-bust” cycles. Boom cycles bring an influx of workers, upward pressure on wages and housing costs, and increased demand for infrastructure and services (Haefele & Morton, 2009). During the bust periods, economic hardship and social turmoil ensue (Haefele & Morton, 2009). The severity and ubiquity of the social impacts have been disputed (Rolston, 2013), but the economic shock is painful and difficult to mitigate (Doyle, 2008).

The speed with which a boom can turn to a bust is illustrated by two 1974 articles in the New York Times. The first, from June 14, 1974, touts the growth in Colorado on the heels of new oil shale leases (Sterba, 1974). The Colony Development project outside of Rifle, Colorado was predicted to bring rising property values, business opportunities,
and population growth to the region. The article concludes, “...this year the oil shale boom started, and it will not fade away.” On October 4, 1974, less than four months later, the Times reported that the developer of the same project was suspending plans (Ripley, 1974). The decision was the result of “current double-digit inflation, tight money and the absence of a national energy policy, which establishes clearly the role of oil from shale in the national energy picture” (Ripley, 1974, p. 1).

The 2008 Programmatic Environmental Impact Statement

The Energy Policy Act of 2005 included several provisions for the Department of the Interior to promote the development of OSTS. One was a requirement to open certain public lands to leasing for OSTS research, demonstration, and development projects (known as RD&D leases). These leases from lands previously approved for OSTS were to be made available within 180 days from the enactment of the Energy Policy Act of 2005. Six RD&D parcels in Colorado were leased to three companies under this provision. Another provision was a mandate for a rapidly conducted PEIS, to be completed no later than 18 months following enactment.

The requirement for the environmental impact statement arises from the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq.). Accordingly, agencies of the federal government must evaluate any major action with the potential for significant environmental impacts. Because the OSTS leasing plan proposed to revise 12 of the BLM’s land use plans at once, it was conducted as a programmatic evaluation. When the time came for individual leases, there would be additional NEPA evaluations
of the impacts specific to the locations, technologies used, and best available science at the time.

The lands under consideration were the “most geologically prospective” (BLM, 2008b, p. 1-2) public lands in Colorado, Utah, and Wyoming, shown above in Figures 5.2 and 5.3. In Colorado and Utah, the oil shale deposits considered most geologically prospective are at least 25 feet thick and yield 25 gallons of shale oil per ton of rock. The oil shale deposits in Wyoming are lower quality, most geologically prospective resources are 15 feet thick or more, and these deposits yield at least 15 gallons per ton. The most geologically prospective lands for tar sands are only in Utah. These are the designated Special Tar Sands Areas defined by the Combined Hydrocarbon Leasing Act of 1981 (Public Law 97-98).

Alternatives Considered

Responsibility for conducting the PEIS fell to the BLM, the agency with oversight of public lands containing OSTS resources. The BLM prepared a draft PEIS that was made available to the public in December 2007. As is customary with any environmental impact statement, several possible actions were proposed and evaluated. The PEIS included three alternatives, each with a set of plans for oil shale and tar sands. In every case, lands would be designated as available for application for commercial leasing. Part of the application process would include further review of impacts.

Alternative A. As is customary, the first was a “no action” alternative. This option preserves the status-quo, and makes no changes to the existing management or rules governing OSTS lands. The Energy Policy Act of 2005 left little room for business
as usual. The clear intent was to open up public lands for commercial leasing, although it stipulated that OSTS development should be conducted in an environmentally sound and sustainable manner and take affected states and communities into account.

Under Alternative A, existing land use plans would continue unaltered. This would leave 294,680 acres in Colorado and 58,100 acres in Utah available for oil shale leasing. The BLM had previously assumed that there was little commercial potential in developing tar sands due to lack of interest. No lands had been designated for tar sands leasing in the existing plans. Therefore, the no action alternative would not provide land for development of tar sands alone, although it might be permitted as part of a lease combined with other energy production.

**Alternative B.** This alternative would designate 1,991,222 acres for commercial oil shale leasing. Available lands would be in the most geologically prospective oil shale areas under the BLM’s administration. This included land where another party owned surface rights but the federal government owned the rights to sub-surface minerals. Lands protected by statute, regulation, or Executive Order were excluded. Tar sands leasing would be available on 431,224 acres of land, with the same exclusions as for oil shale. All tar sands areas were in Utah. Alternative B was selected by the BLM as the preferred alternative in the Draft PEIS.

**Alternative C.** The lands for oil shale and tar sands in this alternative were similar to Alternative B, although there are further exclusions. Lands requiring special management or resource protection in existing management plans would not be included. This would leave 830,296 acres for commercial oil shale leasing and a total of 229,038 for tar sands leasing.
Public Comments

A key component of an environmental impact statement is public involvement. Public input is accepted at several points in the process, but primarily occurs during a 90-day period where a draft is made available and the public is asked to provide feedback. For the 2008 Oil Shale and Tar Sands Programmatic Environmental Impact Statement, the comment period opened on December 21, 2007 with the publication of the Draft PEIS. It was originally scheduled to close 90 days later on March 20, 2008, but was later extended by 30 days to officially close on April 21, 2008. Comments were accepted by mail or through an online submission process. A series of open house style meetings was conducted in February 2008 in Salt Lake City, Price, and Vernal, Utah; Rock Springs and Cheyenne, Wyoming; and Rifle, Meeker, and Denver, Colorado. Oral comments were not accepted at these meetings, but participants were able to submit written or electronic comments. The public input on the Draft PEIS was published as Volume 4 of the Final PEIS. These comments are the data for this case study.

Campaign letters. The Draft PEIS naturally drew the attention of advocacy groups and non-governmental organizations (NGOs). Groups both for and against OSTS development weighed in and encouraged the public to participate. Several organizations conducted letter writing campaigns and prepared form letters for individuals to submit or modify. Table 5.1 shows the letter writing campaigns and the numbers of submissions associated with the organization. Not all campaign letters were clearly linked to an organization. These groupings in Table 5.1 include all the variations on the form letters an organization used.
Table 5.1

2008 OSTS PEIS Campaign Letters

<table>
<thead>
<tr>
<th>Organization</th>
<th>Submissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Resources Defense Council</td>
<td>45,700</td>
</tr>
<tr>
<td>Consumer Energy Alliance</td>
<td>34,300</td>
</tr>
<tr>
<td>The Wilderness Society</td>
<td>18,300</td>
</tr>
<tr>
<td>Center for Biodiversity</td>
<td>1,300</td>
</tr>
<tr>
<td>National Wildlife Federation with Colorado Environmental Coalition</td>
<td>140</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>99,740</strong></td>
</tr>
</tbody>
</table>

More than 50% of the campaign letters came from nine states (California, New York, Florida, Texas, Colorado, Pennsylvania, Illinois, Washington, and Ohio) outside the OSTS area (Vol. 4 p. x). The three OSTS states, Colorado, Utah, and Wyoming accounted for only 5.4% of the campaign letters (Colorado [4%], Utah [1.2%], and Wyoming [0.2%]) (BLM, 2008b). The BLM did not provide statistics linking form letters to states of origin.

Several versions of letters from the Consumer Energy Alliance stated general support for OSTS development and a preference for Alternative B, the most permissive alternative. Letters from the other organizations expressed opposition to OSTS development or stated a preference for Alternative A, the no-action alternative. These letters communicated concern over the cumulative impacts, policy, air quality, land use, and the limited range of alternatives considered. The Final PEIS reports that these
approximately 100,000 form letters were screened by the BLM. Only one copy of each was included in the public record. The BLM reports that almost 2,000 unique comments were received. Of these, 18% came from Colorado and 16% from Utah. Less than 2% were submitted from Wyoming.

Despite the BLM’s screening for campaign letters, the initial analysis and sample selection of this case study found a high number of documents to contain form language. These submissions were the form letters that were modified to some extent by individuals prior to submission. As a result, the texts have minor variations on the forms, and some have combined language from two or more campaigns. Comments identified as containing verbatim form language were eliminated in the sample selection process.

In addition to the above-mentioned organizations, some comments in favor of OSTS development bear the fingerprint of a conservative advocacy group called Americans for American Energy (AAE). AAE is no longer in operation, but was created in 2005 as a 501(c)4, a non-profit social welfare organization (Sourcewatch, 2009). It was run by lobbyists and legislators. Board members included Bill Vasey, a State Senator from Wyoming, Aaron Tilton, a Utah State Representative, and President and CEO Greg Schnake, formerly the Executive Director of the Colorado Oil & Gas Association (Davidson, 2008; Williams, 2008a, 208b). Congressman Rob Bishop of Utah was also associated with the group, and introduced the unsuccessful Americans for American Energy Act of 2008 (Govtrack, 2017). AAE defined itself as a grassroots organization, but the group was reported to be backed by industry (Burr, 2008; Crummy, 2007).

The group pushed an aggressive energy development agenda. AAE’s public presence in the OSTS issue was less visible than in other efforts to secure public land for
energy production. AAE was also involved in attempts to open public lands on Colorado’s Roan Plateau, an area also covered by the OSTS PEIS, to conventional natural gas drilling. Its controversial methods include equating environmentalists to terrorists, claiming support from Utah and Wyoming lawmakers without approval, and enlisting anti-poverty activists to portray environmental protections as harmful to the poor (Henetz, 2008a, 2008b; Raabe, 2007; Davidson, 2008). In September 2007, Wyoming Governor Dave Freudenthal cut ties with the group over misrepresentation of his positions on energy development (Raabe, 2007). In protest of AAE’s tactics, a coalition of Roaring Fork and Colorado River Valley Mayors and Elected Officials penned a December 14, 2007 letter that stated:

> We object in the strongest terms possible your repeated attempts to equate any questioning of your industry’s agenda to abetting terrorists. This is a scurrilous and irresponsible effort to muddy the waters and avoid discussion of the real issues and real values at stake. …

> It appears to the Mayors of the Roaring Fork Valley and the Colorado River Valley that you have decided to make the sacrifice of the Roan Plateau an example of your political influence and the ruthlessness of your effort to secure every advantage for your industry supporters.

> So you have mounted a smear campaign that insists anyone who suggests we balance our need for energy with our obligation to protect our communities is unpatriotic or interested in a “weaker America.” Gentlemen, this is not true and you know it. You should be ashamed of yourselves.” (Colorado Wildlife Federation, 2007)

Only two public comments on the OSTS PEIS make direct mention of AAE. One (2008-52871) referred to the efforts by AAE to create divisiveness, paint environmentalists as terrorists, provide information through “phony websites,” and bribe Utah state legislators. Some of these statements about AAE’s tactics are corroborated by news reports and the Mayor’s letter on natural gas drilling. Another comment, this one in
support of OSTS and AAE (2008-52694), included an email from the organization rallying public support.

The similarities in content, language, and structure of approximately 400 letters suggest that they may be linked to AAE. They are not identical letters, but the word usage, syntax, talking points, and rhetoric echo among them. Some sentences are duplicated in full or have only minor changes. Phrases such as “American energy,” “alarming dependence on foreign energy,” “the most overlooked energy resource,” “one trillion barrels of oil,” and war analogies tie these comments together. These comments have been well crafted in ways that may have been intended to avoid the screening for form letters. As a group, they tend to be longer, formally composed, and are more grammatically correct than other comments. This is in sharp contrast with the more spontaneous tone of letters with little evidence of form language. Comments presumed to be independently authored frequently contain spelling and grammatical errors, are casually composed, and tend to be short, often just a paragraph or two. These form-like comments are not included in the sample because they were deemed to be campaign letters. However, they represent the majority of the comments in favor of OSTS. Only 44 pro-OSTS comments remained after screening, and even those appear heavily influenced by the letter campaigns.

**Analysis of Discourses in the Draft OSTS PEIS Comments**

Using the analytical tools described in Chapter 4, six primary discourses and two supplemental discourses were found in the sample of public comments. Discursive storylines and the number of texts belonging to them are shown in Table 5.2. Discourses
are not discrete categories. The ideas and arguments are shared across boundaries, especially among those objecting to OSTS development. For example, one text may express a primary risk of misuse of public lands, and go on to support that position by describing the destruction that will be caused by OSTS along with a suggestion to develop renewable energy. As described in Chapter 4, Methods, the primary risk described in a text is the storyline to which it is assigned. Because so many texts bear a resemblance to the campaign letters, a brief discussion of those similarities is included for each storyline.

Table 5.2

Discursive Storylines in the 2008 OSTS Sample

<table>
<thead>
<tr>
<th>Storyline</th>
<th># Comments</th>
<th>% of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too much Destruction</td>
<td>184</td>
<td>30%</td>
</tr>
<tr>
<td>Better Options than Fossil Fuels</td>
<td>133</td>
<td>21%</td>
</tr>
<tr>
<td>Stop the Misuse of Public Lands</td>
<td>90</td>
<td>14%</td>
</tr>
<tr>
<td>Irresponsible Government</td>
<td>79</td>
<td>13%</td>
</tr>
<tr>
<td>Not Enough Information</td>
<td>57</td>
<td>9%</td>
</tr>
<tr>
<td>Pro-OSTS</td>
<td>44</td>
<td>7%</td>
</tr>
<tr>
<td>Unassigned</td>
<td>35</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>622</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Storylines are named for their primary messages related to risks. For each storyline, the following seven elements are discussed:

- Storyline
- Entities constructed through discourse
- Agents and their motives
- Metaphors, rhetoric, and situated meanings
- Assumptions about natural relationships and figured worlds
- Cultural worldview
- Framing

Excerpts from the texts are used to support and illustrate the storylines. These are taken from the comments as written, with no correction for spelling and grammatical errors. Commenters were given the option to have their names and addresses withheld from the public record, but less than 1% made this choice. However, names will not be used to protect the identity of submitters. Documents are referenced by the ID numbers assigned by the BLM, preceded by 2008 to distinguish them from those submitted in response to the 2012 Draft PEIS.

**Entities across Discourses**

Entities constructed across discourses are suggested by patterns of word usage in the overall sample, as shown in Table 5.3. This table includes the key content words – the nouns, verbs, and adjectives that are used in the texts that construct a discourse. Oil shale and tar sands are not ranked in the word count table because those words are included in the name of the PEIS to which all texts are responding. The words oil and shale are included in 100% of the documents, and tar and sands are included in 98.5%. Authors do
Table 5.3

<table>
<thead>
<tr>
<th>Word</th>
<th>Frequency</th>
<th>Documents</th>
<th>% Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>land</td>
<td>532</td>
<td>304</td>
<td>48.4</td>
</tr>
<tr>
<td>energy</td>
<td>523</td>
<td>276</td>
<td>43.9</td>
</tr>
<tr>
<td>development</td>
<td>469</td>
<td>223</td>
<td>35.5</td>
</tr>
<tr>
<td>resource</td>
<td>312</td>
<td>153</td>
<td>24.4</td>
</tr>
<tr>
<td>destroy</td>
<td>160</td>
<td>140</td>
<td>22.3</td>
</tr>
<tr>
<td>time</td>
<td>181</td>
<td>130</td>
<td>20.7</td>
</tr>
<tr>
<td>environment</td>
<td>149</td>
<td>127</td>
<td>20.2</td>
</tr>
<tr>
<td>water</td>
<td>252</td>
<td>120</td>
<td>19.1</td>
</tr>
<tr>
<td>fuel</td>
<td>158</td>
<td>120</td>
<td>19.1</td>
</tr>
<tr>
<td>impact</td>
<td>202</td>
<td>97</td>
<td>15.4</td>
</tr>
<tr>
<td>environmental</td>
<td>122</td>
<td>94</td>
<td>15.0</td>
</tr>
<tr>
<td>future</td>
<td>122</td>
<td>96</td>
<td>15.3</td>
</tr>
<tr>
<td>Utah</td>
<td>131</td>
<td>94</td>
<td>15.0</td>
</tr>
<tr>
<td>gas</td>
<td>145</td>
<td>92</td>
<td>14.6</td>
</tr>
<tr>
<td>protect</td>
<td>101</td>
<td>92</td>
<td>14.6</td>
</tr>
<tr>
<td>Colorado</td>
<td>166</td>
<td>90</td>
<td>14.3</td>
</tr>
<tr>
<td>damage</td>
<td>106</td>
<td>90</td>
<td>14.3</td>
</tr>
<tr>
<td>source</td>
<td>112</td>
<td>86</td>
<td>13.7</td>
</tr>
<tr>
<td>process</td>
<td>157</td>
<td>85</td>
<td>13.5</td>
</tr>
<tr>
<td>take</td>
<td>108</td>
<td>84</td>
<td>13.4</td>
</tr>
</tbody>
</table>
not consistently differentiate between the document title and the resource, making them
useless as key content words. The most frequent words in the sample are highlighted in
this and subsequent tables of word frequencies for the separate storylines.

For this and all subsequent frequency tables in this case study, key content word
lists include functional words and exclude words in the stop list as described in Chapter
4, Methods. Word frequency counts single forms of a word. For example, environment,
environmental, and environmentally are all indexed separately. In use, these words often
have the similar meaning. Therefore, the frequency of single words and the frequency of
use may not always be the same. Word counts for environmental and impact exclude
instances with the word statement in the same sentence to avoid the phrase
“environmental impact statement,” which acts as a part of a document title in this case
study. Counts of the word national excludes use with Argonne and laboratory because
Argonne National Laboratory was part of the mailing address for comments. Counts of
the word land exclude bureau and management to separate reference to land from the
Bureau of Land Management.

There are some entities that are constructed through discourse in all of the
storylines. In some cases, entities exist in several storylines but are infused with different
meanings. For instance, industry is seen as greedy and malicious in some discourses,
while it is an engine of the economy in others. Seven main entities—oil shale, tar sands,
land, energy, resources, development, and time—are widely recognized across
discourses.
**Oil shale and tar sands.** Oil shale and tar sands are not well-defined in terms of geology or chemistry in the ways that distinguish other rock formations like coal or limestone. According to the BLM, “oil shale generally refers to any sedimentary rock that contains solid bituminous materials called kerogen, that are released as petroleum-like liquids when the rock is heated in the chemical process of pyrolysis” (BLM, n.d.a). For purposes of the PEIS, oil shale is the kerogen-bearing rock in the Green River Formation, which covers portions of Colorado, Utah, and Wyoming.

The BLM describes tar sands as “a combination of clay, sand, water, and bitumen, a heavy black viscous oil” (BLM, n.d.b). The 2008 and 2012 PEISs refer specifically to tar sand deposits located in eastern Utah. Tar sands in Utah differ in form and extraction technology from the oil sands (also referred to as tar sands) in production in Canada.

Oil shale and tar sands have value as sources of energy, and their worth is predicated on modern, industrial needs. Human utility is also at the center of the terms development and resource. Even though technological challenges and market prices have prevented commercial production, there is confidence expressed among those in favor of OSTS development that with enough persistence and ingenuity, OSTS could become a viable source of fuel.

**Land.** Whereas energy and the environment are somewhat abstract entities in discourse, land is a more concrete, tangible entity. People hike, camp, hunt, and fish on the land. They feel a sense of ownership, whether or not they have ever visited the OSTS region. Land can be measured and mapped, as demonstrated by the often-used phrase “2 million acres.”
The land holds oil shale and tar sands, and it is the use of the land that is the fundamental decision at hand in the PEIS process. Impacts to land can be documented through observation or pictures, thus the risks to the land are likely to be perceived more easily than other risks. The mining of Canadian tar sands and its harm to the land is often used as supporting evidence by those opposing OSTS. This may be a function of the representativeness or availability heuristics, where people apply something similar or easily recalled as a shortcut for missing information.

- “Have you seen what damage Oil shale and Tar sands development have done to the land and environment in Canada?? Is that the type of damage you want done to our land?” (2008-51221)
- “There are many other countries in the world that have already damaged and ruined land whom also have oil.” (2008-50771)
- “All you need do is view the region of Alberta, Canada where oil sands development occurred to deny this proposal.” (2008-50745)
- “From Canada’s experience, it was devastation because of the development of tar sand. They cut thousands of square miles of habitat. The toxics left behind prevented the ecosystem from recovering.” (2008-00215)

Although BLM’s alternatives offer a limited range of options, the discourses in this case study tend to offer a binary choice about land. Will it be dedicated to various techniques of energy production, the possibilities for which include large-scale surface mining or in-situ production where the kerogen is cooked out of the ground? Or will it be preserved for wildlife, future generations, recreation, or hunting and fishing? Will the resources be kept off-limits, or will they be used to support domestic energy needs?
• “It is particularly bad policy to despoil public lands to develop backward-looking energy sources, which greatly reduces their potential for recreation, watershed and wildlife habitat.” (2008-50997)

• “I want our beautiful wilderness kept pristine, healthy and beneficial for wildlife, and to offer people recreation and refreshment of spirit, as God intended.” (2008-50571)

• “Public lands should be used for the GOOD of the entire nation not locked away for selfish simple minded groups like the Center for Biological Diversity.” (2008-50289)

• “Furthermore, it appears to me that these vast land areas that are ripped open will never be recovered, and those costs are not included even if recovery were possible.” (2008-52967)

Those who are opposed to development refer to public land, sensitive land, federal land, and western land. It belongs to all Americans, to be protected rather than sacrificed to energy development. Wilderness qualities implied in these discourses derive from the perspective that recreational use of public lands does not have an impact on land, ecology, or wildlife.

• “The BLM should be in the business, of protecting our public lands, not destroying them.” (2008-50004)

• “I am writing to ask you to protect the public lands from dirty fuel production.” (2008-00215)

• “Agency regulations and federal law require that the BLM manage its lands for multiple uses, yet the agency admits that oil shale and tar sands
development will displace every other public use of public land to benefit a few private companies.” (2008-00275)

- “In the meantime, in a misguided attempt to stave off that crisis, we should not allow our public lands to be sacrificed and irreparably damaged without any proof that the damage can produce a compensating benefit.” (10307)
- “Please do what you can to preserve our natural lands, and please, respect your Mother.” (2008-00343)
- “Please Go Slowly, giving permits to process shale/tar from our unique and beautiful land, without even knowing how this will be done is reckless at best.” (2008-52521)
- “The land you are considering sacrificing is a precious resource.” (2008-0285)

Most consider resource extraction disruptive to the existing landscape, while recreation uses are not. There is a general assumption that the land will be used for human benefit, whether that is by OSTS development or more general recreation. The contest is over which will prevail. For those opposed to OSTS, the land is at risk. For those in favor of OSTS development, the land will not be permanently harmed.

Some of these comments approach NIMBYism in the sense that people don’t want energy production activities in areas they use and value. Yet they fail to recognize that they contribute to the demand that drives energy production, in part by traveling to these places, motorized recreation, and second homes.

- “Our lands must not have pollution it should be clean & great for all of us to have a wonderful vacation w/o wrong materials on our land.” (2008-50428)
- “We don’t need to destroy the places we hunt and fish…” (2008-00281)
• “This region is special, people come here from all over the country to enjoy hunting, hiking, and other recreational pursuits.” (2008-50004)

• “The water supply of our vacation home is threatened in Colorado. What a waste to destroy this pristine land in order to harvest carbon-producing oil.” (2008-51680)

• “I, along with a group of friends, have traveled to Utah once or twice a year for the last 20 years to spend 7 to 10 days hiking kayaking, and sightseeing in the beautiful scenery that Southern Utah has to offer.” (2008-52632)

• “My family and friends and I have been running rivers and hiking in the Green River and San Rafael Swell area of Utah for many years. This area is so special and fragile.” (2008-52821)

• “On two occasions I have been camping in the canyon to be awakened at an early hour when the first large truck traveled through.” (2008-52775)

Those in favor of OSTS also see land as public, but take the position that it should be used, opened up for the public good. They portray the objectors as locking up land and resources, contrary to the multiple-use mandate for public lands. They characterize land protections as single-use management. In the pro-OSTS discourse, oil shale and tar sands are like buried treasure or a birthright. The knowledge that they exist creates an imperative to use them.

• “Oil shale deposits on public lands hold the equivalent of 1.23 trillion barrels of oil. No nation has more oil shale than the United States.” (2008-00238)
• “It’s time for the majority to stand up and say no to all the so called environmental protectors of the land who continually try to take the land away from us.” (2008-52217)

• “Let the entire nation benefit from our national lands and do not let a few simpletons lock it away in the name of preserving it.” (2008-52241)

• “Yes, treat the land responsibly, but not with just a narrow, one viewpoint, environmentalist vision.” (2008-52534)

• “OPEN UP THESE LANDS NOW.” (2008-52799)

While some proponents assert that OSTs production could be done without environmental harm, only two offer the possibility that there could be a mixed-use approach that includes both conservation and OSTs development.

• “Little spots of industry out in the wild do not spoil it, they are just an appropriate mixed usage of the land, for the good of all. Yes, treat the land responsibly, but not with just a narrow, one viewpoint, environmentalist vision.” (2008-52534)

• “However, unlike many of my fellows in oil & gas industry and AAPG, I insist that wildlife habitats be defined & protected, ie. like sage grouse mating & nesting grounds, antelope & elk grazing areas, and that ground water resources be fully protected from drilling and production practices.” (2008-52921)

Energy. Energy is treated as a necessity of life, a thing that we use and need. Despite its importance, it is treated in highly simplified ways. The purposes and uses of energy, such as transportation, heat, or light, are rarely discussed. Only its procurement
and sources are regular topics in most storylines. Energy is discussed as a commodity, something that is bought and sold, imported and exported.

- “I predict that the economic break-even point will continue to be a moving target - mainly because of the energy input needed to extract oil from shale.” (2008-52938)
- “This can only harm more than it can help, invest in creating a market for sustainable energy instead.” (2008-52121)
- “By doing so, it will increase our nation’s energy portfolio, reduce energy prices for consumers and ultimately make us less dependent on foreign energy imports.” (2008-00238)

Authors write of energy in ways that parallels business and banking speech. Energy is invested, spent, returned. Substituting the word financial for the word energy in many sentences would not sound out of place.

- “This will not improve our energy position.” (2008-50035)
- “The proposal is far too costly in environmental and energy terms.” (2008-50498)
- “This country most start investing more in alternative energy sources and the government must make better efforts to curb global warming.” (2008-52145)

For many, energy from OSTS is completely substitutable. There seems to be an implication, particularly in talk of energy alternatives, that there is a menu of co-equal energy sources from which to choose: coal, solar, wind, biofuels, geothermal, nuclear, etc. There is evidence that for some members of the public, some misunderstanding exists about what counts as a renewable energy source.
• “It’s time to invest in other energies and to educate the public to consume less.” (2008-51465)
• “We need to focus our efforts on non-polluting sources of energy such as solar, wind and hydro.” (2008-51098)
• “It is so simple and logical to pursue new energy sources like solar and wind and geothermal ...” (2008-52533)
• “We have the means now to use renewable fuel sources such as ethanol from com, electric hybrids, natural gas, solar, and I’m sure eventually water powered.” (2008-50895)

Forms of energy are rarely discussed. Only four texts discuss liquid fuels. There is some mention of electricity in approximately 39 texts, primarily in reference to the need to use vast amounts of electricity in OSTS extraction and the need for electricity generation to support an industry. In this sense, there is recognition that extracting OSTS will require using one form of fuel (primarily coal, but some suggest creative solutions) to generate electricity, which is then used to extract oil. This may indicate a subtle understanding of the advantages of liquid fuels and the drawbacks of transforming energy from one form to another.

• “You are not doing good enough on the electric requirements. You need to look at first dams, burning trash, burning beetle-killed trees, natural gas, nuclear, and not just coal-fired generation.” (2008-52989)
• “According to your own analysis, to do so would require the construction of a 1,200-1,500MW power plant for every 100,000 bbl extracted from oil shale.
This power plant would likely be coal fired according to the PEIS.” (2008-00083)

- “As I understand it, it takes an enormous amount of energy to get oil out of shale because it has to be heated to 400 degrees to release the oil.” (2008-51239)

- “Extracting oil from these deposits is extremely inefficient (40% of the energy value is lost in heating the material to release the petroleum).” (2008-52113)

**Development.** Development is a sanitized term that stands in for extractive and productive activities, such as drilling, mining, or retorting. It also is used to cover the entire range of related activities, such as building roads, water and energy procurement, and waste disposal. Development is the third most frequently occurring key content word in the sample, following land and energy in frequency of usage. The word occurs at least once in 35.5% of the sample texts.

- “This ensures that NEPA analysis will consider the direct, indirect and cumulative effects that development will have in particular areas.” (2008-52568)

- “Do not allow commercial leasing or development of oil shale until present research and development plans are completed and the social, water and other environmental effects have been fully evaluated.” (2008-00020)

- “The development of oil shale and tar sands is completely unacceptable.” (2008-50913)

- “I support wholly the development of these resources.” (2008-52217)
Development may be described as commercial or private sector, but there is no
corporate entity generally credited with the act of development of OSTS. The BLM, the nation, or
sometimes a vague reference to a collective “we” should be doing something about
developing OSTS.

- “Why has America neglected to develop this important resource before?”
(2008-52435)
- “The nation needs to responsibly develop all possible forms of energy for the
  sake of national security and economic well-being.” (2008-00223)
- “Please establish the alternative allowing the maximum possible acreage
  available for potential development.” (2008-52932)
- “I believe it is critical for country’s energy needs to open up as much federal
  acreage for oil and gas exploration and development as possible.” (2008-52919)

Where referring to development of renewable energy, there is a collective
obligation to pursue alternatives to fossil fuels. Efforts to develop OSTS are seen to take
motivation and focus away from the development of renewable energy.

- “We need to develop more earth friendly energy projects.” (2008-5000)
- “Conservation and the development of renewable energy is far more favorable
  and is necessary for the sake of future generations.” (2008-51486)
- “The oil shales and tar sands should not considered a viable fuel for the long
term future and would be counterproductive to promoting the development of
alternative energy sources.” (2008-50819)
“Leave it in the ground and move ahead to wind and solar developments.”
(2008-52990)

**Resources.** Almost one quarter of the sample texts use the word resource in some way. Calling something a resource implies that it has value or value can be derived from it. A resource derives its worth from its usefulness to humans in any given time and place. Prior to the 19th century, petroleum products had little value (Slocombe, 2007). During the industrial age, oil became a primary source of energy. As the high-quality and most easily accessible sources of oil have been depleted, there is pressure to seek oil from less desirable resources. Geopolitical concerns have also made domestic resources more desirable. Thus, oil shale and tar sands have come to be considered as resources for producing oil, even for those who object to their use.

- “These particular energy resources tremendously exacerbate the causes of global warming.” (2008-51578)
- “Oil and Tar sands is a limited resource and the impacts on our lands are not worth the cost.” (2008-52556)
- “I cannot support the development of oil shale and tar sands resources.” (2008-51510)
- “The federal government must allow the appropriate exploration and development of our nation’s natural energy resources.” (2008-00238)
- “Importantly, developing these resources will also help reduce our country’s unhealthy reliance on politically unstable countries that supply us with oil.” (2008-52568)
Resource is a term used for many things of human value in addition to oil shale and tar sands. It is widely applied to water, air, land, energy, and even money, time, and effort. In some sense, resources become a kind of currency or measure by which to weigh risks and benefits.

- “Additionally, doing more of the same will only retard efforts to put resources into the kind of creative exploration that will result in clean, efficient, renewable energy sources.” (2008-50483)
- “This is a time when our country should be going in a different direction and to make these lands available is a waste of public resources and will cause irreparable damage to wilderness areas.” (2008-50957)
- “Such extractive operations severely and adversely impact all other resources on the land, such as archaeological, botanical, wildlife, and recreational values, because of the extensive surface alterations required to obtain the one mineral resource.” (2008-52990)
- “Public land is a common resource belonging to the people of this nation.” (2008-51940)

**Time.** Some frequently used words have multiple, situated meanings. Time is used to express temporal meaning in a traditional sense of minutes, hours, months, and years. It marks a place in the future or in the past. Time serves as a type of currency, an asset that can be used to achieve goals and objectives. It represents quantities, in multiples or repetitions.

- “Thanks for your time.” (2008-52556)
- “I think our time, money, and efforts would be better spent…” (2008-50023)
• “Obtaining fuel from tar oil sands is a waste of time … (2008-51098)
• “By the time production is ready to ramp up… (2008-50161)
• “The first time around, BLM gave the appearance of caring what the public and the experts thought… (2008-52803)
• “The BLM needs to begin working for the public, current and future, not industry, as I have seen too many times.” (2008-52048)
• “Producing a single barrel of oil from tar sands emits no less than six times more carbon dioxide than producing a barrel of conventional oil.” (2008-52564)

Time is a rhetorical device that expresses a sense of urgency. Opportunities are present to be seized, and harm must be stopped before risks spin out of control.
• “The time for change is now.” (2008-51671)
• “This is not the time to destroy our land to put off the inevitable change from fossil fuels to renewable energy sources.” (2008-50526)
• “This is a time when our country should be going in a different direction… (2008-50957)
• “However there is still time for the Bureau of Land Management to do the right thing… (2008-52145)
• “At a time when the planet and all life on it, including humans, are threatened by the devastating consequences of global climate change… (2008-52417)
• “It is time to stand up to this administration’s pandemic greed.” (2008-50142)
• “It is time for standing up and being counted.” (2008-51358)
The situated meaning of time is especially flexible when used to express an awareness of the present. The expression “at a time when…” is used in texts belonging to all storylines. Although the comments were written at around the same time (within a few months), they express disparate views on what the contemporaneous moment held.

- “…at a time when crude oil is at record levels…” (2008-50929)
- “…at a time when carbon emissions pose one of the gravest threat to life on earth as we know it.” (2008-51720)
- “…at a time when we need to be rapidly transitioning away from fossil fuels-based energy production.” (2008-50256)
- “…at a time where we should be trying our hardest to switch over to renewable resources…” (2008-52184)
- “…at a time when water resources are dwindling and becoming uncertain…” (2008-52417)
- “…at a time when water continues to grow at a premium in our desert state…” (2008-52647)
- “…at a time when we can ill afford environmental destruction.” (2008-50454)
- “At a time when there is no longer any doubt about the anthropogenic causes to global warming…” (2008-50358)

These statements reveal circumstances perceived as risky if not remedied. They define the problem in ways that make the desired action the obvious, logical choice. Their differences are defining features that helped to differentiate discursive storylines of risk.

**Other entities and agents across storylines.** Several other entities are constructed and reinforced through the discourse in these comments. Both the National
Environmental Policy Act and Environmental Impact Statements are constructs that predate and lay the foundation for public participation in the PEIS process. Just under 10% of documents reference the EIS, and slightly more than 1% refer to NEPA. Whether or not NEPA, EIS requirements, or the 2008 PEIS are directly referenced, they are legitimized as entities through individuals’ participation in this particular forum for decision-making, and by their engagement with the rules and customs that govern this problem-solving strategy. Although the comments reflect varying levels of understanding of the process, any participation legitimizes the institutions and authorities of government in this matter. They are mentioned in texts, but are part of the context of every comment submitted.

The BLM is the institution charged with management of the lands in question, and the federal agency responsible for the PEIS. The BLM has the authority to define the alternatives considered and to make the final decision. Comments were received and reviewed by the BLM as part of the public input process. Not all letters are directly addressed to the agency or its personnel. While this may reflect a dispute some individuals have with the BLM’s authority or jurisdiction, it may simply be a matter of confusion. Regardless, anyone who submits a comment individually or through an organization is implicitly, if not explicitly, recognizing the authority of the BLM in execution of the NEPA process.

All storylines recognize the BLM, but its mission and purpose are portrayed in different ways. Specific characterizations of the BLM as an agent with motives are explored in the discussions of storylines to follow. The BLM and its employees act within a discursive framework of administrative rationalism, wherein it seeks to
“organize scientific and technical expertise into bureaucratic hierarchy in the service of the state” (Dryzek, 2013, p. 88). This is a problem-solving discourse, one that idealizes the practice of risk assessment and trusts experts and managers to make impartial decisions in the public interest. The public interest is conceptualized in unitary terms, and presumed to be identifiable within the status-quo of liberal capitalism. Thus, the PEIS objective is to ascertain the public interest, broadly conceived, based on the best available science and expertise. There is an expectation that the agency can and must find a balance between them that will “create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans” (NEPA, Sec. 101 [42 USC § 4331 et seq.]). All discursive elements recognized across discourses are summarized in Box 5.1.

| · Oil shale and tar sands  
| · Land  
| · Energy  
| · Development  
| · Resources  
| · Time  
| · National Environmental Policy Act  
| · Environmental Impact Statements  
| · Bureau of Land Management |

Box 5.1. Discursive Elements Shared across Discourses

**Not Worth the Destruction Storyline**

This is the largest set of texts, with 30% of the sample belonging to this storyline ($N = 184$). The 20 most frequently used key content words are listed in Table 5.4. Destruction is a central theme in at least three of the campaign form letters, which urge
Table 5.4

*Frequency of Key Content Words in Not Worth the Destruction Storyline*

<table>
<thead>
<tr>
<th>Word</th>
<th>Frequency</th>
<th>Documents</th>
<th>% Docs</th>
</tr>
</thead>
<tbody>
<tr>
<td>land</td>
<td>137</td>
<td>88</td>
<td>47.8</td>
</tr>
<tr>
<td>development</td>
<td>94</td>
<td>53</td>
<td>28.8</td>
</tr>
<tr>
<td>energy</td>
<td>87</td>
<td>52</td>
<td>28.3</td>
</tr>
<tr>
<td>destroy</td>
<td>60</td>
<td>49</td>
<td>26.6</td>
</tr>
<tr>
<td>environment</td>
<td>51</td>
<td>47</td>
<td>25.5</td>
</tr>
<tr>
<td>environmental</td>
<td>41</td>
<td>38</td>
<td>20.7</td>
</tr>
<tr>
<td>damage</td>
<td>40</td>
<td>33</td>
<td>17.9</td>
</tr>
<tr>
<td>Utah</td>
<td>38</td>
<td>32</td>
<td>17.4</td>
</tr>
<tr>
<td>oppose</td>
<td>34</td>
<td>32</td>
<td>17.4</td>
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<tr>
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<td>49</td>
<td>30</td>
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<td>15.8</td>
</tr>
<tr>
<td>Colorado</td>
<td>41</td>
<td>28</td>
<td>15.2</td>
</tr>
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<td>future</td>
<td>31</td>
<td>26</td>
<td>14.1</td>
</tr>
<tr>
<td>resource</td>
<td>35</td>
<td>25</td>
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<tr>
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<td>25</td>
<td>13.6</td>
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</tr>
<tr>
<td>wildlife</td>
<td>31</td>
<td>23</td>
<td>12.5</td>
</tr>
<tr>
<td>mine</td>
<td>28</td>
<td>23</td>
<td>12.5</td>
</tr>
</tbody>
</table>
the BLM to “Protect the West from hasty oil shale development” (2008-00298), “Stop dirty oil shale and tar sands development in western wildlands” (2008-00388), and claim that in Canada, “dirty fuels operations destroy vast expanses of wildlands, displace wildlife, create toxic waste sites that go on for miles, produce more greenhouse gasses than conventional fuel and use enormous amounts of clean water” (2008-00217).

**Storyline.** This storyline weighs the energy to be gained by developing OSTS resources against predictions of destruction that will be caused by a commercial OSTS industry. The conclusion is that there is “not enough return for the amount of damage it does to the environment” (2008-50916) and that OSTS is “anything but cost effective” (2008-50375). The integrity of the environment, habitat, and sociocultural values are at extreme risk, and OSTS development should not be permitted to occur. It will “ravage our beleaguered environment and produce no benefits” (2008-50618). The consequences of developing OSTS are too numerous and severe to consider such a sacrifice.

- “The BLM must weigh the potential development against the loss of irreplaceable natural and cultural resources…” (2008-00291)
- “What possible short term profit to be made is not worth the destruction of these beautiful and amazing lands.” (2008-52388)
- “There is no doubt that the proposed development would cause massive, irreversible environmental damage - scarring the landscape with mines, roads, pipelines, and power lines; releasing toxic pollution; consuming enormous amounts of scarce water; requiring ten new coal-fired power plants to provide needed power; endangering the health of local communities; and spewing out greenhouse gases that add to climate change impacts.” (2008-52877)
• “We have to get our priorities straight: some things MUST not be sacrificed to make the economy run.” (2008-00304)

**Entities.** The environment is one of this storyline’s central entities.

Approximately 43% of the texts use some form of the word environment (not including the title of the PEIS). Authors refer to the environment in additional ways, using words such as ecosystems, ecology, wilderness, wildlands, and landscapes, and all are at risk. OSTS poses the threat of devastation, thus words such as damage, destruction, disaster, degradation, catastrophe, and abuse accompany environmental references throughout the Destruction storyline.

• “This development could be an environmental catastrophe to the earth, plants, & animals. The cumulative impacts could be disastrous.” (2008-52110)

• “The environmental impacts are devastating on both a local and a planetary scale, and they cannot be mitigated.” (2008-52641)

• “Please do all you can to help the environment and do not allow oil sands development in pristine areas of Colorado, Utah and Wyoming.” (2008-51088)

• “If it is necessary to destroy every last pristine ecosystem to extract every drop of oil, coal or natural gas and turn the living earth into a moon scape you can keep your energy!” (2008-51817)

• “The alternative would result in massive, irreversible ecological damage to wilderness areas under your protection…” (2008-52723)

Wildlife and habitat are discussed in ways that do not merely make them parts of the environment. Wildlife and habitat are addressed in 22% of the texts. Wildlife habitat
is “already threatened by continual human encroachments” (2008-00268) and OSTS activities will impose additional risk. Impacts to wildlife and habitat are considered to be direct, indirect, and cumulative. There is a sense that humans have an obligation to “be the caretakers of the wildlife” (2008-50238).

- “Destruction of the surface would impact the habitat of wildlife including big game species as well as threatened smaller species.” (2008-52608)
- “Mining of these fossil fuels will kill off wildlife habitats and render the land uninhabitable.” (2008-51646)
- “Migratory birds, protected fish, among other life native to this continent, will be deeply affected by habitat destruction and pollution.” (2008-51668)
- “The process destroys ecology and native animals feeding and mating grounds.” (2008-50363)

Authors stress that preventing destruction is important for the sake of future generations. Approximately 20% of the texts in the Destruction storyline reference future generations, children, and grandchildren. Authors predict that a ruined world will be left to descendants if OSTS development occurs. They imply a sense of grave responsibility for the future, reminding the BLM that all our children and grandchildren will “pay the environmental and emotional costs” (2008-52778) of this choice. Allowing the destruction of OSTS “would be a crime against nature and a crime against future generations” (2008-52641). In reference to future generations, some authors attempt to evoke emotional or protective responses from the decision-makers.

- “Think of future generations of ALL species; that includes us!” (2008-51507)
- “We owe it to future generations to leave this area unsullied.” (2008-50026)
• “We would all like our grandchildren to live in a world that has not been ravaged by the previous generation.” (2008-52137)
• “We don’t want to creat a disaster that will jeopardize the health and welfare of those who come after us.” (2008-52414)
• “You have a very important role in the world to protect a precious resource for my grandchildren and their grandchildren.” (2008-52821)
• “Do you want your grandchildren to grow up in a paved over country with man made trees?” (2008-50771)

The United States of America is an entity that the commenters represent in 20% of the texts. With reference to the nation, authors express concern, belonging, and pride. They ask the BLM to consider the best interests of the United States. Comments do not place the country or its energy needs in the context of a global marketplace. With the exception of Canada (see rhetoric below), and two brief mentions of environmental destruction in India and China, other countries are generally ignored. The earth, planet, or climate might be harmed, but other nations are not considered to be at risk. The focus of this storyline is on the ways the proposal will affect the citizens, environment, and resources of the United States.

• “These areas are much more important to the Nation as repositories for native organisms, archaeological sites, open spaces, etc.” (2008-50040)
• “The US is the best equipped to begin this energy revolution.” (2008-51668)
• “Please think about our country and what the people want for it.” (2008-50771)
• “We must, in this country, start finding ways to cut back on our abuse of all the gifts we have shared in this country.” (2008-51380)

• “If you love America the Beautiful, don’t turn it into America the Eyesore.” (2008-51000)

All forms of fossil fuels are considered to be destructive choices as energy resources, and there is a sense of inevitability about the transition away from them. The clear choice for the future is “renewable energy, not energy-intensive fossil fuels” (2008-52371). Extracting OSTS and continued investment in fossil fuels will perpetuate destruction, create pollution, and intensify the problem of climate change. The risks of using fossil fuels are discussed in 24% of the Destruction texts.

• “Due to the significant environmental destruction caused by oil shale and tar sands extraction, and the resultant air pollution caused by the burning of these fossil fuels, I urge the BLM to deny all applications for oil shale and tar sands extraction.” (2008-50452)

• “This is not the time to destroy our land to put off the inevitable change from fossil fuels to renewable energy sources.” (2008-50526)

• “The idea is for us to get away this use of fossil fuels, NOT to use more.” (2008-51507)

• “Furthermore, it would be a folly of incredible magnitude to commit ourselves to a new form of fossil carbon at a time when the evidence is incontrovertible that this energy source causes climate change that threatens the environment on a global scale.” (2008-52641)
Although not the main risk in the Destruction storyline, greenhouse gas emissions and climate change are entities that are present in this storyline. As in other storylines opposed to OSTS production, these authors contend that climate change is part of the cumulative risk that will arise if OSTS commercially developed. Greenhouse gasses are discussed as outputs from production and use of OSTS. In most texts climate change is only implied as a long-term risk.

- “We need to protect wildlife habitats and limit greenhouse emissions, and I do not believe that the proposed development will help either of those endeavors.” (2008-51462)
- “The negative environmental impact of such action would be sheer folly at a time when we still have an opportunity to control and reverse the production of greenhouse gases.” (2008-51895)
- “We need to learn to conserve energy before destroying the world around us and adding to global warming.” (2008-50205)
- “What’s more, greenhouse gas emissions from the production of synthetic crude are more than three times those from conventional crude.” (2008-52391)
- “It would result in unacceptable quantities of greenhouse gas and other pollutants.” (2008-52442)

**Agents and motives.** There are two main agents with motives in this storyline: the American public and the BLM. Companies, businesses, corporations, and industry are minimized as agents. They are referenced by less than 10% of the comments. Drilling, mining, and extraction are present in 30% of the texts, but only six documents (3%) refer
to companies as agents performing those activities. Of those six, the link between companies and environmental destruction is never explicitly stated. In the absence of energy companies as an agent, OSTS development becomes a de-facto agent that imposes the risk of destruction.

- “These activities will cause substantial and likely permanent damage to soils, watersheds, and plant and animal communities.” (2008-52811)
- “I believe that oil shale and tar sand development in the proposed areas would cause unrepairable damage and cannot be mitigated.” (2008-52839)
- “The tar sands development would destroy some of the most beautiful and unique areas in the world.” (2008-50026)
- “Such development destroys habitat and wildlife, produces massive air and water pollution, wastes scarce water, and destroys the quality of life in our rural areas.” (2008-50205)

The BLM is recognized as the decision-maker in the PEIS process. It has a role as protector of “our public lands, our water supplies, our air, our climate and ultimately our global environment” (2008-52811). However, the PIES created by the BLM “lays the groundwork to destroy the landscape” (2008-52362). Authors urge the BLM to take action to carefully consider the consequences of a decision to open up lands to OSTS development - the exact process the BLM is executing with the PEIS. The commenters contend that to allow leasing would be for the BLM to neglect its responsibilities and become a party to the destruction.

- “The BLM has a responsibility to take care of the land that belongs to the public.” (2008-00175)
• “The BLM must move slowly and more thoroughly assess the impacts that will result from the leasing of irreplaceable landscapes for oil shale and tar sands development.” (2008-52407)

• “It is time to act responsible for all of humanity and remember that all species and environments have become interdependent and interconnected over millions of years and if we remove one variable it has a wave affect through the world.” (2008-50782)

• “Do not lease now and destroy the environment forever!” (2008-52362)

Comments do not explicitly state the BLM’s motivation for doing such a harmful thing. One implied reason for opening up or leasing land to OSTS development is that the BLM has a narrow view of the value of land as merely a source of energy. Comments portray the BLM as willing to sacrifice other uses and values in service to oil production. Authors charge that the BLM has not appropriately protected land in its care in the past, and comments apply that lesson to the future.

• “Please slow down and consider the archeological aesthetic qualities of the beautiful lands you are about to lease for minerals extraction.” (2008-52362)

• “These areas are much more important to the Nation as repositories for native organisms, archaeological sites, open spaces, etc.” (2008-50040)

• “The natural landscape is holier to me than any manmade religious structure, St. Paul’s Cathedral or the Vatican, could possibly be. Would you destroy them if oil could be made out of them?” (2008-00304)
• “We cannot withstand the consequences of ANY further miscalculations equal or greater than those already inflicted on the nation and planet by our government.” (2008-50653)

• “Please show some respect for our Nation and its remaining wild lands.” (2008-51085)

• “In learning from past experience, we know that oil shale development can have devastating impacts to the surrounding land, air, water, wildlife and communities.” (2008-51303)

Some authors suggest that greed is the motivating factor for consideration of OSTS development. They suggest that the BLM is serving the interests of the energy companies. Power and political favors may be factors influencing the BLM’s decision-making.

• “Their seems to be no possible way to justify the amount of damage this would do to the environment and landscape except to line the already billowing pockets of the oil Industry.” (2008-52458)

• “Haven’t we destroyed enough of our world in the greedy acquisition of money, and more money?” (2008-52141)

• “Lets make intelligent informed decisions and ones that everyone agrees with and that truely benefit everyone, not just filling the pockets of bureaucrats and Oil mongers that don’t even live in this state or this part of the country.” (2008-52391)
• “This is MY land you are ready to despoil and the land of every other American please don’t give it away to George Bush’s energy industry cronies.” (2008-51854)  
• “Just because money talks doesn’t mean it says the right things … (2008-52431 ellipses original)  

There is a general assertion that the BLM is not thinking broadly enough, and the agency is challenged to pursue renewables. Commenters ask the BLM to “consider the relatively cheaper (by environmental aspects and probably cost to the consumer as well) that renewable energy development would produce” (2008-50605). In this sense, the BLM is seen as having responsibility for the nation’s domestic energy policy.  

• “Energy independence should be explored through conservation, new technology development and actively encouraging American citizens to lesson their energy usage through a myriad of conservation measures.” (2008-51854)  
• “I propose instead that the federal government (including BLM) put its efforts toward energy conservation and developing alternative energy sources.” (2008-52113)  
• “Please, preserve the land and look for renewable energy alternatives.” (2008-51181)  

The American public is a collective entity with a shared identity. It is impatient and alarmed with the BLM’s overall willingness to destroy the environment, land, resources, and habitat for oil production. People are particularly unhappy with the risks of OSTS development. They were writing to tell the BLM that “enough is enough” (2008-51633). They feel the benefits do not outweigh the costs, or are distributed in unfair
ways. Land, water, habitat, and money will all be lost if Americans are not successful in convincing the BLM that there is “little sense in this drilling, at the financial cost to the American public, let alone, the cost to our environment” (2008-52381).

- “Please think about our country and what the people want for it.” (2008-50771)
- “My belief is that taxpayers like myself should not have to shoulder the fiscal burden that will provide a limited amount of actual energy relief, and massive profits for those few companies that will engage in this short-sighted project.” (2008-52723)
- “Please do not destroy another beautiful area for the benefit of so few!” (2008-50433)
- “This evil plot to mar such a valuable public treasure must be stopped!” (2008-52641)
- “Our most valuable resource, WATER, would also be at risk.… (2008-52988)

The authors in this storyline appear to have two motivations for their comments on behalf of the American public. The first is to protect the environment by preventing the development of OSTS. The second is to advocate for energy alternatives in lieu of OSTS development.

- “We need to develop more earth friendly energy projects.” (2008-50100)
- “We have done far too much already to this part of the country; we need to stop such destructive practices completely.” (2008-51984)
- “We must protect the environment and seek more sustainable forms of energy.” (2008-50295)
• “We need to stop using fossil fuels, not destroy public treasures to harvest a little more.” (2008-51552)

• “What Americans want are alternative sources of energy that do not trash the beautiful lands of which we are steward.” (2008-50273)

Metaphors, rhetoric, and situated meanings. The “negative environmental and social consequences resulting from the current Canadian tar sands development” (2008-00175) are held up as an example of the risks of OSTS development. This comparison reveals some confusion about the energy development proposed for Utah, Colorado, and Wyoming and the Canadian production of tar sands. It is likely that the information about Canadian tar sands provided the basis for both the availability and representativeness heuristics. Authors seem to apply knowledge of the more familiar Canadian tar sands operations, and in doing so, make the assumption that Canadian and U.S. tar sands are the same. There has been no successful commercial production of oil shale or tar sands in the United States., making them unfamiliar risks. Although the PEIS materials state that Canadian and U.S. tar sands require different extraction methods, it is likely that Canadian tar sands supplied the most readily available example of what U.S. tar sands production could be like. The Canadian lesson in environmental destruction is also used to represent oil shale extraction, although Canada does not have commercial oil shale production.

• “This is a highly destructive and polluting source of energy as clearly demonstrated by the disaster in the Canadian fields.” (2008-51085)

• “Have you seen what damage Oil shale and Tar sands development have done to the land and environment in Canada??” (2008-51221)
• “We are already seeing terrible environmental impact from oil shale extraction in Canada. We should not make the same mistakes here.” (2008-51485)

• “Water, Air and wildlife resources as well as cultural, scenic and “quality of life” resoures will be profoundly diminished by this development. The results are plain to see in the Canadian developments.” (2008-52407)

Authors in the Destruction storyline write about specific places they feel could be at risk. Such places are considered “indefensible and fragile” (2008-52358), special, unprotected, and delicate. They contain “intrinsic wild, scenic and archeological resource values” (2008-52950) that must be preserved.

• “We must protect the Colorado River area and preserve one of the most beautiful places on Earth.” (2008-52728)

• “I am adamantly opposed to the extraction of oil from shale or tar sands on public lands in the United States, particularly in the magnificent unspoiled lands of the West including the San Rafael Swell of Utah and Roan Plateau of Colorado.” (2008-52811)

• “Neither recognizes the importance of the intrinsic wild, scenic and archeological resource values along the Green River.” (2008-52950)

• “Many of the lands selected for development are lands that I strongly feel need protection, including the Red Desert in Wyoming, Utah’s Book Cliffs, and the White River in Colorado.” (2008-51303)

Many of these references reflect personal experience in places impacted by OSTS development. The authors seem to believe that there are no environmental impacts their
recreational uses may cause. This is an interesting inconsistency if the objective is to “preserve what little pristine public lands we have remaining” (2008-51951).

• “My family and friends and I have been running rivers and hiking in the Green River and San Rafael Swell area of Utah for many years. This area is so special and fragile.” (2008-52821)

• “I have spent many days, weeks and months exploring, enjoying, and loving these lands.” (2008-52641)

• “I know the area well, having run rivers, driven shuttles, traveled through it for many years.” (2008-51649)

• “I have been traveling the area you are proposing to develop for the last 50 years…” (2008-50026)

The Destruction storyline weighs the costs and benefits of OSTS, a calculation that is present in 23% of the texts. This rhetoric establishes that OSTS extraction is not worth the risk. It asserts that “while the economic gains from the tar sands will be short-lived, the damage to the landscape will be irreversible” (2008-52632). There are some who argue that the consequences of OSTS development are disproportionate to the amount of oil it will produce.

• “I know it’s important to find energy sources other than coal, but what you’re prepared to destroy is worth more than it could possibly yield in temporary fuel.” (2008-00304)

• “Destroying land forever is not worth the gain.” (2008-51188)
• “The costs of this are simply staggering in terms of ravaged lands, carbon releases at a time of nearly desperate efforts to curb global warming, and critical needs to protect wildlife habitat.” (2008-50605)
• “It will ravage our beleaguered environment and produce no benefits.” (2008-50618)
• “I believe the cost (environmental damage) is greater than the return (minimal fuel).” (2008-52366)
• “The landscape should not be sacrificed for a few more years of our inability to reduce our dependency on oil.” (2008-50942)

OSTS resources are portrayed as a poor energy resource. Comments state that OSTS have low net energy, and will produce little oil. Authors counter predictions of a vast reserve of oil with statements that there will only be a “pittance of petroleum yielded” (2008-52950). They will only provide a temporary solution, and “once the oil is extracted and used it is gone forever” (2008-50040). Potential for production is minimized with phrases such as “so little energy” (2008-52519) and “a few barrels of oil” (2008-52391).

• “The net energy made available above that of production energy inputs in the course of such mining is too small, in my view, to ever make the sacrifices mentioned above acceptable (2008-50605)
• “Studies show that at least 40% of the energy value of the shale is consumed in production, since the shale has to be mined, transported, cooked, and then the by-products disposed of.” (2008-52391)
• “This is a really bad idea from both a conservation view and an net energy gain view.” (2008-51181)

**Assumptions about relationships and figured worlds.** There is a largely taken-for-granted demand for energy development in this storyline. The assumption is that the country needs a new supply of energy because America is suffering from an “energy crunch” (2008-52414). Although conservation is advocated, there is tacit acceptance of the idea that the country’s energy supply problem that needs to be addressed in some way. Authors do not question whether new resources are needed. Instead they suggest other, non-OSTS ways for meeting needs.

• “This land can never be “recovered” and the production of this oil will not solve our energy deficit.” (2008-51181)

• “The short term solution to our energy greed is not the destruction of our national treasures.” (2008-51534)

• “This will not resolve or alleviate our energy problems in the short or long haul.” (2008-51633)

• “I am hopeful that you consider their inheritance when you consider the current energy crisis.” (2008-52821)

The best answer to energy problems is renewable energy resources, also referred to as energy alternatives. They are generally seen as innovations that still need investment and development. Technologies are not quite ready to support an energy transition, but “so many alternative energy sources are right on the horizon (ie wind, solar, hydrogen, etc)” (2008-51404). The nation should be supporting renewables rather than fossil fuels, and the implication is that the BLM can and should be leading policy in this direction.
According to the comments, the BLM should invest in alternatives, encourage others to invest in alternatives, or thwart fossil fuel development to make renewable energy more attractive. Only two texts name specific forms of renewable energy. The rest simply refer to renewable and alternative energy sources.

- “Why not invest in renewable energy instead?” (2008-51221)
- “By not allowing commercial companies to drill, explore, and excavate, you will help to put more pressure on these companies and our government to look into alternative energy resources.” (2008-52431)
- “We should be ending our addiction to oil and investing this money into renewable energy sources.” (2008-51668)
- “Economically we are not paying the true cost of our standard of living; leave the land as is; and let’s develop alternative to fossil fuel.” (2008-50531)
- “Resources, both private and public, used to extract oil from shale would be better utilized encouraging the development of sustainable energy.” (2008-50040)

**Worldview.** The worldview expressed in the Destruction storyline is strongly egalitarian communitarianism. The idea that nature is ephemeral, fragile, and can be irreversibly harmed is at the heart of this discourse. Environmental damage, destruction, and ruin are the perceived risks, with no possibility for recovery. Other forms of life will be impacted, and human quality of life will be diminished. Future generations will be harmed. Concern for future generations and the desire to live more lightly on the earth align closely with the egalitarian communitarian worldview.
**Framing.** Predictions of disaster in the wake of OSTS development are a negative goal frame, describing losses that will be suffered if the decision-makers do not make a choice to restrict the use of land for OSTS. Authors advocate for the No Action Alternative to protect the land, and for alternative energy to meet needs. They present both a problem and a solution, but the advantages of renewable energy are not framed as gains.

**Summary.** The Destruction storyline accepts the need for the United States to secure access to additional energy. Finding an appropriate resource to fill the need is the problem. The move to develop OSTS poses the risk of environmental destruction. The benefits to be gained are few and the tradeoffs are unacceptable. Future generations will suffer and wildlife and habitat will be harmed, all for very little oil. Renewable energy and conservation are solutions to the energy problem, and the BLM needs to restrict the use of OSTS. Discursive elements from the Destruction storyline are summarized in Box 5.2.
Storyline:
The benefits to be gained from oil shale and tar sands are not worth the destruction to the landscape and the environment.

Entities:
- The environment
- Wildlife and habitat
- Future generations
- The United States
- Fossil fuels

Metaphors, rhetoric, and situated meanings:
- The environmental destruction of Canadian tar sands
- Personal experience and specific places
- Weighing of costs and benefits
- Low production/low net energy

Agents with motives:
- The American public
- BLM
- OSTS development

Assumptions about natural relationships and figured worlds:
- The nation faces an energy crunch
- Renewable energy and conservation as substitutes

Worldview:
Egalitarian Communitarian

Goal framing:
Negative goal framing - The destruction caused by OSTS development will be a loss if it is permitted to occur.

Box 5.2. Not Worth the Destruction Storyline

Better Options than Fossil Fuels Storyline

This storyline has 133 texts, accounting for 21% of the sample. The 20 most frequently used key content words are listed in Table 5.5. Advocacy for renewable energy is frequent throughout the discourses that are opposed to OSTS development. Renewable energy, alternative energy, and energy alternatives are promoted in several campaign letters, and are suggested in other storylines. However, this storyline goes beyond mere advocacy for renewable energy. In the Better Options discourse, the risk of further investment in fossil fuels appears front and center. The solution is to find better options and avoid the risk of betting on a fossil fuel future.
<table>
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These form letters state that “safer and more cost-effective solutions are already available, such as energy efficiency and alternative energy technologies,” (2008-00189) and insist there is a “desperate need” (2008-50393) to transition to non-polluting, renewable energy sources. Form letters criticize fossil fuels because they will “ravage the landscape and produce unacceptable quantities of greenhouse gases and other pollutants” (2008-50557). One variation predicts that the OSTS proposal will increase dependence on fossil fuels by perpetuating “an outdated, fossil-fuel-intensive energy infrastructure” (2008-50489).

**Storyline.** This storyline argues that there are better options than OSTS for addressing the country’s energy problems. Fossil fuels are obsolete, a limited and harmful source of energy. Pursuing OSTS is a short-term solution that will only deepen the problems in the long run. Better options are available and the BLM should support efforts to develop renewable fuels, manage needs, and seek energy alternatives. We need to “radically change our ways of acquiring energy and to preserve what we have left of our beautiful land” (2008-50974). The principal risk in this discourse is society’s continuing, dead-end pursuit of fossil fuels. OSTS development poses risks to the environment and climate.

- “Please quit solving our oil scarcity problem by developing more oil in completely impractical ways…” (2008-00248)
- “The Bureau of Land Management’s controversial proposal would fuel an outdated, fossil-fuel-intensive energy infrastructure and comes at a time when we need to be rapidly transitioning away from fossil fuels-based energy production.” (2008-50256)
• “The oil shales and tar sands should not be considered a viable fuel for the
long-term future and would be counterproductive to promoting the
development of alternative energy sources. The economic and moral future of
this country, and possibly our species, relies on transitioning to alternative
energy and reducing greenhouse emissions as much as possible as soon as
possible.” (2008-50819)

• “I strongly oppose the use of oil shale and tar sands which will provide only a
very temporary solution at huge expense to our environment. We can no
longer tolerate the selfish greed of the few at the expense of the habitability of
the entire planet.” (2008-50602)

Entities. Fossil fuels in general and oil in particular are portrayed as outdated,
non-essential forms of energy. Climate change, peak oil, and limited supply have made
investment in oil immoral, impractical, and unwise. Fossil fuels have become passé.
Progress dictates that they can and must be replaced with other, more environmentally
friendly energy sources. OSTS resources “represents a step backwards in public policy”
(2008-50996).

• “Developing the technology to extract fossil fuels from oil shales and tar
sands While extracting oil from oil shale and tar sands might have made sense
as a price hedge against the OPEC cartel in the pre-global-warming era, it no
longer makes sense.” (2008-50997)

• “The coming of peak oil in the economy will cause much disruption. The
solution is not to put more fossil fuel energy into getting the last barrel of oil
from tar sands and oil shale.” (2008-51053)
• “Continuing on the path of fossil fuel exploration is only delaying the inevitable. People need to accept the fact that the supply will run out.” (2008-51489)

• “Oil? Isn’t that yesterdays form of fuel?” (2008-51508)

• “Fossil fuel extraction and consumption is so last century.” (2008-51571)

• “We don’t need to get more oil in any way .... it’s obsolete.” (2008-51622)

• “The proposals to open up these areas for mining represent old, worn out ideas and technologies.” (2008-50483)

Energy alternatives are an essential part of this storyline. In order to avoid the expanded use of fossil fuels through OSTS, there must be viable options. Most of the comments (64%) suggest a focus on renewable resources or conservation. They advocate for investment in developing “alternative, liberating energy sources” (2008-52413). They also state that technologies are currently available and would make it possible to stop using fossil fuels.

• “I think our time, money, and efforts would be better spent on education in sciences, alternative fuels and protecting our environment.” (2008-50023)

• “Let’s instead pursue solar, wind, geothermal.” (2008-50184)

• “Energy conservation can supply all the energy we need.” (2008-50254)

• “We already have the technology for greener cars we just need to use it.” (2008-51140)

• “The technology is already there we just need money and funds to go into renewable energy.” (2008-52379)
This storyline stands out for the authors’ willingness to suggest solutions to energy production and ways to reduce dependence on fossil fuels. They advocate for specific resources and conservation measures. There is faith in the ability to come up with innovative solutions because “women and men in our country are ingenious when they are supported and encouraged to develop smart, healthy options” (2008-50519). There is also the view that education or legislation could reduce energy demand.

- “Please! solar, wind, hydro, wave energy, biofuel from agricultural waste or from garbage (something we seem to have an abundance of).” (2008-50913)
- “Perhaps it would be wiser to devise mass transportation and more eco-friendly cars, than to destroy the planet in our unending search for oil.” (2008-51090)
- “Create jobs and protect the environment should be the ways to go!!” (2008-51456)
- “If every person in this country replaced their dish washing detergent with a non oil based product, we would save 4500 barrels of oil per year.” (2008-51983)
- “…educate the public to use less fuel by offering serious incentives for reducing air and car travel and making public transport cleaner, more accessible and free.” (2008-51419)
- “Our country needs to be mandated to use less energy by congress.” (2008-50584)
- “…force car companies to make cars more fuel efficient…” (2008-51802)
• “It’s time to invest in other energies and to educate the public to consume less.” (2008-51465)

Their suggestions also indicate that the authors consider how energy is used. This type of discussion of energy applications is not prominent in other storylines. The authors in Better Options are more conscious of energy’s role and uses in society. They discuss energy needs and the problems of energy supply. The problem of energy is real and needs to be addressed with a long-term solution. The risk is that the challenge will be answered by doubling down on fossil fuels through OSTS.

• “Oil shale and tar oil extraction does not solve our country’s energy problem.” (2008-00312)

• “We need long term solutions to the energy and global warming problems, not “finger in the dike” attempts which will only contribute to the problems, not solve or even improve them.” (2008-50022)

• “It appears your decisions would be a short term solution to some of our energy problem but with long term damage to our environment.” (2008-51485)

• “I know that we are a nation addicted to oil, but we need to begin to address the addiction and not continue to fuel it.” (2008-51323)

The range of alternatives to OSTS that are suggested are not exclusively renewable. Three authors are willing to consider nuclear power and clean coal. Traditionally, nuclear power has been environmentally taboo. The willingness to propose nuclear plants or coal as preferable to OSTS production is evidence of the level of disapproval for OSTS.
• “We need energy so badly that other resources are considered even nuclear would be more practical and create less damage.” (2008-00292)

• “As an alternative, why not tuck a nuclear plant or two into some out-of-way location in this area--it would have less impact on the environment and be much more cost-effective.” (2008-52640)

• “We need to concentrate more on renewable energy resources instead of fossil fuels. However, in the long run I believe that “clean coal” technologies offer more potential for solving our energy problems than oil shale.” (2008-52938)

Future generations figure into this storyline in several ways. Authors object to OSTS development based on the obligations to preserve the land for future generations and to prevent climate change. Overall, there is a feeling that “we owe it to our children to sacrifice now” (2008-00385) to ensure sustainability for the future. Some comments suggest that there may not even be future generations if OSTS is developed.

• “Save this wilderness for your children’s children’s children.” (2008-00356)

• “Don’t the future generations deserve more than the polluted and wasted planet that tar sands development anticipates?” (2008-50921)

• “The land we used is borrowed from our children. What will they inherit if we continue to devastate the planet?” (2008-51785)

• “Why in the world would we want to leave a polluted, dug up, ugly landscape and bad air for our future generations?” (2008-52533)

• “It shows no respect for future generations, in fact it is murdering them.” (2008-51287)
• “…our grandchildren will NOT HAVE A CHANCE to live a decent life if they live at all.” (2008-50456)

The environment is an entity that is at risk not only due to OSTS extraction, but from all fossil fuels. As a yet-undeveloped resource, OSTS presents a new threat to the environment that should be stopped before it takes hold. Authors equate transitioning to renewable energy with saving, protecting, or preserving the environment. The word environment and its various forms appear in 33% of the Better Options comments, excluding usage in the phrase “environmental impact statement.”

• “I think we have to find other options to save the environment.” (2008-50127)
• “We need to adopt CLEAN ENERGY that preserves our environment, not destroys it!” (2008-52278)
• “I think we have to find other options to save the environment.” (2008-50127)
• “Protect and preserve the natural landscape as it is.” (2008-50852)
• “New, non-polluting and renewable energy sources MUST be developed in order to save our already ravaged environment.” (2008-51506)
• “…we can no longer continue to destroy our environment to seek the remaining few drops of oil.” (2008-50602)

The threat to the environment comes from pollution or destruction. Pollution is a concern in 17% of the texts, and approximately 20% explicitly state that OSTS will harm the environment. This bears some similarity to the Destruction storyline, but the Better Options authors maintain their focus on the risk of continuing to use fossil fuels. Many of the comments indicate the opinion that the environment has already been harmed. We
have the option to use resources with “less environmentally damaging results” (2008-50087) and stop “destroying the environment any further” (2008-51489).

- “Stop destroying more of the environment than you already have.” (2008-51622)
- “We need to transition to non-polluting, renewable energy sources, not pollute the environment even more.” (2008-50206)
- “The plan to open up previously protected land for oil shale mining is a plan to continue the same devastating practices that have scarred the land, polluted the water, and released tons of greenhouse gasses into the atmosphere.” (2008-50483)
- “We should be in search of better fuels, not using the fuels that continue to pollute the air and damage Nature.” (2008-51118)
- “It is clear that alternatives to fossil fuel development are urgently needed to deal with the nations’s energy demand without the attendant environmental damage which is inevitable from the mining, and consumption of fossil fuel.” (2008-52990)

Greenhouse gasses, carbon emissions, and climate change are consequences of OSTS development. The Better Options storyline is concerned with climate change, where it is also referred to as global warming, and CO2, carbon, or greenhouse gas emissions. Emissions terms are used about as often as climate change or global warming, but only five texts mention both. Emissions stand in for climate change, leaving it as the taken-for-granted outcome. Climate change can be offset as a long-term risk by seeking
alternatives and reducing consumption. The risk of climate change is mentioned in 28% of the texts.

- “Now is not the time to be creating more green house gases.” (2008-52145)
- “Oil will still produce carbon and other greenhouse gases when burned. Regardless of where or how you get it, it still is leading us into extinction.” (2008-50725)
- “If we do not, the savings we incur by the use of new fossil fuels will be overshadowed by many orders of magnitude by the costs we will incur. As a result of increased global warming. This would be generational tyranny and morally reprehensible.” (2008-50996)
- “The time has come that we must find energy sources that do the least harm to the environment and do not add to the carbon dioxide driving global warming.” (2008-51631)
- “Obtaining fuel from tar oil sands is a waste of time and really impacts the global warming segment of our environment.” (2008-51098)

Agents and motives. In this storyline, it is not clear that the authors differentiate between the overall federal government and the BLM. The BLM/government is motivated by the need to secure a supply of energy for the nation. The actions that are suggested are far outside the BLM’s purview, and they are not necessarily things the federal government controls. There is a supposition that the BLM/government itself is developing OSTS, that it determines how research and development funds are invested, and that it has the ability to set a comprehensive energy policy.
• “Save your money, save our environment, drilling all over America is not going to sustain us. We need alternative fuel and practices.” (2008-50804)
• “Please do not excavate tar sands and oil shale but use the cost of this to develop wind, solar and water power and educate the public to use less fuel by offering serious incentives for reducing air and car travel and making public transport cleaner, more accessible and free.” (2008-51419)
• “Use your funds to support conservation of the energy we now have, and development of renewable energy that will not contribute to global warming.” (2008-51631)
• “Our country needs to put conservation and efficiency as top priorities.” (2008-52373)
• “Think how much further ahead America would be if we invested the amount of the war-for-oil fiasco on solar energy.” (2008-51113)
• “As a nation we should be focussing on renewable energy sources and this diverts needed attention and funding from that need.” (2008-51538)
• “…our government should be putting more resources into finding a way to be a role model for the world instead of being greedy and destroying the only place we (humans beings) have to live.” (2008-51191)

In the Better Options storyline, the purpose of the BLM’s PEIS is not treated as an effort to decide land use or environmental impacts. It becomes a decision about energy problems, with the outcome setting the energy agenda for the nation. The BLM/government must find a solution, and OSTS is an easy, quick fix to the country’s need for energy. The BLM/government is on the verge of making a bad decision to take
the nation down the path of more fossil fuels. The authors are trying to prevent “this last
ditch effort to wring out a few more barrels” (2008-50468).

- “I am always disappointed at how short-sighted our government is about how
to handle our energy problems.” (2008-51239)
- “Please do whatever you can to prevent any use of public land to get oil or
gas.” (2008-00385)
- “We will lose more than we gain in value. This will not improve our energy
position.” (2008-50035)
- “We need long term solutions to the energy and global warming problems, not
“finger in the dike” attempts which will only contribute to the problems, not
solve or even improve them.” (2008-50222)
- “Alternative energy is available, and cheaper, with less environmentally
damaging results. That is where the money and time should be spent.” (2008-
50087)

In this narrative, the American people are addicted to energy, particularly fossil
fuels. The public needs to be saved from its dependence on oil. The few who see the folly
of OSTS are appealing for an intervention in the form of an “energy policy that will lead
to a sustainable future” (2008-51523) by transitioning to better sources.

- “Stop the vicious spiral of addiction, etc.” (2008-50414)
- “I know that we are a nation addicted to oil, but we need to begin to address
the addiction and not continue to fuel it.” (2008-51323)
- “When will this country know that enough of the old technology is enough
and we must look forward to varieties of other energies and put the strength of
what’s left to our research and development into looking ahead?” (2008-50921)

- “This country is so far behind when the rest of the world is making so many advancements! Wake UP People, this is your planet too!” (2008-51253)
- “…shale and tar sand oil are just other forms of petroleum dependence…” (2008-52413)

The consequences of feeding the fossil fuel habit by developing OSTS would be severe. The nation would remain blinded by addiction, and would “make these lands and ecosystems our last sacrifice on the altar of unending, unsustainable growth” (2008-50161). Americans risk their survival, quality of life, and position in the world if they fail to end fossil fuel dependence.

- “If we continue these practices there will be nothing left. Trees will only be seen in books. As we destroy the planet we are destroying ourselves. It has to stop.” (2008-51118)
- “We used not to be this stupid. What has happened to us?” (2008-51239)
- “We need to show leadership in this area or we will fall behind the rest of the world.” (2008-51792)
- “Our quality of life depends upon the future of renewable energy resources.” (2008-52379)
- “When the world is looking for greener forms of energy, this expensive and unsustainable form of energy extraction and utilization will be a white elephant.” (2008-51299)
• “We can no longer tolerate the selfish greed of the few at the expense of the habitability of the entire planet.” (2008-50206)

**Metaphors, rhetoric, and situated meaning.** Along with America’s energy addiction, there is a rhetoric of insanity. Texts reflect a sense that the entire country has gone crazy. Americans are not capable of making rational, reasonable decisions; instead, they are acting in foolish and unreasonable ways. Where “common sense tells us to adjust our lifestyles and economy to less fossil fuels” (2008-51053), we are instead locked into a pattern of “insane consumption of energy” (2008-51532).

• “Have we gone nuts? This will only keep us on the same path to a dirty end to the human race. Stop this madness.” (2008-52972)
• “That makes no sense whatsoever! Stop this nonsense immediately.” (2008-50022)
• “We need to stop this insane quest for ever increasing wealth.” (2008-51287)
• “This kind of exploitation should be illegal. Certainly it is immoral.” (2008-51874)
• “We have been through this foolishness once before, 3 decades ago. Oil Shale proved environmentally destructive and economically unfeasible for use back then, and it remains so now.” (2008-51953)

As a somewhat milder form of addiction, there is a dependence on oil and fossil fuels that needs to be broken. This problem of dependence is sometimes focused on oil imports. It is likely a response to the push for energy independence by proponents of domestic energy production. Using this rhetoric is an acceptance of foreign oil as a risk while attempting to redirect the solution away from OSTS development.
• “…there are far more effective ways to reduce our dependence on foreign oil and oil in general.” (2008-52373)
• “Oil independence is not worth this cost.” (2008-50627)
• “We must seek alternative fuels and break our dependence on fossil fuels…” (2008-51419)
• “The nation needs to decrease dependence on foreign oil but this is not the way to do it.” (2008-52640)
• “We do not need to be so dependant on foreign oil.” (2008-51140)

The Better Options storyline minimizes the amount of oil available from OSTS. There might be some oil produced, but it will be minimal and it will not last for long. People have attempted to develop OSTS before, and they will be unsuccessful this time, too.

• “…the best we can get is a relatively small amount of lousy oil.” (2008-00292)
• “We need a change in direction on energy, not a few more barrels of oil.” (2008-51752)
• “We have been through this foolishness once before, 3 decades ago.” (2008-51953)

This storyline has much discussion about tradeoffs between short- and long-term outcomes, as well as costs and benefits. This balance between costs and benefits is a topic in 33% of the comments in this discourse. The BLM/government is seeking short-term solutions, but the energy problem requires long-term approaches.
• “Destructive searches for petroleum are crossing the threshold in the cost-benefit balance as they become increasingly destructive for the environment at the same time as their returns diminish for the American people.” (2008-50060)

• “Rather than the short term gain we need long-range solutions, and these are not them.” (2008-00312)

• “While it may temporarily stimulate the economy with jobs and cheaper oil, the long term effects are hardly worth the short term benefits.” (2008-51324)

• “If we do not, the savings we incur by the use of new fossil fuels will be overshadowed by many orders of magnitude by the costs we will incur as a result of increased global warming.” (2008-50996)

• “Tar sands are an expensive fossil fuel with many costs to the environment. The benefit is a short term gain of some oil and it is not worth it.” (2008-52085)

• “This is a short sighted and highly costly method of obtaining fuel at the expense of the environment and future generations well being.” (2008-50616)

• “The proposal is far too costly in environmental and energy terms.” (2008-50948)

• “Oil shale extract would provide very little net energy at an unacceptable cost to the environment.” (2008-52640)

Assumptions about relationships and figured worlds. The authors in the Better Options storyline presume that there will be some amount of investment in energy development. The energy industry’s role in making those decisions is minimally
recognized.” (Words connected to energy companies appear in only 12% of the texts.)

Instead, there seems to be an expectation that the BLM is or should be a central decision-making authority that chooses what energy resources the country pursues and is responsive to the public’s concerns. Commenters urge the BLM to make good decisions about tradeoffs that OSTS would require.

- “In exchange we’d have to give up an awful lot of land.” (2008-00292)
- “Alternative energy is available, and cheaper, with less environmentally damaging results. That is where the money and time should be spent.” (2008-50087)
- “I think we have to find other options to save the environment.” (2008-50127)
- “Oil independence is not worth this cost. Please make more serious efforts at conservation and investment in alternative & renewable energy.” (2008-50627)
- “Think how much further ahead America would be if we invested the amount of the war-for-oil fiasco on solar energy.” (2008-51113)
- “We need a new direction in government subsidisation toward green energy and to save our laud for our enjoyment and to sustain life on our planet.” (2008-52893)

The need for more energy is taken for granted in this storyline. The authors caution against investing in a finite and damaging resource to meet those needs. Comments are mixed opinions on whether the solution is to expand the supply of energy to meet needs or to manage needs to fit the available supply of energy. Some take for granted that growing energy demand is necessary and possible in the present and in the
future. Others question the reasonableness of meeting perceived needs, suggesting instead that conservation and efficiency will be the solution.

- “We need to concentrate all of our efforts on developing alternative resources to meet our energy needs and to protect our environment.” (2008-51334)
- “It’s time to invest in other energies and to educate the public to consume less.” (2008-51465)
- “We must put our minds into serving our public’s energy demands with new sources that will not end up altering the natural systems of the planet that supports us.” (2008-51865)
- “Energy conservation can supply all the energy we need.” (2008-50254)
- “The only solution to the energy crisis is to reduce demand.” (2008-52702)

**Worldview.** Both hierarchical communitarianism and egalitarian communitarianism are evident in this storyline. On the egalitarian communitarianism side are comments that advocate conservation and management of needs. The prevention of environmental destruction also corresponds with this worldview. Hierarchical communitarianism is expressed in advocacy for nuclear energy, for centralized decision-making, and for American position as a world leader. This storyline’s perspective on risks and solutions appeals to both high group worldviews although there may be some difference of opinion about how an energy transition should be carried out and what alternatives would be acceptable.

**Framing.** This storyline takes two approaches to goal framing. The overall goal is for the BLM to make a decision that prevents any further pursuit of fossil fuels. There is a negative frame that describes the losses to be suffered if the choice is to allow OSTS
development. The loss would be the deepening of the nation’s dependence on fossil fuels and, eventually, climate change. On the other hand, there is advocacy for a transition to energy alternatives. This avoids the loss of fossil fuel commitment while at the same time substitutes for the loss of whatever quantity of oil OSTS would have supplied. This framing of loss avoidance is a positive goal frame to promote a secondary choice in favor of fossil fuel alternatives.

**Summary.** Box 5.3 summarizes the Better Options storyline. As an energy resource, OSTS is a continuation of the fossil fuels problem. Developing OSTS is a short-term solution that will only intensify America’s dependence on fossil fuels. Fossil fuels threaten the environment, climate, and future generations. The OSTS PEIS opens the door to a new way to feed America’s energy addiction. Conservation and renewable energy are the solutions that will protect the land, prevent global climate change, and secure a better future. The BLM should choose to pursue alternatives rather than allowing OSTS.
Misuse of Public Lands Storyline

Ninety texts belong to this group, and this storyline accounts for 14% of the sample. The 20 most frequently used key content words are listed in Table 5.6. The exploitation of public lands is a main point of campaign letters. The forms state that, “our public lands are already bearing the brunt of the current energy boom.” Only a few private companies will benefit from the sacrifice of private lands. This exploitation of public resources is neither environmentally or economically sound. In many respects, this storyline runs parallel to the form letters from the environmentalist organizations.

**Storyline.** This storyline requests that the BLM protect public lands against misuse by preventing the development of OSTS deposits. Authors challenge the idea that...
Table 5.6

*Frequency of Key Content Words in Misuse of Public Lands Storyline*

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<th>Word</th>
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</tr>
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</table>
energy extraction is an appropriate use of public lands, and suggest that energy companies should not be allowed to exploit public resources for profits.

- “This is to request that you please do not allow exploration and extraction and development of shale oil and tar sands on public lands. These are meant to be protected for our present and future enjoyment.” (2008-51884)
- “Please do not forfeit public lands into oil shale development.” (2008-52025)
- “The public lands belong to the public and should be preserved for the benefit of all.” (2008-52546)
- “You must stop allowing the destruction of our beautiful state of Colorado and our public and private lands for the greed of corporations taking oil shale.” (2008-52978)

The integrity of public lands will be harmed by OSTS development. Public access and use of public lands are threatened. The future is at risk. The comments in this storyline request that the BLM make a decision to prohibit OSTS development on public lands. These commenters pressure the BLM exercise its power to “STOP IT NOW before it is too late” (2008-52978).

- “The impacts from oil and gas leasing will be with us for a long time, all so that we have a few additional days of fossil fuel in America. It is a SHAME how a public agency has sacrificed the multiple values of precious public lands for the greed of a few. PLEASE not take this approach to oil shale. …As a citizen owner of public lands, I BEG you, the responsible agency to be responsible, not a pansy for energy interests.” (2008-52676)
• “STOP big oil from killing off our plant and our home. Lives are more important than dirty money.” (2008-52317)

• “This has to stop! Our children’s future education on true nature in its purest form is at stake!” (2008-51218)

**Entities.** The Misuse storyline revolves around the use of public lands. Although other environmental entities are present, land is the central concern in this discourse. Air and water are mentioned in only 4% and 19% of the texts, respectively. Wildlife and habitat appear in 18%, while the environment is only slightly higher at 21%. Land is discussed in more than 80% of the comments.

Publicly owned, federally managed land is the valued entity that is at risk. Energy production would amount to the taking and abuse of public property. This discourse takes for granted the implicit privatization of public lands and resources if development takes place. It is presumed that the development of OSTS would not be a public benefit.

• “…your policy is an unwise plunder of precious land, taxpayer money, and has unacceptable impacts on our nations’s already heavy carbon footprint.” (2008-00285)

• “I urge you to prevent drilling on public lands. They belong not to the government, not to big business, but to all Americans and generations to come.” (2008-51902)

• “Our public lands are NOT for private enterprise. They must remain under the protection of the public to preserve the little bit of valuable untainted land that is America’s greatest resource and necessary for survival.” (2008-50774)
The valued placed on public land is not monetary. Its worth lies in its wilderness characteristics, beauty, spiritual connections, restorative potential, and as a legacy for the future. There is also a sense of stewardship and responsibility that is the duty of both government and the public.

- “Save our precious BLM lands for future generations who will want and need places to escape for peace, quiet, and getting in touch with our inner selves. There is something awesome and holy about undisturbed lands.” (2008-52947)
- “I’m ashamed that my state, however, still sees fit to sacrifice natural beauty, refuge, spiritual serenity, and therapeutic wilderness in the false name of “progress.” (2008-52560)
- “I want our beautiful wilderness kept pristine, healthy and beneficial for wildlife, and to offer people recreation and refreshment of spirit, as God intended.” (2008-50571)
- “We hold our public lands in trust for future generations of Americans. They are not ours to diminish or destroy.” (2008-50784)
- “Our Democracy holds this land in trust for the use of the public, that we and our posterity can know the beautiful bounty of the American Wilderness.” (2008-5154)
- “We have such beautiful land in this country & it is not necessary to have oil shale as the animals need land to live on & get food from the water.” (2008-50428)
Of all the discourses in this case study, the Misuse storyline is the one most concerned with future generations. Other storylines take issue with risks such as pollution, destruction, and climate change that will burden future generations. In contrast, the authors in this storyline perceive that the risk for children and grandchildren is the lost opportunity to experience nature.

- “We are failing our future generations by allowing the destruction of our natural resources.” (2008-51988)
- “Please choose Alternative A and make this land enjoyable for current and future generations.” (2008-52742)
- “No amount of oil extracted can compensate for loss of such important public lands to all future generations.” (2008-52862)
- “Please, please don’t sacrifice our last wild places and our children’s future for short-term oil profits.” (2008-50879)
- “For our children and our children’s children we have a responsibility to give them the same planet that we have been able to enjoy.” (2008-51055)
- “Our children’s future education on true nature in its purest form is at stake!” (2008-51218)
- “No amount of oil extracted can compensate for loss of such important public lands to all future generations.” (2008-52862)

**Agents and motives.** Although energy companies are seen to be driving the OSTS process, the focus in this storyline is on the BLM and its responsibilities. The BLM has an obligation to protect public lands, an obligation it has forgotten. By entertaining the idea of allowing OSTS development, the BLM is acting in ways that are
negligent of its duties and complicit with the energy companies’ raid of public resources. The BLM is urged, “Don’t let them get away with it” (2008-52223).

- “I think it’s reckless of BLM to even consider leasing out this land without considerable safeguards to help protect the area…. I hope that BLM management will have a moment of sanity and stop this slip shod, fast track approach to management on this beautiful and important land.” (2008-00266)
- “The BLM should be protecting what’s left of the American West from exploitative industries, not selling it off piece by piece to the highest bidder.” (2008-50003)
- “PLEASE FULFILL YOUR MISSION TO PRESERVE AND PROTECT OUR NATURAL LANDS. DON’T BE SHORT-SIGHTED BY SELLING OUT TO GREEDY OIL COMPANIES WHO ARE ONLY INTERESTED IN PROFITS.” (2008-50850)

According to the authors, the public, the government, and even a god, has entrusted the BLM with protection of the land. If the BLM decides to allow OSTS activities, that trust will be violated. Unlike the Irresponsible Government storyline, where trust is already gone, the authors in the Misuse storyline appeal to the obligation to “honor the government’s commitment to preserve and protect public lands” (2008-51441) for the good of the people.

- “I urge you to take this public trust with utmost gravity and choose to protect our land and our future by directing your efforts towards sustainable energy development.” (2008-00451)
• “It is shamefull to have to remind you and your organization that the public expects you to conserve the earth in all areas in order to protect the peoples trust.” (2008-50538)
• “God created a wonderful world for us to protect and to manage wisely.” (2008-50737)
• “The earth is fragile and we are its caretakers. You have been chosen as leaders to protect America’s treasures.” (2008-51902)

It is not only the land that the BLM is expected to protect. By preserving the land, the BLM also protects American heritage and the inheritance of future generations. If the BLM allows development, opportunity, culture, and even the future itself may be lost.

• “Please protect our public lands for the future.” (2008-50415)
• “The BLM should be protecting what’s left of the American West from exploitive industries, not selling it off piece by piece to the highest bidder.” (2008-50003)
• “They must remain under the protection of the public to preserve the little bit of valuable untainted land that is America’s greatest resource and necessary for survival.” (2008-50774)
• “Please, please don’t sacrifice our last wild places and our children’s future for short-term oil profits.” (2008-50879)
• “Think about our countries future, and past mistakes, and make the responsible choice for all people.” (2008-52617)

According to the authors in the Misuse storyline, energy companies are setting the agenda and pushing the government to open up lands for OSTS extraction. Energy
companies in one form or another figure into 40% of the comments. They are portrayed as powerful and manipulative.

- "Please don’t destroy millions of acres of wonderful countryside for the sake of some short-sighted, for-profit, exploitive industries." (2008-50003)
- "Our public lands are NOT here just for the profit of multi-nationals. They are OUR lands and should be held in trust, not destroyed and squandered for short-term profits." (2008-50204)
- "I’m extremely disappointed that the BLM seems willing to sacrifice large tracts of our public lands to commercial oil shale and tar sands development.” (2008-00281)
- "It’s time to stop the destruction of public lands for the wealthy corporate exec’s and bankers.” (2008-50777)

The energy industry and companies are motivated by greed. Anyone who advocates for OSTS development is only pretending to be acting in the public interest. Profits are the industry’s only objective, and they will plunder public resources to achieve them.

- "Money lining the pockets of corporations will not buy us a better world.” (2008-51988)
- "Don’t believe for a moment that energy companies’ intentions are for the national interest, lower energy costs or anything other than a long, greedy drink at the public trough.” (2008-52223)
- "OUR LAND IS NOT FOR SALE TO BIG BUSINESS OR RICH CONTRIBUTORS TO ELECTION CAMPAIGNS!!!!!!!!" (2008-50737)
Companies have no motivation to be good custodians of public property. Their track record in other places demonstrates that they are only interested in exploiting the land. Profit margins preclude environmental responsibility and cleanup. The government gives companies “corporate welfare -- cheap leases that allow them to destroy public land” (2008-50784). Some comments even portray companies as intentionally ruinous, “wishing to destroy the planet by mining and refining oil shale and tar sands” (2008-51452).

- “Oil companies will be the main beneficiaries of such development to the detriment of the US citizenry…” (2008-50873)
- “If they don’t take care of what is their’s how can we trust them with our lands?…Consider the long term effects, and remember to look at these gas drillers past records especially Encana and what they have done in the past in Canada! All these companies are the same all they really care about is their bottom line, not us the land or the environment.” (2008-00144)

The American public is a collective entity in this storyline. The people are in a rivalry with companies over the land, fighting back against their victimization, and lobbying against a give-away by the BLM. The Misuse storyline is an attempt to enlist the BLM’s support of the American people, their ownership of the land, and their resistance to exploitation. There can be “no possible benefit to the American people in developing these lands” (2008-52862).

- “The BLM should abide by the wishes of the MAJORITY of Americans, not those looking to make a quick buck.” (2008-50003)
• “America belongs to ALL citizens and not the few in oil and gas, logging, and mining.” (2008-50611)
• “The oil conglomerates have enough. Leave this land for the People.” (2008-50147)
• “Oil companies will be the main beneficiaries of such development to the detriment of the US citizenry who are the real owners of this land and their mineral rights. THESE ARE OUR LANDS!” (2008-50873)
• “They are hell-bent on claiming as their own what rightfully belongs to all Americans.” (2008-52223)
• “Why contribute to it in such an ineffective manner and in the process ruin lands that are set aside for the American public.” (2008-51616)

Authors are motivated by the risk that the land will be taken from the people. Development will equate to a privatization of the OSTS areas. The public will be excluded from the land, or even worse, companies will wrest ownership away from them.

• “Access to this land by hunters, angler or hikers will be limited by the oil companies who set up rules from thier headquarters somewhere.” (2008-50037)
• “Please remember once the land is gone it will be taken away from us forever.” (2008-00144)
• “Look at all the land north of Parachute that the oil companies grabbed up and now have sold for millions of dollars!” (2008-00144)
• “A large portion of this area should be set aside for recreation so that common citizens have access.” (2008-00266)
• “The 1976 Federal Land Policy and Management Act was pretty clear in its multiple-use mandate, and this is a proposal that will surely preclude other legitimate land uses as well as forfeiting the health of the land, which the FLPMA and many other laws are clearly designed to protect.” (2008-50331)
• “The last part of the equation is that these oil companies treat these leases like their private property.” (2008-50037)

Metaphors, rhetoric, and situated meaning. Energy production is an unacceptable use of public property. Public land is equated to land that is protected. Private companies should not be permitted to use public resources for profit or destructive energy production. OSTS production is “too controversial to subject our public lands to possible misuse and abuse” (2008-50415).

• “Unacceptable! It is simply unacceptable to use BLM or other public lands for oil shale and tar sands development.” (2008-00037)
• “Starting up a massive development of oil shale and tar sands on public lands is unacceptable.” (2008-50873)
• “Oil development of Public Land is unacceptable.” (2008-51457)
• “I’m writing to tell you why I, and many others, think that developing vast amounts of land for oil and gas drilling in Colorado, Utah, and Wyoming is absolutely unacceptable.” (2008-51637)
• “THIS USE OF THESE LANDS IS UNACCEPTABLE!!!!!!!!!!!!!!! DON’T DESTROY GOD’S WORLD IN THIS WAY!!!!!!!!!!!! DON’T CONTRIBUTE TO POLLUTION AND DON’T CAUSE MORE
Although land should be protected, protection does not mean all uses are prohibited. Comments reveal that protection effectively means setting land aside for public recreation. Activities such as hiking, camping, hunting, and fishing are not viewed as harmful. Many of the justifications for protection come from personal experiences as recreational visitors. Land is to be preserved for public use, and there is little mention of its value as habitat, wilderness, or provider of ecosystem services.

- “Our lands must not have pollution it should be clean & great for all of us to have a wonderful vacation w/o wrong materials on our land.” (2008-50428)
- “My family and I frequently vacation on BLM lands especially in Utah and Colorado. BLM lands need to be protected from resource development for the recreational benefits of all Americans; not the profits of the few resource extraction corporations.” (2008-52109)
- “I try to spend about two weeks a year backpacking in southern Utah, mostly the eastern half. To me these are sacred lands so I walk softly on the fragile terrain. These places need to be respected and protected not exploited.” (2008-52709)
- “As a frequent visitor to the southwest, especially the 4 corners area, I enjoy visiting the parks and public lands in the area and want to know they will be protected and just as beautiful each time I visit.” (2008-52742)
- “I am an admirer of Nine Mile Canyon and have spent enough time in the canyon to witness the current excessive commercial traffic. On two occasions
I have been camping in the canyon to be awakened at an early hour when the first large truck traveled through.” (2008-52775)

Some of the authors claim expertise through personal experience working for energy companies. They tell of experiences confirming that energy extraction is environmentally risky, and that the companies do not care about the land. Efforts to produce oil “will only succeed in polluting the land which will fall to the taxpayers to foot the bill for cleanup” (2008-00266).

- “I know first hand I worked for Union Oil for several years and have first hand knowledge of how they dumped hazardous materials in East Fork of Parachute Creek.” (2008-00144)
- “Having worked in the oil shale industry in the late 1970’s I can tell you that the damage to the land will last for several years.” (2008-50037)

Use of land for OSTS production is frequently described as a theft from the American people. The BLM is poised to become an accomplice to this crime, depending on the PEIS decision. Acquiescence to energy companies’ interests would reroute public funds, lands, and resources to the energy industry.

- “Stop taking our precious land away!” (2008-51042)
- “We enjoy the land and what it has to offer. Unfortunately, money and profit are not offerings. They are things that are taken, stolen, exploited from the land.” (2008-51055)
- “The 2 million acres of PUBLIC lands in Wyoming, Colorado and Utah belong to the public. Your proposal would cost taxpayers billions, consuming millions of tons of coal and water each year.” (2008-51305)
• “Our tax dollars, not industrial money, support these lands, and it would appear that BLM has, again, become the means for industry to reap a windfall.” (2008-51750)

• “Also, BLM rarely gets long-term fair value in resource licensing projects on public lands. They are usually corporate welfare for political friends.” (2008-50878)

Assumptions about relationships and figured worlds. There is a basic assumption that energy companies are greedy for profits. This pairs with the common knowledge that greed is bad. Consequently, the energy industry is seen as the antagonist in this storyline. Companies are seen as abusing and exploiting the public rather than providing an essential fuel to society.

• “I would hope said representatives would have the moral strength to stand up for what’s right and not for what makes us monetarily wealthy.” (2008-52560)

• “And last year, their profits were in the BILLIONS!!! How much more do they need?” (2008-52884)

If the energy companies are the antagonists, the BLM has a choice. It can be the protagonist by stepping up to its obligation to protect the land and the public interest. Alternatively, it can be an accessory to the raid on public resources. This differs from the Irresponsible Government storyline, where the government is itself the threat. In the Misuse storyline, the BLM has the choice to allow or prevent the energy companies’ abuse of public resources.

• “The BLM should manage the land for all of us, not just the extractive industries.” (2008-50573)
• “Please honor the government’s commitment to preserve and protect public lands.” (2008-51441)
• “The companies will make a profit today, and we will pay many times over tomorrow.
• “Please do not allow this folly...” (2008-51452)
• “Our Democracy holds this land in trust for the use of the public, that we and our posterity can know the beautiful bounty of the American Wilderness.” (2008-51457)
• “Our public lands were never intended for this. It is not in the public’s best interests to basically destroy these open areas.” (2008-51516)
• “When will you people STOP catering to the oil industry and START listening to the people who are asking for more investment in renewable energy (and they ARE the majority!)?!?!?” (2008-52073)

Commenters are not categorically opposed to energy development. It is the particular combination of oil shale, tar sands, and public lands that is objectionable. Conventional oil and gas, and OSTS development on private lands would be acceptable to some authors. Some comments suggest that energy alternatives would be a better choice. Use of land for renewable energy is suggested in about 20% of the texts.

• “I can accept limited oil and gas drilling on public lands because there is some possible long term restoration from their impacts. Restoration of any acceptable quality is not possible from tar sand and oil shale mining.” (2008-00337)
• “I still believe though that a land swap for drilling rights would silence a lot of critics since we would all be benefiting directly from such an arrangement.” (2008-00144)

• “It has the worst carbon imprint of almost any form of energy development.” (2008-00285)

• “WE MUST have a crash Apollo program to bring renewables on line NOW.” (2008-50464)

• “Maybe you should consider putting wind turbines up instead…” (2008-51913)

• “Rather, the BLM should support renewable energy generation on our lands such as wind energy.” (2008-00337)

**Worldview.** The cultural worldview most clearly expressed in this storyline is hierarchical communitarianism. Authors write of proper procedures, good of the many, and the duty of the managing agency. The lack of concern about certain uses of land express the idea that nature is tolerant, while the objection to OSTS development indicates that people believe there are limits to nature’s ability to recover from disruptions. Some egalitarian-type comments assert that nature would be inevitably harmed, that no energy development should be tolerated, or that energy needs should be managed in lieu of providing supply. However, the acceptance of land use and the attempts to persuade the BLM to fulfill its duty to protect land adhere most closely to the ideals of hierarchical communitarianism.

**Framing.** In the 30% of texts that express protection of public land as the desired action, the authors likewise are suggesting a positive goal frame in which the choice will
avoid loss. Only 13% of the texts advocate Alternative A, the No Action alternative. Those authors specify exactly what they want the BLM to do. In these texts, the framing tends to suggest that by making the desired choice, the public will avoid loss or harm.

The remainder of the Misuse texts tend to approach the argument with a negative frame. The goal behavior is to have the BLM protect the land by disallowing OSTS production. These comments argue that if the BLM’s choice is to allow OSTS activities, the American public and future generations will suffer inevitable losses.

**Summary.** The Misuse of Public Lands storyline defines the risk as the wrongful use of public lands. Leasing land to energy companies to pursue OSTS development will result in environmental impacts and denial of access to land in ways that will be detrimental to the public good. The energy industry will benefit at the expense of the American people. OSTS production violates the principles of public ownership and the BLM’s duty to protect the interests of current and future generations of American people. Therefore, the BLM should choose the No Action Alternative or prohibit OSTS development on public lands. The discursive elements of Misuse of Public Lands are shown in Box 5.4.
Box 5.4. Misuse of Public Lands

Irresponsible Government Storyline

The 79 texts in this storyline represent 13% of the sample. The Irresponsible Government storyline differs from the others in that there is only one form letter that takes an approach similar to this storyline, although it does not do so as forcefully as the non-form comments. The form merely states that, “The Bush administration is preparing to open up millions of acres of public land in Colorado, Utah, and Wyoming for extraction and development of oil shale and tar sands” (2008-52343). It provides no motivation for doing so. As a whole, this storyline makes strong, unfavorable assertions about the motives for irresponsible government. Table 5.7 shows the 20 most frequently used key content words in this storyline.
Table 5.7

*Frequency of Key Content Words in Irresponsible Government Storyline*

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<tr>
<td>earth</td>
<td>12</td>
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<tr>
<td>environment</td>
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</table>
**Storyline.** Whereas the Misuse storyline takes the position that the BLM and the federal government have the power to allow or prevent others to use public lands for OSTS development, the Irresponsible Government storyline claims that the presidential administration, federal government, and agencies are themselves the source of risk. The government is directly responsible for the development of OSTS. Although the energy industry may be influencing or working in collusion with the government, it is the government’s willful mismanagement that is the primary risk.

- “This oil shale plan is bad environmental policy and bad economics, but above all scandalously bad government.” (2008-00045)
- “And if your agency is supposedly protecting us from the woes of a downtrodder environment then who is going to protect us from you?” (2008-52756)
- “‘You’ are supposed to be managing the land not destroying it.” (2008-50702)
- “You are destroying the earth, and you will make life much worse for all of us if you open these areas up for development.” (2008-52017)

**Entities.** The environment is an entity at risk in the Irresponsible Government storyline. As in the Destruction discourse, one of the risks of making lands available for OSTS development is permanent, unjustifiable damage to the environment. Authors are alarmed by the lack of concern the government has consistently shown for the environment. Past and future environmental harm is a direct result of actions by the federal government.

- “This administration has done enough environmental damage.” (2008-00357)
- “This government has been a disgrace to the environment.” (2008-50790)
• “Wakeup and start directing your efforts at saving the environment not destroying it.” (2008-50838)
• “It would become utterly destructive is more land is opened up to oil drilling, and even worse if it is opened to tar sands development, which is even more environmentally destructive.” (2008-51945)
• “We no longer need an altitude of destroy first then say you’re sorry where irreplaceable environments are concerned.” (2008-51634)

The planet and the earth are also at risk due to the government’s position on OSTS development. As they are used in the texts, earth and planet have meanings comparable to the environment. However, when authors reference the earth or the planet, they tend to use terms that are more personal than when they refer to the environment. The planet and earth are referred to as “ours” in 13 texts whereas the environment is described as “ours” in two. The earth and planet are also anthropomorphized in ways that the environment is not.

• “I don’t know why we are still devastating our planet with large, gaping, ugly holes that scar the landscape.” (2008-50895)
• “No more licenses to pollute and despoil an already over-burdened earth.” (2008-50440)
• “You should be ashamed of yourselves for wanting to do such a thing to this wonderful earth of ours. She has given us a place to live and call our own and you repay her by destroying her land, her water and her air. Please do not do this, keep her clean and safe.” (2008-52086)
• “Hasn’t the planet undergone enough abuse from “civilized” man?” (2008-50745)

• “In just 7 years they have stripped the economy of its surplus and now they are stripping the earth of hers. It is time to pull the plug on this free for all and bring justice for our earth!” (2008-51002)

Public land is a resource that is being misappropriated and destroyed for private gain. Authors object to the exploitation of public land, insisting that, “private industry belongs on private land” (2008-00297). Texts reinforce the public aspect as meaning “a common resource belonging to the people of this nation” (2008-51940). There is opposition to the pressure to “lease maximum amounts of public land for private gain” (2008-52803). Public lands should lead to public benefits. The government should prevent, not cause the risks to public lands.

• “No more destruction of public lands to feed corporate coffers.” (2008-50440)

• “It is time to preserve, tend, take good care of our lands.” (2008-50551)

• “It is unconscionable to violate our national lands.” (2008-50643)

• “I am appalled that oil shale and tar sands are being opened on PUBLIC lands.” (2008-51105)

• “Of course I oppose all development of public lands for the use of oil companies.” (2008-51634)

The threat of climate change is ignored, disputed, and glossed over by the government. Comments assert that climate change is real, but also acknowledge that the government may not recognize it to be so. As a long-term, cumulative risk, the government is negligent in overlooking the significant risk of climate change in the draft
Politicians are “TOO BUSY COUNTING THEIR OBSCENE PROFITS TO NOTICE SOMETHING IS WRONG WITH THE PLANET” (2008-50984).

- “This process is a farce because the DPEIS’s discussion of the greenhouse gas effects of oil shale development has so transparently been written by the Administration’s political hacks, rather than the federal government’s scientists.” (2008-52803)

- “Global warming is real, but even if you still have doubt, you cannot dispute air quality or water quality which has drastically declined the past few decades.” (2008-52408)

- “The evidence is in, the Supreme Court has ruled CO2 can and should be considered a pollutant under the Clean Air Act, and this administration and your agency through this document sticks its head in the sand again.” (2008-00083)

**Agents and motives.** The Irresponsible Government storyline has two primary agents that take an active role and have identifiable motives. The government it is poised to make decisions driven by greed that will damage the environment, the climate, public lands, etc. The American public will suffer, as a consequence, and the proponents of this discourse vigorously oppose the government’s actions.

A third entity, the energy industry and the companies that comprise it, operate in secret, manipulating the government to serve its interests. Greed, money, and profits are motives for companies and government that are mentioned in 34% of the texts. There are insinuations that companies have influenced the government or the BLM to promote industry interests. Any actions to secure OSTS leasing have taken place at high levels,
predetermining the outcome of the PEIS. Companies and the industry benefit from OSTS development in the Irresponsible Government storyline, but their actions are not perceived as the main risk. That blame is reserved for the government.

- “It is an outrage that the U.S. Bureau of Land Management plans to lease out 1.9 million acres of public lands it’s supposed to protect in order that private companies can make huge profits out of oil shale processing.” (2008-00045)
- “I am sick and tired of the U.S. government giving billions of dollars in subsidies and credits to oil companies.” (2008-00309)
- “DON’T despoil our habitat for the oil companies’ benefit.” (2008-50318)
- “Oil company greed should not be swaying your decisions.” (2008-50454)
- “…stop the wholesale give-aways to corporate interests.” (2008-51156)
- “…do you intend to look the other way as a lackey of the “slash and bum” industries of Corporate America as they “bush-whack” and rape America the Beautiful for their own private, aggrandizement?” (2008-51654)

The government is portrayed as the presidential administration, the BLM acting as the government agent responsible for OSTS decisions, and as the federal government in general. In this storyline, the risk to the environment and the American people is the willingness of the government, the BLM, and the Bush administration to open up public lands to OSTS development. Through irresponsible management, negligence, or corruption, the government is the primary risk. The development of OSTS is seen to be contrary to the public good. Authors criticize the actions of the government in general, the BLM, and the Bush administration, sometimes in combination. Even agencies that do not exist are named as the culpable party.
• “The Federal Protection Agency for the Environment is falling way short of their job to protect these vulnerable places on this earth from Greedy Money Hungry Powers that Be.” (2008-51002)

In some texts, the government is recognized as composed of individuals who are government employees. These people are held responsible for the decisions that create risk.

• “It is not the anonymous ‘government’ making such counter-environmental decisions, it is the people who make up the government.” (2008-50702)

• “You should be ashamed of yourselves for wanting to do such a thing to this wonderful earth of ours.” (2008-52086)

• “Whatever you folks at BLM are up to this time why not alter the bad karma and do something right…” (2008-52756)

In this storyline, the government is portrayed as irrationally committed to fossil fuels. Its frenzy for oil production causes it to ignore the risks of fossil fuels and the possibility of energy alternatives. The commenters work from an assumption that fossil fuels are harmful and unnecessary.

• “Is the only word known in Washington is DRILL.” (2008-51601)

• “The notion we sit on more oil than Saudi Arabia has everyone so giddy the implications of extracting yet more oil and burning yet more coal to get it appears lost on the bureaucracy at the BLM.” (2008-00083)

• “The current administration needs to put its money where its mouth is. Bush et al. claim to want to curb global warming but with every day they attempt to
march in the opposite direction leading the world deeper and deeper into the morass of fossil fuel failure.” (2008-50440)

- “Why does the Bush administration insist on trying to waste our nations natural resources and fossil fuel stores so that we can put off alternative energy source development for a few more years?” (2008-50492)

- “In his 2006 State of the Union speech, President Bush stated that the US is addicted to oil. His solution: get more oil. That’s like saying the solution to a drug addiction is to get more drugs. The Bush prescription is utterly senseless.” (2008-51945)

The Bush administration is the target of much of the vitriol directed at the government. President Bush and his administration are criticized in 39% of the texts in this storyline. The Bush administration is seen to be dictating policy on land and energy without regard for environmental consequences. The government’s mission to protect the environment and the American people has been swept aside by the president.

- “Whta guy!! He’ll destroy our land/country to enrich his cohorts. What a legacy!! But does he really care? Don’t think so … (2008-50296) (ellipsis original)

- “The Bush administration needs to quit thinking about what will benefit them and think about how the environment is going to negatively affect their grandchildren, because they were to selfish and narrow-minded to be kind to our earth.” (2008-50712)

- “We have already lost so many precious recourses to the Bush administration.” (2008-50142)
• “As usual, Bush is trying to destroy the environment, so disobey him, he is only a president (elected not by the majority) and not the God or Dictator he thinks he is.” (2008-50080)

• “The American People are so tired of the Bush Adm. doing what you want to do against our constititution and our laws.” (2008-51947)

• “The Bush Administration and everyone in it has done and continue to do more damage to our Planet than any administration or government in the history of humankind.” (2008-51461)

Greed and cronyism are the motivations attributed to the Bush administration. The president himself is greedy, his administration is greedy, and they support the greed of others through their “gross miscarriage of power” (2008-50142) and political quid-pro-quo.

• “It is time to stand up to this administrations pandemic greed.” (2008-51042)

• “IT NEVER CEASES TO AMAZE ME HOW CALLOUS AND GREEDY THIS BUSH ADMINISTRATION HAS BEEN CONCERNING SHOVING OIL AND GAS DEVELOPEMENT DOWN OUR COLLECTIVE THROATS …” (2008-50894)

• “It has become the mission of this administration to confiscate public lands for the president’s own greedy goals.” (2008-51196)

• “The Bush administration needs to quit thinking about what will benefit them and think about how the environment is going to negatively affect their grandchildren, because they were to selfish and narrow-minded to be kind to our earth.” (2008-50712)
• “Under the Bush administration, these conglomerates have plundered our national treasures, returning only favors to their political friends.” (2008-51634)

This discourse calls out the Bush administration as a risk, but there is also a sense that the same lack of care and ethical disregard is endemic to the federal government. The government and its agencies have “turned into enablers for any goldrush, get in, get out, make a fortune, hair-brained idea someone or a group of someones comes up with” (2008-52551). The U.S. government is “giving billions of dollars in subsidies and credits to oil companies” (2008-00309) and “handing out’ American taxpayers’ lands” (2008-51373) for the benefit of the energy industry.

In the Irresponsible Government storyline, the BLM is one of a group of “politically motivated agencies doing Environmental Impact Statements” (2008-00376). The BLM turns a blind eye to the impacts on the environment and local communities in an “unending search for oil” (2008-51665). The BLM is a risk because it is not fulfilling its obligation to protect public lands and the public interest.

• “The BLM needs to begin working for the public, current and future, not industry, as I have seen too many times.” (2008-52048)

• “I want to see the Bureau finish its job of serving the public interest, and not the interests of selective, private corporations.” (2008-52991)

• “I am outraged that the BLM is planning to subject two million acres of public land to oil shale development.” (2008-00311)
• “We all know that you have had a somewhat checkered past in your efforts to protect our public lands and that you have been (and are still) pressured from Mr. Bush appointed agency heads.” (2008-00376)

Among those who perceive the BLM to be a risk, some authors hold out hope that the agency may have good intentions and be able to resist the pressure of the political climate in Washington. The Bush administration, and in one comment, Congress, is behind the expectation that the BLM allow commercialization of OSTS. In these texts, the authors plead with the BLM to do its job or to make the right choice.

• “Bush won’t be in office forever. Hopefully, if we work together, we can prevent more damage from being done.” (2008-50485)

• “Do your job- Protect Our Public lands, waters & wildlife! You work for citizens, not industry!” (2008-50030)

• “Why is the BLM in such a hurry to issue commercial leases? It seems that BLM might be bending due to political pressure rather than managing the land for ALL users.” (2008-00261)

• “I realize Congress required the BLM to publish regulations establishing an oil shale and tar sands leasing program within the Energy Policy Act of 2005.” (2008-00083)

• “Please do the right thing and protect America’s resources and public property. To do otherwise is shameful.” (2008-51940)

However, the presumption that the BLM wants to do the right thing is not a widely-held position. The BLM is more commonly portrayed as a malevolent force acting to satisfy the hunger for power and money.
“What you are attempting to do with Natural Resources is no different than what Hitler attempted to do with Human Resources.” (2008-50406)

“Can you think of more ways to destroy Nature???” (2008-50785)

“Stop mining our landscape - you are supposed to preserve our public lands - not sell them off to the highest bidder!” (2008-51847)

“How can you be so greedy, so single-mindedly blind to what you are doing.” (2008-52017)

“BLM IS WAS SET UP TO PROTECT AMERICA’S LANDS, NOT AS A REAL ESTATE AGENT FOR POLITICANS!!!!” (2008-50424)

In the Irresponsible Government storyline, authors allege that the government is beholden to the energy industry. Government prioritizes the interests of energy companies, although they remain hidden, shadowy figures on the sidelines of the policy and decision-making process.

“Right now the balance is skewed toward energy development; and massive leasing for oil shale development that hasn’t been proven economically makes no sense. That is, unless the energy industry is setting the agenda.” (2008-00257)

“Be gone, bad apples. Rush to the opening arms of those corporations whose special interests you’ve sought to promote ahead of the public welfare.” (2008-00297)

“Apparently one must just “follow the money” to find out how these decisions are being made … ” (2008-50606 ellipses original)
• “This sort of thing is a desperate attempt to prolong the life of the oil companies. At the expense of the earth. Give it up already.” (2008-51683)
• “Your obvious catering to the oil industry has been gaining a wider base of attention in this country and is truly unAmerican.” (2008-51940)

The American people are fed up and they feel that their government has sold them out. The public will bear the costs of devastation and responsibility for cleanup, while others profit at their expense. The authors in this discourse speak on behalf of all citizens when they say, “We have had it with this Administrations greed for a buck. The American People have had IT” (2008-51947).
• “Im am so fed up with the freaking govt destroying everything.” (2008-51162)
• “Please don’t sell out.” (2008-50485)
• “…the American people end up owning a giant landscape of rubble.” (2008-00045)
• “The last time we had this extraction industry in our state, they left without notice, shattering the local economy and leaving behind waste that has yet to be cleaned up. It remains to be seen if $24 million of our tax payer’s money will be sufficient to take care of the mess left behind.” (2008-00253)
• “Taxpayers are footing the bill for the buyout and cleanup of this horrific pollution that was launched by greed and ignorance.” (2008-50895)

Authors contend that the American people are being treated unfairly. Public resources are used for private gain. Companies are given preferential treatment while ordinary people are victimized by the avarice of the energy industry and the government.
• “These lands are “PUBLIC”. This indicates that George Bush does not own these lands, they belong to the American people.” (2008-51196)
• “I am sick and tired of the U.S. government giving billions of dollars in subsidies and credits to oil companies. They pay less than their fair share.” (2008-00309)
• “The American people have been trodden upon and abused enough and so have our natural resources.” (2008-51634)
• “…dirty fuels production hurt more Americans than those it rewards…” (2008-00376)
• “People no longer want to hear that you are just ‘doing your job’.” (2008-50702)
• “I am shocked and disappointed and will try everything in my power to stop this because I know how this can affect my life and my generation as well.” (2008-52184)

**Metaphors, rhetoric, and situated meaning.** Of all the storylines in this case study, the Irresponsible Government comments express more anger and hostility than in any other. Commenters use expletives, shame, and put curses on the government personnel. Such bluntness may stem from the belief that the government is corrupt and incapable of making a legitimate decision. There is little to gain by the politeness, civility, and respect more common in other storylines.

• “I hope each BLM idiot who is responsible for such an irresponsible stunt goes square lo hell!!” (2008-00311)
• “Destroy the world some more, fucking idiots! Why should you care ..... it’s just more money & benifits to you ..... right?” (2008-50558 ellipses original)

• “You are responsible for your actions, and these actions are reprehensible.” (2008-50598)

• “SHAME ON YOU FOR MANY ETERNITIES!” (2008-51461)

• “You should be ashamed of yourselves for wanting to do such a thing to this wonderful earth of ours.” (2008-52086)

In a twist on the rhetoric of future generations, commenters go so far as to wish misfortune on the progeny of the decision-makers.

• “…shame on you. I hope your kids know what you are doing and are as embarrassed as I am of you.” (2008-51091)

• “The only revenge I can imagine (what goes around comes around) which might eventually bring justice to your crime is that your grandchildren should suffer a slow and lingering and painful death such as you are so calously affording to other species of life as our planet implodes around us.” (2008-50406)

• “MAY THEIR FILTHY WEALTHY GRANDCHILDREN CURSE THE SOURCE OF THEIR WEALTH FOR THE PRICE PAID IN A RUINED PLANET TO MAKE GRANDDADDIES’ DOUGH.” (2008-50984)

Morals and ethics are invoked as persuasive devices by the authors in this storyline. Authors describe the actions of the government as “morally reprehensible” (2008-00083). The decision-makers have “no moral compass, no common sense” (2008-00297).
• “Lets get busy and become members of the moral race. Quickly!” (2008-50762)

• “You are helping to destroy our nation and make our resources available to private companies in a way that is deplorable in both its moral and ethical corruptness.” (2008-51940)

Themes of crime and violence run through the Irresponsible Government texts. Words like plunder, pillage, rape, ravage, and war are used to describe the actions of the government. They suggest the government is so misguided that it has turned on its own people.

• “I have not had the opportunity to visit the beautiful lands that are about to be under attack.” (2008-50895)

• “DO NOT DEVELOP OR DESTROY OR TAKE/STEAL FROM THE PUBLIC LANDS.” (2008-50598)

• “The resource thieves must be stopped.” (2008-50643)

• “How absolutely deplorable! High crimes and misdemeanors abound!” (2008-51461)

• “Bush, his croneys and anyone associated with this abomination should be executed for crimes against humanity. A sentence that should have already been carried out for Bush and Cheney.” (2008-50959)

• “It is a crime and an outrage that such outrageous, ill-planned exploitation is even being considered by this government.” (2008-51586)

• “Opening up land for such destruction would be nothing less than criminal.” (2008-51945)
• “This administration will rape the planet for every scrap of oil.” (2008-50959)
• “Now you want to declare war against the environment of Colorado and Utah for one thing: oil.” (2008-51807)

Assumptions about relationships and figured worlds. The most significant assumption about relationships, and one that authors believe has been breached, is the belief that we should be able to trust our government to fulfill its obligations. The government, through the BLM, should manage the public’s lands in the public interest. Government should consider impacts to the climate and environment, and it should be immune to political and financial motivations.

• “The BLM is supposed to be protecting these Public Lands, not burning and or rapeing them for any reason.” (2008-00086)
• “This level of irresponsible management does not lead to trust.” (2008-00253)
• “Please give me a glimpse of hope in my governments ability to enact sound environmental policies and not pander to the oil companies interests.” (2008-52812)

Greed, money, and profits are motives for both companies and government that are mentioned in 34% of the texts. The reality of the world these authors describe is that greed for money and power drives energy and land use decisions. The OSTS proposal is nothing more than a “politically expedient and greed-catering debacle” (2008-52625).

• “My God, must GREED be the driving force behind all that we do?” (2008-50406)
• “One should not underestimate either the greed or shortsightedness of those already promoting the notion oil shale and tar sands are the “answer” to our national energy dilemma.” (2008-00083)

• “We have seen so much destruction since the Bush Administration has taken power.” (2008-51022)

• “This is an act by an out-going president who no longer has any power; so he’ll continue doing what he did throughout his 2-term tenure, and that is to provide for the wealthy, protect corporations, and ignore any issues regarding the preservation of our environment.” (2008-50296)

**Worldview.** This storyline falls on the communitarian side of the group dimension. A belief in the appropriateness of government regulation is expressed throughout. A fundamental concern of the Irresponsible Government discourse is the malfunction of government. People express the belief that the government has a role in limiting choices to prevent harm to society. This storyline has both high and low values of the grid scale represented. From the hierarchical communitarianism perspective, the government should be an organization of law and order. It should have clear definitions of right and wrong and prioritize the good of the many. Egalitarian communitarian values are expressed in texts discussing fairness, energy conservation, and concern for future generations. The position that nature will be irreversibly harmed and the authors’ advocacy for energy conservation are also egalitarian. The storyline is firmly communitarian, but it occurs across the hierarch-egalitarian range of the grid dimension.

**Framing.** The goal of the authors in this set of texts is to prevent OSTS development. Only 6% recommend a particular PEIS alternative, but all want the OSTS
leasing stopped. The texts describe the harm and losses that will occur if the BLM chooses to pursue the path of OSTS development. In this respect, this discourse uses a negative frame of suffering losses. Two factors make the goal framing unusually complicated. First, for those who hope to benefit from money and political favor, making such a choice would be forgoing a personal gain for a greater good. This requires that the BLM set aside its motivations of greed and power to place the good of the public over private gain. Second, according to the authors, government corruption and profiteering from public resources are already causing losses for the American people. Not only do the decision makers have to avoid losses due to irresponsible government, they have to change the status-quo in order to do so. Government officials must forego future gains and suffer losses of current benefits.

**Summary.** The Irresponsible Government storyline is summarized in Box 5.5. The government is not fulfilling its responsibility to the American people to protect public interests. The federal government, the Bush administration, and the BLM are causing damage to the environment, perpetuating climate change, and plundering public resources. They are willing to sacrifice the environment, the climate, and public resources for the sake of energy development. This is an ongoing problem that has resurfaced in the proposal for OSTS commercialization. The solution is for the government to set aside its own greed and that of energy companies and faithfully execute its duty to protect the public land and public interests for the good of all Americans.
**Box 5.5. Irresponsible Government Storyline**

**Not Enough Information Storyline**

With 57 texts, this storyline consists of 9% of the total sample. Table 5.8 shows the most frequently used key content words. This storyline differs in character from the others. It includes comments that are more extensive and technical, with some running as long as seven pages. Many of the authors are professionals and scientists, and most appear to be well-informed. They demonstrate expertise and experience in matters of policy, energy production, air quality, and history of the region. Comments frequently reference passages from primary documents, and some perform calculations they find missing from the analysis in the draft PEIS. There are references to documents that have
Table 5.8

Frequency of Key Content Words in Not Enough Information Storyline

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<th>Word</th>
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These are anti-OSTS campaign letters that recommend that no action be taken until the BLM can provide adequate or “less speculative” (2008-00274) information. The form letters charge that Congress took action on OSTS before relevant information on OSTS impacts was available. The PEIS is challenged on the basis that it “inadequately presents foreseeable cumulative impacts” (2008-00333). Technology is referred to as experimental, while water and energy inputs also need to be assessed before proceeding with OSTS development. Form letters only state that without better information, the BLM cannot determine the “true environmental and social risks of this program” (2008-52627) and so it should wait until more is known before making a decision. The forms do not go into the detail and expert-level calculations that the independent comments provide.

**Storyline.** This storyline challenges the BLM’s ability to make an informed decision due to the lack of critical information. There are too many unknowns - water consumption, water sources, extraction techniques, waste disposal, energy inputs, economic impacts, noise, roads, school enrollment, etc. - to be able to assess the full impacts that OSTS leasing and commercialization will have. More time and information are needed for proper evaluation of the environmental impacts of the alternatives.

- “Until the necessary studies have been made and the technology has been proven, hasty and unnecessary development would be premature.” (2008-00307)
• “This analysis is very cursory and completely fails to take into account the true cumulative impacts to cultural resources that would likely occur if extensive oil shale and/or tar sands development were allowed to occur under either Alternatives B or C of the draft PEIS.” (2008-52385)

• “I favor the use of natural resources. However, its process must be orderly, regulated and fair to all stakeholders. Until all facets of oil shale development and the respective costs and benefits are known, the Department of Interior, BLM and related agencies must not surrender of public assets to private industry, speculators or exploiters.” (2008-00023)

• “I understand that this analysis is program-level, but the analysis seems very weak and no details are provided.” (2008-52733)

This storyline is mixed in its perspective on OSTS development. Word choices and potential risks indicate that many are opposed OSTS. They use the too-little-information argument to show the impossibility of responsible OSTS production. More than 60% of the authors appear to assume that more information will inevitably lead the BLM to the conclusion that OSTS is infeasible.

• “Until all facets of oil shale development and the respective costs and benefits are known, the Department of Interior, BLM and related agencies must not surrender of public assets to private industry, speculators or exploiters.” (2008-10023)

• “I suggest the BLM take the eventual carbon dioxide output and the consequences into consideration along with deferring this EIS until there is adequate information to proceed.” (2008-10087)
A smaller set of commenters are open to the idea of OSTS development but advocate a slow, deliberate approach. These commenters do not appear to rule out the possibility of eventual commercial production. Their support for OSTS is contingent on more information, better technology, and careful evaluation of the evidence before any decisions are made.

- “At some time in research and development, shale will become extractable. Has’t happed yet so we neeed to wait until the system works to benefit all.” (2008-52994)
- “My wife and I are completely and vigorously opposed to the commercial leasing of any public land for oil shale development until such time as there is a proven and tried method of extraction that will not use excessive water and energy.” (2008-00018)
- “Any such commitment should wait until the technology exists to prove that oil shale can be produced without an unacceptable impact on global warming, air quality, land, water and wildlife habitat.” (2008-52613)

**Entities.** One of the unknown factors for OSTS development is the technology to be used for extraction. A successful method has not been developed, although possible technologies for in-situ and surface production have been proposed and are discussed in the PEIS. However, projections of environmental impacts cannot be made or fully assessed without a specified method. Extraction technology is referenced in 54% of the Not Enough Information storyline.
“The rush toward commercial leasing for oil shale is unwise because the means of extracting energy from oil shale and tar sands at a commercial level remains unproven.” (2008-00259)

“From a purely economic perspective, I do believe it would be a wise choice to AT THE VERY LEAST hold off until the technology is more developed in the private sector…” (2008-00343)

“It is impossible for the BLM to truly assess environmental impacts when the potential technologies to be used are not even fully developed yet.” (2008-52441)

“The oil industry does not currently possess the technology to extract oil from these deposits without significant environmental impact, so the need to lease these lands for development now is premature at best.” (2008-52841)

There are many unanswered questions about water in the PEIS. Water availability and water consumed in OSTS production are concerns. Authors express doubt that the BLM has considered impacts on other uses, such as drinking and irrigation water. The OSTS region is “arid and water-poor” (2008-52536), a desert where “water is in limited supply so it is imperative we not use water irresponsibly” (2008-52994). Water is a scarce resource, and there are many ways in which OSTS could pose a risk to water in the region.

“The amount of water necessary to extract oil shale will outstrip the supply of water, affecting municipalities, the agricultural industry and future growth in the region.” (2008-52643)
• “The issue of pollutants entering the water is a much longer term issue and is not as readily definable, as is the lowering of the water table.” (2008-52855)

• “While current drought conditions are acknowledged,…recently published suggest that even the BOR may be optimistic as to water availability.” (2008-00177)

• “Why not wait until we know better the availability of necessary water, and how our need for oil is balanced against preservation of water and of beautiful country in western Colorado and central Utah?” (2008-00296)

• “Specifically, the BLM’s analysis should include county-level analysis for areas within and outside of the ROI, particularly where the loss of water for agriculture may affect counties outside of the ROI.” (2008-52669)

The PEIS does not provide enough information about where water will be obtained, leaving the issue subject to “intensive negotiations between various parties, including water right owners, state and federal agencies, and municipal water providers as well as the developers. [Draft PEIS, page 3-74]” (quoted in 10177). Downstream water users are considered to be at risk in this storyline. Conversely, they also pose a potential risk to OSTS production. People and states in the lower Colorado River basin have water rights that are likely to be impacted by OSTS demands. Downstream water users are not active participants at this stage, but they are likely to become agents with strong motives if and when they are impacted by water reductions.

• “Lower Basin States … are almost certainly not going to be willing to accept a 1.5 million acre-ft reduction (20%) to help facilitate the economic
development of the Upper Basin States by virtue of the introduction of a new industry.” (2008-00177)

- “Certainly there is water here, but taking it comes at the expense of the entire southwest population base and agricultural industry, including Southern California. Above the concern of poisoning the entire upper Colorado River Watershed, one must question the voracious consumption of this scarce resource and the connected affect it would have on the whole of the southwest, and its millions of residents.” (2008-52875)

- “Also, downstream users of Colorado River water in Arizona, Nevada and California would be severely impacted. This will, undoubtedly, result in a massive lawsuit by these states costing the Federal Government huge funds—money which could be more wisely spent advancing alternative sources of energy.” (2008-00020)

This discourse recognizes the Energy Policy Act of 2005 as the reason for the time and manner in which the PEIS is being conducted. The Act requires the conduct of an expedited PEIS for OSTS, to be completed within 18 months of the Act’s passage. This is a very short window for such a large project, a point noted by authors who understand the process. The driving force behind this PEIS is the 2005 Energy Policy Act, which requires that the BLM take some action on leasing tar sands.” (2008-52789)

- “While it is understood that the Energy Policy Act of 2005 required a rapid release of a PEIS, it should be noted that this timeframe was mutually exclusive with many of the recommendations of the Rand study, most of
which are common sense measures required prior to any responsible decision
on large scale mineral rights leasing of Federal Lands.” (2008-52864)

Commenters offer their criticism of the Act and its passage by Congress. One
states quite bluntly that for the BLM to enact policy on this basis would be to “capitulate
to an industry written, poorly conceived congressional mandate that wholly fails to take
into account the massive known and unknown environmental impacts that large scale
resource production from the shale would impose upon the affected areas” (2008-52875).

• “Resist the temptation to fund this oil shale endeavor with direct government
partnerships or direct government price support as is authorized in the
ENERGY POLICY ACT OF 2005.” (2008-52842)

• “I find the assumption for water use found in the Draft PEIS to be a hopeless
fantasy produced more to satisfy Congress and the Energy Policy Act of 2005,
than to be of any practical use.” (2008-00177)

Among the criticisms is the position that the Energy Policy Act of 2005 is a
contravention of the NEPA process. In this view, the Act itself contains provisions that
should have undergone a NEPA review to determine the impacts of its mandates. There is
also an understanding that the Act effectively predetermined the outcome of the PEIS by
its directive to the Secretary of the Interior to commence commercial leasing of OSTS
lands.

• “Given that no legislative NEPA process was conducted in preparation of the
Energy Policy Act of 2005, the current PEIS must serve that purpose and …is
grossly inadequate for that purpose.” (2008-52880)
• “Alternative A No Action Alternative This Alternative is unrealistic. but it is understood that BLM must consider such an Alternative to comply with NEPA. The Energy Security Act of 2005 contemplated the need for oil shale as a source of energy for the nation and this alternative would not meet that mandate.” (2008-52552)

• “Yet, the PEIS process has been expedited to conclude in favor of leasing public lands to the maximum extent well in advance of any industry decision on whether this will ultimately be commercially viable.” (2008-52880)

Agents and motives. For those with knowledge of the Energy Policy Act of 2005, the BLM is an agent recognized as having been given the impossible task of assessing the impacts of an unknown technology and an unrealistic time frame in which to complete it. Without specifying the extraction methods to be used, or what lands energy companies will want to lease, the effort to predict and evaluate environmental impacts is viewed as premature.

• “Even though the law requires it, you have no business writing this when you don’t know what methods are going to be used to do the work.” (2008-52816)

• “It is impossible for the BLM to truly assess environmental impacts when the potential technologies to be used are not even fully developed yet.” (2008-52441)

• “I feel the Administration, Department of Interior, and the BLM have put the cart before the horse.” (2008-52810)

• “BLM should wait until more is known about just how this program would be carried out before completing a programmatic EIS.” (2008-00275)
The BLM’s obligation under the Energy Policy Act of 2005 to commercialize OSTS is at odds with the federal requirement to manage for multiple-use under the Federal Land Policy and Management Act of 1976. This leaves the BLM torn between accomplishing two binding but contradictory directives.

- “Agency regulations and federal law require that the BLM manage its lands for multiple uses, yet the agency admits that oil shale and tar sands development will displace every other public use of public land to benefit a few private companies.” (2008-00275)
- “The extraction process will take away the multiple use of these public lands because nothing is compatible with oil shale.” (2008-52643)
- “There is no real reason to hurry this process, except to insure that the industry gets access to the resource at the earliest possible date and at the least possible cost, which is a specific detriment to the public, who BLM is supposed to represent.” (2008-52880)

Aside from the acknowledgement of the Energy Policy Act of 2005, the BLM is seen as having produced a flawed, hastily prepared document, lacking in details and missing critical information. The BLM has only created the appearance of compliance with NEPA. Upon close analysis, the PEIS “falls far short of meeting the minimum level of assessment required for adequate decision-making” (2008-52740).

- “I must say that this document looks more like a feeble attempt to circumvent NEPA than it does a legitimate attempt to comply.” (2008-52880)
• “Humans will necessarily have an impact on their environment, but any risks of permanent damage we take in manipulating the environment are only justified by necessity, not convenience.” (2008-00295)

• “Again, this PEIS is very premature and rushed for the magnitude of the proposed development on these public lands in Utah, Colorado, and Wyoming.” (2008-52862)

By promoting the commercial leasing of OSTS, the BLM is preparing the “surrender of public assets to private industry, speculators or exploiters” (2008-00023). It is acting in careless ways, unconcerned with the possibility of “economic and environmental catastrophe” (2008-00249). As in other storylines, the BLM is fumbling the management of public lands, this time due to its slipshod PEIS analysis.

• “To propose leasing at this time is playing into the hands of speculators at the expense of the American public.” (2008-00020)

• “I am concerned that BLM is prepared to sacrifice large tracts of the public lands without being able to provide adequate information to determine the true environmental and social risks of this program.” (2008-00275)

• “You’ve got it backwards. This land and its resources belong to the public, not the energy industry.” (2008-52880)

• “This is a boondoggle to the American public to allow mining leases that will destroy our land-especially in light that most of these companies pay a pittance for these leases.” (2008-52733)

The BLM and the PEIS are taken to task by knowledgeable citizens and experts. They offer sharp, specific, and well-backed critiques of the PEIS. Where the BLM is
thought to be making procedural mistakes, contravening law, or ignoring the best available science, the authors point that out. Flawed or missing assessments are criticized. Commenters even go as far as to supply missing information. Topics for critique range from economic impact analysis to carbon emissions to electrical power inputs to hydrogen use for processing raw shale oil.

- “I do not believe that the agency has properly used the IMPLAN model to fully disclose the estimated regional effects of oil and tar sands development, and the impact on other sectors such as recreation or agriculture.” (2008-52669)

- “Please further explain how OSTS will contribute to global climate change and how federal permitting agencies will control carbon emissions. The assertion that “Increasing CO2 concentrations also lead to preferential fertilization and growth of specific plant species” at id is also arbitrary and not supported by scientific data.” (2008-52768)

- “I have calculated that 149,000 MW of new electric generation would be required at 124 new 1200 MW plants within the three-state project area (equivalent to 44% of the total coal-fired utility generating capacity in the US today) just to produce the oil crude, excluding further refining, transport to markets and other primary and secondary effects, including the mining and transportation of the coal.” (2008-52880)

- “Using the low end of the hydrogen requirement and ignoring losses yields a daily hydrogen requirement of about 38.5 million SCF for the nominal 50,000 BID shale oil single-site plant contemplated in the draft PEIS. At the high end,
hydrogen requirements would exceed 86 million SCF/D. …This implies 300 to 700 trailer deliveries daily for a single 50,000 BID plant.” (2008-52536)

Knowledgeable commenters are also familiar with policy, law, and the complex interactions of government. Authors reference other federal agencies, such as the Department of the Interior, Department of Defense, Department of Energy, Bureau of Reclamation, Fish and Wildlife Service, and Forest Service. Authors refer to the 2005 Rand Corporation study on oil shale prepared for the National Energy Technology Laboratory of the U.S. Department of Energy. Other state, federal, and non-government documents, such as EISs, Resource Management Plans, Executive Orders, patents, and information from energy companies are part of the intertextual references that appear as evidence to support the authors’ positions.

- “The 2005 Rand report (p. 21) states “Questionable commercial readiness and high production costs pose serious problems that currently prevent oil shale development.”” (2008-52880)

- “Reference is made to U.S. Patent 5059303 and British Patent GB2073288 as representative of technical efforts to reduce the severity of hydrogenation.” (2008-52536)

- “As the recent multi-State negotiations resulting in the agreement that allowed the approval of the Final EIS for Colorado River Operations under Low Reservoir Conditions demonstrated, tinkering with the provisions of the Colorado River Compact is complicated and fraught with legal issues.” (2008-00177)
Companies and industry are discussed in 46% of the texts. Companies are recognized as being driven by profits and market forces. Authors remind the BLM that companies are not serving the public interest. They willingly take public resources and support, but they do not create sustainable local economies in return.

- “It is popular knowledge that many energy companies are making handsome (some would say obscene) profits and research and development can well be accomplished on their own properties.” (2008-00023)
- “It is not a reliable industry. It has always been a boom/bust scenario and there have been no changes adequate to believe that it will be any different in the future.” (2008-52810)
- “Premature leasing will almost inevitably lead to pressure for subsidies to sustain commercial development until it becomes profitable without subsidies. This may be never, at which point the industry will leave when the subsidy inevitable dries up.” (2008-00249)
- “Too often, local American communities are subject to the impacts of high-paced energy resource development, only to be left holding the bag when the industry decides to pull out if the economics of development aren’t sufficiently profitable.” (2008-52841)

Despite their profit-seeking motives, companies are portrayed as unready to develop OSTS. The technologies belong to the companies, and those technologies are still experimental and may never be viable for commercialization. Some comments suggest that the Energy Policy Act of 2005 and the PEIS are pushing companies toward a resource they are not ready for or interested in using.
• “Be that as it may, as of this writing, the oil shale/tar sand “industries” are, realistically, still in their infancy.” (2008-00343)

• “The PEIS states that there has been no interest by industry and that there is no technology available for extraction. There is no demand for leasing.” (2008-52789)

• “In the major media, Shell has stated that it will not be in a position to determine the commercial viability of its proprietary in-situ process for oil shale until at least 2010 and will use data from its two R&D leases under EPAct 2005 to make that determination. Proprietors of other oil shale technologies are even farther from such determination.” (2008-52880)

**Metaphors, rhetoric, and situated meanings.** The rush to complete a PEIS is a topic of criticism in the Not Enough Information storyline. Discussion of hasty preparation and premature decision-making is common. The environmental impact process is rooted in legislation, rules, and legal precedents that prescribe a careful, deliberate approach that should be based on the best available science. The heart of this storyline is the assertion that the PEIS is not careful, thorough, or well-supported by science.

The BLM’s hurry to make a decision without sufficient information about technologies and locations, or the time to perform thorough analysis is roundly criticized. Authors note that the rules and the directive of NEPA for agencies to take a hard look at the direct, indirect, and cumulative environmental, cultural, and socioeconomic impacts are not followed. In this respect, the PEIS is “very cursory” (2008-52382) and “fails to fulfill the intended purposes of a PEIS” (2008-52858).
• “It appears this EIS is being forced through without proper information which means that there can be no realistic evaluation by anyone including the BLM.” (2008-00087)

• “How can informed decisions about the allocation of massive amounts of public lands to leasing be made without any information about the potential impacts, both of the subject action and cumulatively?” (2008-52880)

• “The process needs to be slowed down so that all affected parties have adequate time to review the processes, technologies, impacts, viabilities and other important issues. locally, regionally, nationally and globally.” (2008-52880)

• “It is impossible for the BLM to truly assess environmental impacts when the potential technologies to be used are not even fully developed yet. The BLM needs to go slow and carefully assess first.” (2008-52441)

• “I must confess to being stunned by the reliance on obsolete data in the development of the assessment of available water for OS&TS development.” (2008-00177)

• “I propose that this PEIS has not completed a thorough study of the consequences to the Western States of massive increased water usage in the upper Colorado River drainage if the preferred alternative is granted.” (2008-52875)

One of the ways commenters argue that OSTS development is unwise is by pointing at past failures to successfully develop energy sources in the region. The pain of past cycles is not forgotten, and the pattern of boom and bust in energy development is
perceived as a significant risk. Only 16% of the texts in this group refer to boom and bust, but this represents more than half the references in the entire sample. The accounts are personal and describe how the local people struggled but eventually recovered.

- “We came to realize during this time that the only ones you could really count on for support were your neighbors. Continuing the good neighbor tradition, I consider it a responsibility to comment on gross deficiencies in the oil shale part of the plan as it relates to the Piceance Basin in particular.” (2008-52842)

- “I was a resident of Colorado when the oil shale program in that state shut down in 1982, and recall how devastating that was to the communities formed to support the project. Too often, local American communities are subject to the impacts of high-paced energy resource development, only to be left holding the bag when the industry decides to pull out if the economics of development aren’t sufficiently profitable.” (2008-52841)

- “To rush the process now without a clear and practical plan will lead to bigger Black Sunday busts than the past ones.” (2008-52966)

The Black Sunday bust in 1982 is the most common reference among these authors, but some experienced earlier busts or relate the risk to the failures of the U.S. Atomic Energy Commission’s Rulison and Rio Blanco experiments. Rulison and Rio Blanco were part of the Plowshares Program, an attempt to stimulate natural gas production using subsurface nuclear explosions. The experiments were unsuccessful and left two hazardous sites near Rifle, Colorado.

- “Let me know if any of the experience with the 1974 program would be of any value.” (2008-52940)
• “As a longterm resident of Wyoming, I have seen another oil shale boom and rush come and go, with the resultant empty towns and economic bust. As I recall the late 70s and early 80s, a lot of hope was placed in oil shale development; and frankly, it was a dud.” (2008-52612)

• “Before Synfuels there was The Plowshares Project and generations of similar failed public-private oil shale ventures that stretch back a century.” (2008-52842)

• “We do not need another scenario like Project Rulison and Project Rio Blanco (underground nuclear explosions used to free the gas from tight sands). Apparently, the “scientists” and politicians involved in those projects were so eager to find a peace time use for nuclear power that they were more concerned about following through with their projects than accessing the potential outcome --- contaminated gas! It appears the same thing is happening in regards to political influence and insufficient science in planning for oil shale. Remember: it is impossible to put the genie back in the bottle.” (2008-52810)

The commenters in this storyline are aware of the six research, demonstration, and development leases that were initiated shortly after the passage of the Energy Policy Act of 2005. The RD&D leases are unknown or largely ignored in other storylines, but in the Not Enough Information storyline, authors suggest that the PEIS decision should wait until data is available from RD&D leases. The RD&D outcomes become yet another point of missing information and further evidence of premature decision-making.
• “It seems particularly shortsighted of the BLM to proceed with any leasing until results from the experimental Research and Development plots are available; and more to the point; that those results prove that this is a sensible, efficient, and lesser-impact form of energy source than our current uses of the public resource for coal, oil and gas.” (2008-52612)

• “Results from experimental R&D oil shale pilot projects are pending. Let’s wait for those results.” (2008-52613)

While the energy and water requirements for commercial OSTS are still uncertain, there is some preliminary data on water and energy required to produce oil from OSTS. Commenters find the consumption of water and energy to be unacceptably high. Water or energy inputs may appear as separate concerns in a text, but they often are discussed in tandem to illustrate the impossibility of a viable OSTS industry. Authors find that “the amount of water and power needed compared to the value of the power gained does not make sense” (2008-52750).

Water consumption and contamination are perceived as risks to regional water supplies. The problem is compounded by the location of OSTS in arid, drought-prone states. The use of water for OSTS production is considered a direct threat to human health and wellbeing. OSTS is expected to impact groundwater and surface waters.

• “The amount of water needed for this process is prodigious. Water is the commodity in shortest supply worldwide and especially in the Intermountain West. To consider using water needed for life in the communities and fanning activities for energy development is callous and dangerous to citizens’ health.” (2008-00020)
• “The water will be dried out and local committees will not have any water to depend on.” (2008-00215)

• “I am particularly concerned at wasteful consumption of our increasingly scarce water resources, given that we are by no means out of the drought zone here in Wyoming, or Utah.” (2008-52612)

• “By the proponent’s admission, this process will require 3 to 5 barrels of water for each barrel of oil produced. A cursory examination of the geographic areas that the basins lie in can only yield the conclusion that these water resources do not exist.” (2008-52875)

• “The PEIS, shows how there will in all likelyhood be a reduction in the ground water level and its quality.” (2008-52855)

Commenters see energy consumption for OSTS production as a risk on two fronts—low energy return and high carbon output. The authors state a belief that coal will be used to generate power for the OSTS industry. This will lead to new “coal mines, power plants, greenhouse gas and other pollutants” (2008-52367) in the pursuit of oil. Natural gas byproducts of OSTS extraction might be used to generate electrical power, but the authors do not see this as a solution to the problems of low net energy and carbon production.

• “The amount of energy needed to develop this project is massive, probably from coal-fired plants resulting in further air pollution. Also, the energy required is many times more than that produced resulting in a net energy loss. The entire scheme is impractical.” (2008-00020)
“I would like to see the ratio of cost of energy required to harvest to profit from energy. If the ratio is low, the environmental impact is not worth it.” (2008-52462)

“The processing alone of this gas will create a huge amount of C02 and other emissions, not to mention the probable release of a great deal of methane in to the atmosphere. Burning it will cause further pollution, and represents a phenomenal addition to the energy balance equation. …Without this chicanery, the ratio is closer to 1:1 or even 1.5:1, a net loss.” (2008-52875)

Climate Change is taken for granted in this storyline. The information missing from the PEIS is the careful analysis of the incremental and cumulative climate impacts of OSTS. Authors point out the BLM’s neglect of what should be an obvious problem in 33% of the texts, with an additional 16% expressing concern about air quality and pollution. They press the BLM for greater depth and a more comprehensive analysis of greenhouse gas emissions that includes all stages of OSTS development, from RD&D to full-scale commercial production.

“I suggest the BLM take the eventual carbon dioxide output and the consequences into consideration along with deferring this EIS until there is adequate information to proceed.” (2008-00087)

“It is unreasonable and capricious for an agency to concede that anthropogenic development, such as OSTS development, would very likely contribute to global climate change and then not present any reasoning why OSTS would or would not contribute to global warming. Please further
explain how OSTS will contribute to global climate change and how federal permitting agencies will control carbon emissions.” (2008-52768)

• “This PEIS utterly fails to deal substantively or honestly with one of the most important impacts expected from development of oil shale and tar sands. Release of greenhouse gas emissions, especially carbon dioxide, would be massive if even a small fraction of the oil shale and tar sands resources under consideration were to be exploited.” (2008-52858)

• “I hope that the best possible data on reasonably anticipated regional climate changes and their impacts on water supplies will be carefully considered. Only if such things are done can the cost and benefits of oil shale extraction be truly calculated.” (2008-52973)

• “The entire treatment of air quality effects in Chapter 4 is less than five pages, including only three paragraphs on global climate change, yet the next phase of evaluation will not occur until after public lands have been leased to industry.” (2008-52880)

Assumptions about relationships and figured worlds. These authors express confidence in the NEPA process. They express the belief that careful application of science and data will produce the best possible decisions on land use and energy development decisions. These processes are designed to protect and balance multiple, often competing public interests. The Energy Policy Act of 2005 is an anomaly that violates the otherwise reliable rules and institutions of decision-making. The Energy Policy Act of 2005 has compelled the BLM to produce an incomplete PEIS without regard for best available science, expert recommendations, or the standards of NEPA. A
better decision can be reached if the BLM returns to the letter and spirit of NEPA and other federal guidelines.

- “I strongly urge the agency to delay completing its PEIS process until the agency can provide less speculative information.” (2008-00275)
- “As you are aware, a PEIS is expected to provide a complete and comprehensive analysis of the potential cumulative impacts of oil shale and tar sands development.” (2008-00275)
- “I’d really appreciate it if you would pursue a more complete analysis of the environmental side effects of oil shale and tar sands development in the West as you write up your environmental impact statement.” (2008-00295)
- “While it is understood that the Energy Policy Act of 2005 required a rapid release of a PEIS, it should be noted that this timeframe was mutually exclusive with many of the recommendations of the Rand study, most of which are common sense measures required prior to any responsible decision on large scale mineral rights leasing of Federal Lands.” (2008-52875)
- “These circular arguments are a clear and blatant attempt by BLM to circumvent the intent of NEPA and are tantamount to the level of planning prior to the US invasion of Iraq, and would likely have similar consequences. Under NEPA, that would be illegal.” (2008-52880)

This storyline is committed to data-driven decisions. The process of making such a decision takes time. It requires new data collection and careful analysis. The rapidly-conducted PEIS has allowed for neither. Instead, it is based on insufficient data and faulty assumptions. Whether the BLM was forced to prepare such an incomplete PEIS or if it
willingly did so to promote OSTS, it is a “wholesale failure” (2008-52880). Not only does the BLM need time to prepare an adequate PEIS, the public needs sufficient time to review and provide comments. If the BLM was committed to making the best possible decision, it would slow down and proceed incrementally.

- “The RD&D program is an excellent first step and as the draft makes clear, no one at this time knows how or when commercial oil shale production will occur. To enter into commercial leasing or even commercial rule making at this time is premature.” (2008-52790)
- “Proceed orderly and sensibly based on what is actually known and knowable.” (2008-52842)
- “90 days is insufficient time to analyze such a large document with profound consequences to the Western Slope of Colorado where I live.” (2008-52643)
- “Before starting the development, there should be a deeper research on oil shale and tar sand.” (2008-00215)

**Worldview.** As with many other storylines in this case study, the Not-Enough-Information discourse is on the high group, strongly communitarian end of the spectrum. There are egalitarian communitarian elements, such as the desire to conserve, manage needs, and prevent environmental destruction. However, adherence to laws and regulations place this storyline closer to the hierarchical communitarian worldview. Hierarchical communitarianism promotes law and order, respect for expertise, and centralized management. This storyline is dense with references to scientific data, procedures, and rules. Such trust in government regulation is strongly characteristic of hierarchical communitarianism.
Framing. The stated goal of this storyline is for the BLM to gather more information before making a decision. All the authors seem to believe this will lead to a better decision. Taking the inclusion of better information and a more deliberate decision-making process as the goal, the frame is one of avoiding a bad or uninformed decision. An uninformed decision has potential to create losses through such things as climate change, boom-bust economies, or poor investment of water and energy.

Summary. Storyline elements for the Not Enough Information discourse are shown in Box 5.6. The authors in the Not-Enough-Information storyline look to scientific evidence and data to support the proposed development, and are highly critical when they find it lacking. The BLM is not following the government’s own rules and policies for decision making based on the best available science to assess multiple types of impacts at various scales. The hastily assembled PEIS is premature.
Box 5.6. Not Enough Information Storyline

**Pro-OSTS Storyline**

Only 44 texts in this storyline had enough original text that they were not excluded from the sample for form language. Despite this, these comments are very similar to the form letters, as previously noted. These 44 make up only 7% of the sample. Key content word frequency is shown in Table 5.9.

Themes of the form letters include American energy independence and the vast quantities of oil in Colorado, Utah, and Wyoming, which are “particularly overwhelming in their potential to provide America with its own energy” (2008-52415). They assert that the benefits of OSTS “far exceed the disadvantages” (2008-52212). Oil shale has been an overlooked resource, even as “America grows even more desperate to import more and
Table 5.9
Frequency of Key Content Words in Pro-OSTS Storyline

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<thead>
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<th>Word</th>
<th>Frequency</th>
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more of a vanishing resource” (2008-52576). The federal government denies access to these resources, leaving America dependent on “oil-rich foreign nations that are often hostile to our country” (2008-52296).

Interestingly, renewable energy is included in more campaign form letters advocating OSTS than those opposing it. Some advocate for OSTS development alongside energy alternatives. They state that OSTS, “along with renewable energy sources like solar and wind, are essential for creating a stable energy supply” (2008-00067), or that “development of unconventional energy resources like oil shale and tar sands can bridge the gap between now and our renewable energy future” (2008-52249). Others minimize the contribution renewable resources can make, arguing that “conservation and renewables will, at best, play only a minor role in our future energy security” (2008-00229). One form goes as far as attempting to label OSTS an alternative energy, suggesting that the United States should “pursue balanced, strategic energy solutions and alternative energy sources like oil shale and tar sands” (2008-00241).

**Storyline.** This storyline promotes the development of American OSTS resources. America’s dependence on foreign oil is a threat to the country and its position in the world. Tapping into OSTS resources will ensure the nation’s energy supply, national security, and a healthy economy. Efforts to develop OSTS need to begin now, because long start-up times and technology development will take years. By restricting energy development, environmental protections are a threat to national security.

Foreign dependence and domestic environmental restrictions pose security and economic risks. OSTS can be used without significant environmental harm. The country has an enormous resource and we need to use it.
• “It is urgent that this Nation breaks out of its malaise and takes decisive action for its future well-being. Adopting Alternative B and promulgating commercial leasing rules for federal oil shale land is essential for the long-term health of this Country.” (2008-52879)

• “The political, economic and environmental risks we face from delay outweigh any risks from moving forward.” (2008-52887)

• “Our country has come to a crossroads in energy that if the right path is not taken our country will be in very serious trouble. I believe it is our responsibility to develop all the energy sources that we have in this country including oil shale and tar sands.” (2008-52217)

**Entities.** Nationality is a defining feature of the Pro-OSTS storyline, with 86% of the texts referring to nationality in some way. America or the United States are referenced in 66% of the texts. Nationality takes many forms, especially in the juxtapositions of domestic/imported energy, or American/foreign interests. Portrayals of nations as agents with motives and interests are discussed below, but nationality is a construct of great importance to this discourse.

• “As an American I have a choice not to buy a foreign automobile sending dollars overseas, but I do not have a choice in gasoline!” (2008-52435)

• “America should run on American energy.” (2008-52575)

• “The Draft PEIS is a good first step towards U.S. energy independence and national security.” (2008-52241)
• “BLM policy makers should understand and appreciate the value of oil shale to the US and should do all possible to foster this new and growing industry here at home.” (2008-52575)

Authors describe oil and gas as precious, essential commodities in this storyline. These fuels are fundamental to American life. Ensuring sufficient supply is necessary for the wellbeing of the nation. Security, prosperity, jobs, and freedom all flow from oil and gas. It is “our responsibility to develop all the energy sources that we have in this country including oil shale and tar sands” (2008-52117).

• “Developing US shale oil reserves is imperative to saving America from a financial, environmental, technological, and political disaster.” (2008-52878)

• “Until alternate forms of energy are developed it will require, for our economy and way of life to continue, that oil production continue in a safe and viable manner.” (2008-52207)

• “The resources within this domain are important to the welfare of our country.” (2008-52889)

• “We users of these fuels don’t want to harm our environment either, but it is a necessary part of life…” (2008-52207)

The price of energy is presented as a risk in 48% of the texts. Rising energy costs and high prices at the pump are gouging Americans. Foreign nations are increasing oil prices, and environmentalists are keeping energy expensive by blocking domestic production. Commercialization of OSTS is expected allow Americans to take control of energy prices and reduce costs that are “negatively affecting consumers, industries and businesses” (2008-00238).
• “Regulate the litigation that slows, stops or elevates the cost of energy related projects.” (2008-50016)
• “Oil shale and tar sands can help stabilize our domestic energy supply, which would translate into more predictable (and hopefully more affordable) energy prices.” (2008-52568)
• “Even if it should cause a little environmental damage, it would be of less importance than high energy prices.” (2008-52903)
• “By doing so, it will increase our nation’s energy portfolio, reduce energy prices for consumers and ultimately make us less dependent on foreign energy imports.” (2008-00238)
• “The rising cost of energy and our country’s reliance on foreign oil are disconcerting.” (2008-52568)

Agents and motives. America is losing ground in the world. It is losing its competitive edge and its power is diminished by its reliance on other countries for its energy supplies. Gaining access to cheap, domestic energy will correct those problems. The country needs to use domestic resources to reduce dependence on foreign oil. Commercial production is “essential for the long-term health of this Country” (2008-52879). Without progress on energy development, we risk losing “all that is great in America” (2008-52217).

• “Another cost of not developing shale oil is that without the oil savings, the US loses the capital needed to develop new technologies necessary for solving many of the other health, environmental, and technological problems of the
world. A strong US is a benefit to the world. A financially bankrupt US will be unable to stop global chaos from reigning.” (2008-52878)

- “Common senses should prevail, not emotional and unfounded opposition. The USA energy industry is only finding 1 BBL of oil for every 4 BBL of oil it consumes. The US Dollar has lost it’s value and is worth only 75% of what it was against the Euro within the last 2-3 years. We need to stimulate drilling and exploration in the US and not restrict it.” (2008-52926)

- “WE ARE AMERICA!!! We must become self sufficient in the future or run the risk of becoming a second class nation.” (2008-52435)

Although they are lesser figures in this storyline, the government and the BLM are seen as slowing the development of OSTS. The BLM’s current approach to leasing is portrayed as “dangerously narrow in its prospects to provide needed technology” (2008-52879). Restrictions on energy development are the result of a misguided attempt to “protect some unheard of plant or animal coupled with the continued restrictions of development due to the whining of a small group of self-serving NIMBYs” (2008-5295). The BLM is also viewed as responsible for ensuring both production and affordability of energy.

- “There’s no one single silver bullet here, so stop being so obstructionistic & short-sighted.” (2008-50172)

- “We’re all tired of the government throwing up roadblocks for the wishes of the greatest majority of Americans. Get off the dime NOW (2008-52662)

- “WE NEED THIS OIL!!!!! Please do not delay any longer!” (2008-52435)
• “Unlock this door and stop hindering our life style in the name of your agenda. We users of these fuels don’t want to harm our environment either, but it is a necessary part of life…” (2008-52207)

• “The majority of Americans appreciates your efforts and look forward to the day when fuel is affordable again.” (2008-00305)

• “I hope you can find a cost effective means to refine this oil.” (2008-50029)

• “Please do everything within your power to encourage and develop U.S. oil production, including from oil shale.” (2008-52241)

• “Creating a stable domestic energy supply should be the focus of the BLM’s efforts for the next several decades. Developing oil shale and tar sands should be part of that long-term plan.” (2008-52567)

Foreign countries threaten America, Americans, and American ways of life. Authors employ unflattering stereotypes of hostile foreigners to demonstrate a reason to fear imported oil. Other countries are taking money and power from the Americans. They wish to dominate or destroy the United States. American values such as freedom and independence are on the line. OSTS development will prevent this foreign menace from harming the nation. Even Canada is an unfriendly presence in this storyline.

• “I seriously have a problem paying $3.20 per gallon of gasoline to make some foreign arab muslims richer who continually call for the extermination of all “infidels”, to say nothing of the underhanded support our money is to extremist terrorism!!!” (2008-52435)

• “I am tired of being at the whim of some sand-kicking shiek. Just wait until the populace of China & India start driving more.” (2008-50172)
• “I’m tired of foreign oil strangling us - Ethanol is more of an environmental problem than oil ever thought about being. We have Cuba drilling off of the cost of Florida, Russia taking over the seas.” (2008-52662)

• “It’s time that we take control of our destiny before the middle east does it for us by cutting off our oil dependence on their oil.” (2008-52217)

• “Canada has been laughing at us for quite some time. It is an embarrassment that we have oil sands and yet no access to these minerals. Nevermind the fact that Utah imports 35% of its oil from Canada OIL SANDS!!!!!!!!!!!!!!!!!!” (2008-52799)

An additional risk to the US energy supply comes from environmentalists. There is something elitist and self-serving attributed to their motives, although specific gains are not named. Their goal is to obstruct development and make land unavailable to both the public and industry. A sinister intent to harm the nation is attributed to environmentalists. They are “environmental terrorists” (2008-52435) harming America with propaganda, lawsuits, and hypocrisy.

• “I know there are critics of energy development in the United States who do not want any new development. To me, their rhetoric is empty and irresponsible.” (2008-52604)

• “Public lands should be used for the GOOD of the entire nation not locked away for selfish simple minded groups like the Center for Biological Diversity.” (2008-50289)

• “Don’t let the left-wing loonies destroy our economy with their misinformation campaign.” (2008-50303)
• “Its time for the majority to stand up and say NO to all the so called environmental protectors of the land who continually try to take the land away from us.” (2008-52217)

• “The problem is not the environment, it is the environmentalists. They are wrong.” (2008-52241)

• “OBSTRUCTIONISTS OF OIL SHALE WILL GO DOWN TN HISTORY AS THE ROOT OF OUR ENERGY I ECONOMIC COLLAPSE. WE CANNOT ALLOW THIS.” (2008-52799)

• “I do NOT support simply putting such resources “off limits” as a P.C. bow to alleged “conservationists”.” (2008-00242)

Metaphors, rhetoric, and situated meaning. Rhetoric of security and defense is frequently invoked in the Pro-OSTS storyline. Security has broad meaning in use. It can mean sufficient energy supply, continuity of that supply, and overall national security. This theme plays on political and cultural tensions and competition in world markets. Security and defense extend beyond the nation’s borders, including fighting for oil abroad, and the protection of the US economy from oil producing nations.

• “Let us begin the process of utilizing our national resources to protect this countries security and economy!” (2008-52697)

• “This Preferred Alternative, will help make available for commercial development oil shale resources critical to the economic and energy security of our Nation.” (2008-52865)

• “The most cost effective way to difuse war in much of the world today is to reduce the income and dominance of middle eastern oil.” (2008-52287)
• “The energy act of 2005 was correct in acknowledging that the USA needs to limit its dependence on foreign oil. Dependence on foreign oil creates a direct threat to national security and it has allowed the American consumer to be guaged with ridiculous prices for fuel.” (2008-50014)

• “The resources within this domain are important to the welfare of our country. Cost foreign imports places our Nation in bondage and aids many who would see our way of life end to further their agenda.” (2008-52889)

Failure to proceed with OSTS leasing and development translates to lives lost to terrorism and war. Profits from oil are used to sponsor terrorism, which will “all but disappear if those funding terror throughout the world can no longer foot the bill” (2008-52287). Comments imply that America’s war on terrorism is also a war for oil. Those who are opposing OSTS development are directly responsible for the American deaths that result from the delay.

• “Our troops are being killed in the Middle East.” (2008-52915)

• “Each day that it takes may mean, in one way or another, that an American serviceman has unnecessarily lost his life somewhere in the world.” (2008-52287)

• “Stop global terrorism by reducing the price of oil as determined by Opec and Environmental groups.” (2008-50016)

• “It is patently absurd to not develop this domestic resource while fighting wars to retain a toehold in antagonistic and precarious jurisdictions throughout the world.” (2008-52932)
Of the 59% of the texts in this storyline that discuss the environment, most express concern but find some level of environmental impact acceptable. Pro-OSTS authors proclaim that oil can be produced from OSTS without significant harm to the environment. This capability comes variously from past experience, improved technology, and an American “entrepreneurial spirit, which would help rejuvenate the industry” (2008-52879). We simply need to “develop the means of using it in a cleaner fashion” (2008-50172).

- “Much has been learned from prior experimental and demonstration processing plants and recent studies have shown that advanced technology can eliminate CO2 emissions.” (2008-52233)
- “Oil shale and tar sands can be developed in an environmentally responsible way and the OSTS PEIS exemplifies this point.” (2008-52604)
- “I believe the US can responsibly extract shale oil while minimizing pollution.” (2008-52878)
- “I know companies are working on ways of extracting oil that will do less damage to the environment which is also very important. I hope that these companies that will be extracting can help us on both sides of the environment issue.” (2008-52923)
- “There are new technologies emerging that: 1. DO NOT USE WATER. 2. HAVE FAR LOWER EMISSIONS. 3. RECLAIM THE SURFACE DISTURBANCE. 4. WILL NOT IMPACT WILDLIFE. 5. CAN RECOVER OIL ECONOMICALLY.” (2008-52799)
Authors also express confidence in the NEPA and EIS process to provide sufficient protections for the environment, wildlife, and other resources.

- “I also want to mention that I am concerned about the environment and support the OSTS PEIS’ provision that requires a lease-by-lease application process.” (2008-52568)

- “But this would not cause significant damage as long as all appropriate laws and permits were followed, and it can be done as I have seen from my current employer and my previous one, a hazardous waste incinerator.” (2008-52435)

- “This allows for complete NEPA review of these areas and would result in site-specific environmental mitigation.” (2008-52667)

- “I insist that wildlife habitats be defined & protected, ie. like sage grouse mating & nesting grounds, antelope & elk grazing areas, and that ground water resources be fully protected from drilling and production practices.” (2008-52921)

There are some one-of-a-kind comments that express unusual positions. One suggests that domination of nature is a right and that god-given resources are meant to be used. Another argues that human impacts should be considered a source of pride. Four contend there should be no lands restrictions of any kind on OSTS development.

- “Man is not capable of killing this planet. We are a part of nature. We are at the top of nature and yes we should use it appropriately.” (2008-52207)

- “As far as I am concerned we should drill for oil wherever it is.” (2008-50029)
• “Technology and industry do not spoil the landscape; they add an element that we should be proud of, as long as it is done carefully.” (2008-53007)

• “Let the entire nation benefit from our national lands and do not let a few simpletons lock it away in the name of preserving it.” (2008-52241)

Authors confront and refute the narratives of competing discourses. Knowledge about the risks of OSTS that is taken for granted in other discourses is challenged and dismissed in the Pro-OSTS storyline. Comments contend that new information or technology improvements render criticisms of OSTS invalid. Some authors even argue that OSTS will provide environmental benefits to plants and animals.

• “In addition, recent scientific research has shown quite clearly that the output of the sun, NOT the “greenhouse gas” carbon dioxide, is what drives global changes in temperature.” (2008-50929)

• “Recovering oil from the vast U. S. oil shale resources has been severely criticized recently for producing excessive C02 emissions. This criticism may be justified if the oil were to be produced with old technology.” (2008-52233)

• “The BLM should take the cliche and old concerns of “too much water”, “Black Sunday”, “popcorn effect”, “tailings”, “emissions”, and “community infrastructure” and recognize the source of such self perpetuating fears. They are old and outdated and do not reflect responsible new efforts to provide environmental extraction.” (2008-52799)

• “C02 is not the problem, so states the Oregon Institute of Science and Technology report on Environmental Effects of Increased Atmospheric
Carbon Dioxide…. But C02 is part of the solution because it increases the rate of growth of crops and trees.” (2008-52931)

- “Raptors have built their nests on our oil tanks and stairs. Wild Horses hover around drilling rigs to watch the activity. Reclaimed drilling locations have more vegetation and food for animals on them than the undisturbed grounds surrounding them.” (2008-52926)

The Pro-OSTS storyline advocates for as much energy development as possible. They express the opinion that the country should take a no-holds-barred approach to producing energy. Oil shale is essential to fending off “US economic, and environmental collapse” (2008-52931).

- “OPEN UP OUR AMERICAN MINERAL RESOURCES!!!!!!!!!! LET THE “FREE MARKET” BACK INTO AMERICA’S FREE COUNTRY.” (2008-52799)

- “I am supportive of making as much acreage as possible open for Oil and Gas Exploration and Development.” (2008-52926)

- “With all the US economy faces today, we need this vast energy resource now more than ever.” (2008-52575)

- “I feel so strongly that we need other sources of energy other than just oil out of oil wells. Oil sands is an opportunity to accomplish having more oil and at the same time helping our environment.” (2008-52943)

Demand is growing in the United States and other countries, and needs must be met through any means possible. There is no question in this storyline that OSTS is
needed to increase the overall supply. Four texts include renewable energy in the country’s solution to the energy problem, while only two discuss conservation.

- “In spite of significant conservation efforts, world energy demand is projected to increase by 50% over the next 20 years and could double in 50 years.” (2008-00238)
- “We are way behind on developing alternative, clean renewable sources of fuel.” (2008-50172)
- “Without immediate oil shale development it may not be possible to avert an energy supply crisis substantially worse than the supply shortfalls experienced in the 1970s.” (2008-52865)
- “This document is important to the commercialization of our vast oil shale resources, which will very soon be needed to fill shortfalls in liquid fuels supplies. While production of electricity from solar energy in its various forms, as well as reduction of demand through improved efficiency will help, even combining these alternatives is insufficient to avoid an economic crisis brought on by fuel supply shortfalls.” (2008-52879)

Authors take the PEIS comments as an opportunity to promote other controversial energy developments alongside OSTS. These other developments are not the subject of the PEIS, but for authors who advocate “diversifying our country’s energy portfolio and for reducing our dependence on foreign oil” (2008-52567), OSTS is only part of the solution to the supply problem.

- “Develop shale oil and tar sands resources in the Lower 48; build a large capacity pipeline from Alaska to lower 48, develop infrastructure on the east
coast to discontinue the use of home heating oil. Build nuclear power plants for the generation of electricity.” (2008-50016)

- “That said we need to use every available source we have, including oil shale, tar sands, & liquified coal.” (2008-50172)
- “I support use of all fossil energy sources, including oil shale, oil sources within “sensitive” areas, and coal available within the United States in order to free us from foreign sources which threaten the security and stability of our country.” (2008-00242)

In this storyline, OSTS not only provides energy and independence, and it is also a stimulus to local and national economic growth. Without OSTS, the country will face “$5 per gallon gas & goods that cost a third more” (2008-50172). Producing domestic oil from OSTS will “provide untold jobs to deserving American workers as we explore, produce, refine and even export these energy sources” (2008-52287). Benefits will also come from lower prices and a secure supply, which in turn will support growth in other industries.

- “Finally, development of unconventional fuels will strengthen the local and regional economies of Utah, Colorado and Wyoming. Development of oil shale and tar sands will help to strengthen our national energy security and bring much needed supplies of oil into the markets to offset increased demand in China and India.” (2008-00238)
- “After all, everything you use including toilet paper is made or transported by oil.” (2008-52207)
• “Western Colorado economies would see numerous benefits by allowing for oil shale development. Oil shale will provide new job sources to help maintain employment diversity and stability. This would further give existing businesses and new businesses more customers for their goods and services. The economic opportunities associated with development will help strengthen local communities in our area.” (2008-52593)

**Assumptions about relationships and figured worlds.** The primary risk defined in this storyline is America’s dependence on foreign energy. The situation will worsen as demand rises and the world markets become increasingly competitive. Authors praise the American ideology of independence and freedom, values that 55% of the texts address. Dependence leaves the country vulnerable to unfriendly economic and political actors. Antagonism and competition are the fundamental relationships between nations. Therefore, American dollars spent on foreign oil go to support the country’s enemies. Pro-OSTS authors wish to sever those ties.

• “I am all in favor of allowing responsible companies to explore and exploit our mineral resources, so we do not become unnecessarily dependent on foreign nations.” (2008-53007)

• “Simply put...we need to be independent or one day we will lose total control to those who will deprive us of our freedoms without discretion.” (2008-52207)

• “I want the U.S. to be independent of the rest of the world for our oil.” (2008-50029)
• “In the meantime, our country continues to rely on foreign sources of energy, some of which are subject to very real political risks.” (2008-52887)

• “There are probably countless unknown reserves within the U.S. that we could use, instead of paying through the nose to numerous foreign nations.” (2008-52534)

America’s dependence on energy makes a crisis inevitable if a sufficient supply of energy (preferably domestic) is not secured. With an untapped resource believed to be equivalent to more than 1 trillion barrels of oil, OSTS provides the answer to the problem. The potential for supply shortages and the foreign source of energy that are greater risks than the country’s increasing demand for the Pro-OSTS authors.

• “Importantly, developing these resources will also help reduce our country’s unhealthy reliance on politically unstable countries that supply us with oil.” (2008-52568)

• “Leaving this resource in the ground is not an option, and the sooner we begin development, the better we can plan for and mitigate adverse impacts. If we wait for the crisis to occur, we will be reacting, and the results will surely be less favorable.” (2008-52879)

• “I, as well as many Americans, am concerned about US dependence on foreign petroleum and am pleased to see that efforts are being made to tap our own country’s immense resources.” (2008-00305)

• “As one versed in thermodynamics and the relationship of energy to society it is clear we have no other choice but to include oil shale in the mix.” (2008-52865)
The long lead time for energy development makes it imperative that work on OSTS begin right away. The longer the country waits to develop its resources, the greater the harm to American consumers, economies, and businesses. The country must act now.

- “Given that the leasing/permitting process is likely to take a year or two or more, and given that the in situ process recently tested will take three or four years to ramp up, and given that the likely producers will start with small investments until the commercial feasibility of their process is proven, it is likely that large scale production of shale oil is ten years away, even if we started today.” (2008-52887)

- “If the USA is to become somewhat energy independent then the program that was shelved at Parachute many years ago needs to be reimplemented and may take 40 years of research and development similar to the 45 year lead time needed for the tar sands of Alberta and Saskatchewan which are now coming into their own.” (2008-52932)

- “For all the time wasting in America and getting around to making these minerals available, our oil prices are skyrocketing.” (2008-52799)

- “Since 2000, 270 mills have been closed and 196,000 jobs have been lost (2008-03% of industry employment) because of high energy prices.” (2008-00238)

**Worldview.** The worldview expressed in the Pro-OSTS discourse aligns with the individualism end of the group scale. This is evident in the attitudes that government interferes too much and that regulations waste time and money. Both hierarchical and egalitarian versions of individualism are present. Hierarchical individualism dismisses
concerns over environmental risks and uncertainty about the future. It also adheres to traditional values, which aligns with the defense of the American way of life and may be part of the desire to entrench in fossil fuels.

On the other hand, egalitarian individualism holds that economic growth will raise quality of life. It advocates managing supply to meet needs rather than trying to reduce demand. The position that OSTS will not cause environmental harm is consistent with the perspective that nature is benign and recovers easily from disturbance.

Framing. In this storyline, the goal is for the BLM to choose the most permissive position on OSTS development. While four texts specifically advocate for Alternative B, the BLM’s preferred alternative, the remainder simply urge the BLM to promote OSTS development. The consequence of developing OSTS is presented as a gain to be obtained. A commercial OSTS industry would grant America energy independence, national security, and economic stimulus, and meet the demand for oil.

Summary. The Pro-OSTS storyline is summarized in Box 5.7. This storyline advocates for the development of OSTS to protect American interests. The country is at risk due to dependence on energy imports. Securing a domestic source will reduce the problems of energy and national security, and will cut off American dollars that support terrorism and hostile nations. Development of OSTS resources poses little to no risk to the environment.
Six storylines representing discourses of energy and risk were identified in the public comments on the 2008 Draft PEIS. Risks discussed include environmental destruction, continued fossil fuel dependence, misuse of public lands, irresponsibility and greed of government, insufficient information to make a responsible decision, and American dependence on foreign oil. Many entities and agents are at risk. They include the environment, climate, wildlife habitat, future generations, public ownership and access to land, the earth, the United States, and the proper function of its government.

The storylines described in this case study are categories constructed with a focus on risk and energy as the objects of analysis. The boundaries between storylines are
blurry. Texts often contain elements of other storylines, with one blending into another. For example, most storylines include the desire for the land to be protected from harm and destruction. The set of Not-Worth-the-Destruction texts makes that issue its primary risk, while others use damage to the land as a supporting or secondary concern.

Any discourse is subject to tensions from within and pressures to change. Attempts to modify the storyline are seen in texts that stray from or disagree with the typical discourse while maintaining most of the main discursive elements. They may be attempts to revise or redirect the storyline. Despite the variances within a given storyline, the discursive elements represent a set of ideas that coalesce as a thematic narrative.

There are points of common knowledge shared across storylines. There are also areas where a storyline works to contest or attenuate the rhetoric and assumptions of competing discourses. Most notably, the Not Enough Information, Destruction, Better Options, Misuse, Irresponsible Government storylines work from the position that climate change is an established fact. The Pro-OSTS storyline directly refutes this idea. The Destruction storyline centers on the narrative that OSTS will be disastrous, while Pro-OSTS insists it can be done without permanent or unacceptable harm.

The Pro-OSTS storyline is based on the idea that more energy is desperately needed. It argues that energy should come from domestic sources. The Destruction storyline accepts the idea that more energy is needed, while arguing that the tradeoff for environmental impacts is not acceptable. In Better Options, the idea that domestic energy is preferable is acknowledged, but it questions the resources from which energy should be obtained.
These texts suggest something about where people get their information, and how they structure their arguments. There are similarities between several of the storylines and the campaign letters from imply a connection. It may be a coincidence that many authors wrote comments with similar language and discursive elements. It is more likely that, whether intentional or not, authors have paraphrased or adjusted language supplied by an organization’s form letters, education campaigns, or talking points. This highlights the role of advocacy organizations in educating and mobilizing the public.

The public comment period closed on April 21, 2008. On November 7, 2008, a Record of Decision was issued, which selected Alternative B for both oil shale and tar sands, with clarifications and minor corrections. The decision made 1,991,222 acres of land available for oil shale leasing, and 431,224 acres for tar sands (BLM, 2008a, pp. 38-39). Lands were only made available for RD&D leases with options for commercial production leases. Additional site-specific and project-specific NEPA review of environmental, social, and economic factors—complete with a new opportunity for public comments—would be required before issuance of commercial leases.
CHAPTER 6

CASE STUDY 2 – 2012 OIL SHALE AND TAR SANDS

PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT

Following the issuance of the Record of Decision for the 2008 Oil Shale and Tar Sands Programmatic Environmental Impact Statement, 13 environmental non-governmental organizations14 joined together to file a lawsuit challenging the decision (Colorado Environmental Coalition v. Salazar, 2009). The complaint, filed in June 2009, asserted that the Bureau of Land Management (BLM) and the Department of the Interior violated the law by failing to adequately consider the impacts on air quality and climate change. It also claimed that the BLM and DOI failed to consider alternatives that would protect sage grouse habitat15 and other areas with important environmental characteristics.

In February 2011, the DOI and the environmental consortium proposed to settle the suit. The parties agreed that the BLM would begin a new environmental review process within 120 days in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. § 4321et seq.). It was to issue a final decision no later than

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15 The sage grouse is a bird recognized as warranting protection under the Endangered Species Act.
December 31, 2012. The new assessment would consider the exclusion of certain sensitive or protected lands and areas identified as core or priority habitat for sage grouse.

The BLM began a new Programmatic Environmental Impact Statement (PEIS) in April, 2011. The new PEIS was described as a “fresh look” at land-use allocation decisions to determine whether, given the current state of technology and information not available in 2008, future leasing opportunities should be focused on lands with fewer conflicting uses (BLM, 2012b). In revisiting the oil shale and tar sands (OSTS) development on public lands, the BLM was tasked with evaluating ten Resource Management Plans that permitted leasing on 2,017,714 acres for oil shale and 430,686 acres for tar sands development within Colorado, Utah, and Wyoming (BLM, 2012b).

A draft of the PEIS was published on February 3, 2012. The public was invited to participate by submitting comments on the draft from February 3 through May 4, 2012. As with the 2008 PEIS, written comments were accepted through mail and an electronic submission system.

**Context of the 2012 Programmatic Environmental Impact Statement**

Much had changed between the 2008 and 2012 comment periods. The 2008 PEIS took place at the end of George W. Bush’s presidency. The 2012 PEIS came under Barack Obama’s administration. The president had appointed Ken Salazar, a Senator from Colorado who had taken a conservative approach to oil and gas development in Western Colorado, as Secretary of the Interior.
During the comment period for the 2008 PEIS, there were only stirrings of economic trouble in the housing market (Joint Center for Housing Studies of Harvard University, 2008). By 2012, the global economy had crashed and the world was in the worst recession since World War II (International Monetary Fund, 2009). After an initial drop in 2009, commodity prices were once again on the rise (see Figure 5.4 in the preceding chapter). Average U.S. retail gasoline prices were near their pre-crisis peak, shown in Figure 6.1 (Energy Information Administration [EIA], 2017b).

![Figure 6.1. Average U.S. retail gasoline prices from January 2000 to July 2012. Prices are nominal. Data from U.S. Energy Information Administration, 2017b.](image)

Unemployment rates at the time of the 2008 PEIS hovered around 5% nationally, but were even lower in Colorado, Utah, and Wyoming (U.S. Bureau of Labor Statistics [BLS], 2017b; 2017c). Table 6.1 shows unemployment rates for the nation and the states and counties with OSTS resources during the 2008 and 2012 comment periods.
Table 6.1
Unemployment in the U.S., States, and Counties in the OSTS Region

<table>
<thead>
<tr>
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</tr>
</tbody>
</table>

*Note: Unemployment rates are not seasonally adjusted. Seasonally adjusted rates are not available for all local areas. Data from U.S. Bureau of Labor Statistics, 2017b, 2017c.*

Joblessness in the OSTS states was at or below the national rate at the time of the 2012 PEIS, but in those states the unemployment rates had almost doubled. In the oil-shale bearing counties of Colorado, the rate had roughly tripled.

Despite the increases, it is likely that growth in the energy industry helped keep unemployment in check in these energy-producing areas. Nation-wide, employment in oil and gas extraction had grown by 19% (BLS, 2017a). Six of the OSTS counties were among those with the highest concentrations of employment in oil and gas extraction in the country (BLS, 2015). Colorado saw 27% growth in oil and gas industry employment between 2007 and 2012 (BLS, 2014). In Utah, Duchesne County underwent a boom in oil and gas production, increasing its production of oil and gas production by 90% and 60%, respectively. Oil production in Carbon County increased by 101%, while Grand County saw 178% growth (Utah Division of Oil, Gas and Mining, 2015).

Aside from a brief decline in 2009, worldwide per capita and total energy consumption continued to rise (World Bank, 2016). World energy consumption in 2011 was up 7.6% over 2007 levels (IEA 2011, 2013). Earlier concerns about growing energy consumption...
use in Asia were realized as China, a close second in 2007, surpassed the United States as
the world’s top energy consumer, and India moved into third place (Enerdata, 2017).

In the United States, overall energy consumption in 2011 was down 6.5% from
2007 levels, and energy imports had fallen by 22% (EIA, 2017b). Coal and petroleum use
decreased as they were replaced by domestically-produced natural gas and renewable
energy. Expanding production of oil and gas through the use of hydraulic fracturing
technology was forecast to make the United States a net energy exporter by 2035 (EIA,
2012). There was less optimism about OSTS in the EIA’s 2011 and 2012 forecasts than
there had been in 2007, when they were considered economically viable with then-
current oil prices (EIA, 2007, 2011a, 2012). In 2007, the EIA estimated oil shale to
comprise about 7.5% of domestic oil production in 2030 (pp. 96, 156). By 2011, OSTS
only figured into forecasts for 2035 with a 2% contribution to domestic liquid fuels
production (EIA, 2011b). Despite the optimism about OSTS in the Energy Policy Act of
2005, the EIA’s perspective in 2012 was that “oil shale is not expected to be produced in
significant quantities in the United States before 2035” (EIA, 2012, p. 65). Only kerogen
from tar sands (also known as oil sands) from Canada figured prominently in the EIA’s

The 2012 Programmatic Environmental Impact Statement

Despite the lack of enthusiasm for OSTS, the Energy Policy Act of 2005 required
the DOI and BLM to make efforts to develop the resources. In addition to the six original
research, development, and demonstration (RD&D) leases for oil shale, the BLM
solicited a second round of proposals for new RD&D leases in 2010. At the time of the
draft PEIS release and public comments, three new leases in Colorado were under review, two of which would eventually be awarded.

The RD&D leases were for 160-acre parcels, with additional Preference Right Lease Areas (PRLAs). PRLAs were options that specified additional tracts for commercial production leases, up to a maximum of 5,120 acres. The 2010 lease terms were also for 160-acre RD&D parcels, but included only 640-acre PRLAs. At the time of the PEIS comments, the existing RD&D leases committed up to 34,888 acres to possible commercial development in the terms of the original agreements. Those leases were recognized as prior existing rights in the PEIS. Figure 6.2 shows the OSTS region and resources with the six finalized oil shale leases at the time of the 2012 DPEIS. Figure 6.3 shows detail on the location of all eight RD&D leases and the associated PRLAs.

The six companies with RD&D leases were testing different methods and technologies. One of the original leases was awarded to Oil Shale Exploration Company. This lease was acquired in 2011 by Enefit American Oil, a subsidiary of an Estonian company that had proven its technology for oil shale extraction in Estonia. Its objective was to prove and optimize technology and design for the location-specific resources through its RD&D lease in Utah. Shell Oil Corporation and its subsidiaries (collectively referred to as Shell Oil) had been testing in-situ conversion on private lands since 1996. It had successfully produced 1,500 barrels of oil from a small test plot. Shell Oil owned three of the RD&D leases in Colorado, and had plans to test variations of its technology on each. A third leaseholder, Chevron, U.S.A., Inc., announced in March 2012 that the company would discontinue lease activities and divest its BLM lease.
Figure 6.2. Oil Shale in Colorado, Utah, and Wyoming. Map shows the Green River Formation with most geologically prospective oil shale resources. Public domain, BLM, 2012c, p. 2-15, 2017.
The RD&D leases provided little new information about environmental or social impacts of OSTS development. The draft PEIS stated that the evaluation of impacts for the different alternatives would depend on the specific location of future commercial projects as well as on the specific project design (BLM, 2012b). In its final decision, the BLM concluded:

The magnitude of these potential impacts cannot be quantified at this time because key information about the location of commercial projects, the technologies that may be employed, the project size of production level, development time lines, and mitigation measures that would be applied are unknown. (BLM, 2012c, pp. 2-89, 2-117)
Thus, the 2012 PEIS process was limited to the assessment of impacts resulting from changes to the Land Use Management Plans and issuance of new RD&D leases, not the impacts of commercial production. Future development projects would need to be assessed through subsequent NEPA processes due to the lack of available information.

**PEIS Alternatives**

Alternatives were designed around the settlement agreement of the environmental consortium’s lawsuit. The 2012 PEIS evaluated four alternatives, with two sub-alternatives, for OSTS development. Alternative 1 is the No-Action Alternative included in all environmental impact statements prepared under the National Environmental Policy Act. This alternative proposed no changes to existing land uses, which in this case meant leaving the outcome of the 2008 PEIS in place. This was the most permissive option in the 2012 PEIS, and would keep 2,027,714 acres available for commercial oil shale leasing and 430,686 areas for commercial tar sands leasing.

Alternative 2(a) had a conservation focus, and would amend land use plans to reduce land available for future commercial oil shale leasing to just under 830,000 acres and fewer than 229,000 for tar sands leasing. It specifically excluded areas with wilderness characteristics, sensitive habitat, and other areas of environmental concern. The land availability in Alternative 2(b) matched Alternative 2(a) but allowed only RD&D leases until certain conditions for commercialization leases were met. This sub-alternative constituted a change in the method of obtaining a lease. Alternative 2(b) was named as the preferred alternative in the draft PEIS.
Alternative 3 was the most restrictive, allowing only the RD&D leases in existence at the time of the Record of Decision for the 2012 PEIS to be considered for commercialization leases. For tar sands leasing, only the land for one lease that was under negotiation at the time of the PEIS would be available. The public land potentially available to the OSTS industry would be reduced to a maximum total acreage of 32,640 for oil shale and 2,100 for tar sands.

Alternative 4(a) allowed for moderate development of resources. The land designated for future consideration for leasing remained the same as the 2008 PEIS and the 2012 Alternative 1, but excluded certain areas of environmental concern. Alternative 4(b) considered the same land as Alternative 4(a), with the limitation that RD&D leases were required first and other conditions must be satisfied before conversion to a commercial lease. This alteration in the leasing policy was the same as imposed in Alternative 2(b).

Public Comments

As required by the implementation rules for NEPA, public involvement is a key component of the PEIS process. The public was given the opportunity to ask questions and to comment on the Draft PEIS. Two Notices of Availability of the Draft PEIS were published in the Federal Register, one for the Environmental Protection Agency on February 3, 2012 (77 Fed. Reg. 5513), and one for the BLM on February 6, 2012 (77 Fed. Reg. 5833). These notices announced the publication of the Draft PEIS and opened the period for mail or web submissions for public comment on the Draft PEIS through
May 4, 2012. Written comments were also accepted at public meetings held in March 2012 in Silt, Colorado, Vernal and Salt Lake City, Utah, and Rock Springs, Wyoming.

The archive website for the 2012 PEIS contains 635 public comment documents (BLM, 2012a). Comments were received from individuals; non-governmental organizations (including special interest groups); private businesses and industry; and local, state, and federal agencies. Submissions came from 37 states plus the District of Columbia. About 70% of the submissions were from the states where OSTS activities were proposed.

**Campaign letters.** The number of direct submissions of public comments for the 2012 PEIS appears low at 635. However, that number includes several large petition-style documents wherein thousands of people generated letters through an interest group’s letter-writing campaign or electronically signed their names to a form letter from an organization. Table 6.2 shows the eight known advocacy groups responsible for these approximately 159,000 signatures: Defenders of Wildlife, Earthjustice, Center for Biological Diversity, Sierra Club (submitted after the deadline but accepted by the BLM), National Wildlife Federation, Wilderness Society, Colorado Environmental Coalition, and Institute for Energy Research. An unidentified group submitted 379 copies of a campaign letter.

The form language used by the Colorado Environmental Coalition and Earthjustice was nearly identical, with only minor differences in the texts. The letter from the Center for Biological Diversity also had strong similarities in content to the Colorado Environmental Coalition and Earthjustice forms. All three of these organizations advocated for no new use of public lands for OSTS development, a position more
restrictive than any considered in the PEIS. The Sierra Club and Defenders of Wildlife recommended Alternative 3, while the Wilderness Society and National Wildlife Federation endorsed the BLM’s preferred alternative, 2(b). The Institute for Energy Research and the unidentified campaign advocated for Alternative 1, the no-action alternative that would leave in place the decision made in 2008.
In many of the letter-writing campaigns, the text of form letters could be personalized by those who signed. However, the comments were not submitted directly by the individuals; nor was the primary content of the messages crafted by the individuals. For these reasons, the comments submitted in this way have not been handled as separate public comments in this analysis. Nevertheless, they are important. Campaign signatures represent an attempt to amplify the messages created by the organizations. The numbers suggest that these interest groups played a significant role in generating interest, informing, educating, and motivating action in their respective constituencies. Furthermore, they invoke cultural worldviews and provide shortcuts for interpretation, which in turn can drive culturally biased assimilation and polarization.

Language from the letter writing campaigns was not limited to the submissions by the organizations on behalf of their members. In many instances, stretches of language or the entire letters were copied into public comments submitted directly to the BLM by individuals. In the process of selecting a sample for this case study (as described in Chapter 4), additional campaign forms from interest groups were discovered. In texts directly submitted to the BLM by individuals, where all or a majority of the content appears to have come from a letter writing campaign, the letters have been treated as other forms. In cases where texts contained short stretches of form language but a majority of independently-authored content that contributed an individual’s perspective, the independent content was considered in the analysis.

A notable exception to this was a group of texts advocating Alternative 1. They appear similar to the unidentified letter writing campaign, but the letters submitted by individuals are much richer in content than the form. The message starts from the idea
that the 2008 PEIS was done correctly and the 2012 PEIS is a waste of time, effort, and resources. There are three variations on this theme, each representing a different discourse arriving at the same conclusion in favor of Alternative 1. The letters bear similarities in language and rhetoric, but for the most part, texts are composed in such a way that they are individualized, not merely duplications of the same letter. These texts were included in the sample, and are discussed in greater detail below.

Although nothing in the 2012 texts ties these comments to the group Americans for American Energy, the letters amplify major and minor themes from the 2008 PEIS case. Energy independence, energy security, and national security were all significant issues in the pro-OSTS comments during in 2008 and 2012. The concern over jobs, local economies, and businesses were present but not prominent in 2008. Language use, rhetoric, and talking points connect pro-OSTS comments within the 2012 PEIS and echo the sentiments promoting American energy in the 2008 comments.

Further evidence comes from the BLM’s documentation of public comments, which includes images of mailing envelopes. The letters have unique author names, and are signed by hand. Envelopes were addressed by hand and the return addresses indicate that they come many different towns. The group of letters that may be linked to Americans for American Energy bear the postmark of a U.S. Post Office in Grand Junction, Colorado. The stamps on the letters came from the same series, and appear to have been mailed on a few dates in late April and early May. This is true for letters in the sample, and for many of those disqualified for the use of form language.
Analysis of Discourses in the Draft OSTS PEIS Comments

Through analysis, seven storylines were found to be present in the sample of texts from the 2012 PEIS comments. Three of these discursive storylines are in favor of leaving the maximum lands available for OSTS development through selection of Alternative 1, the No-Action Alternative. The other four express opposition to some or all development of OSTS, and recommend that the BLM limit OSTS activities on public lands. These storylines and the number of texts associated with each are shown in Table 6.3. The table shows storylines grouped according to their positions relative to Alternative 1.

Descriptions of discourse follow the format used in the 2008 case study. Each storyline is described through seven elements:

- Storyline
- Entities constructed through discourse
- Agents and their motives
- Metaphors, rhetoric, and situated meanings
- Assumptions about natural relationships and figured worlds
- Cultural worldview
- Framing

Supporting excerpts are taken from the comments as written, with no correction for spelling and grammatical errors. Documents are referenced by the ID numbers
Table 6.3  
*Storylines in the 2012 OSTS Sample*

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<th>Storyline</th>
<th>#</th>
<th>% of Sample</th>
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<td>Environmentalists Have Hijacked the System</td>
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<tr>
<td>Obstacles are Unfair to Companies</td>
<td>21</td>
<td>11%</td>
</tr>
<tr>
<td>Regulations Hurt Local Economies</td>
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<td>16%</td>
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<tr>
<td><strong>Storylines Opposed to Alternative 1</strong></td>
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<td>Too many resources</td>
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</tr>
<tr>
<td>Unsafe for People and the Environment</td>
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<td>16%</td>
</tr>
<tr>
<td>Stop Climate Change</td>
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<tr>
<td>Protect Parks</td>
<td>17</td>
<td>9%</td>
</tr>
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<td>Unassigned</td>
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<tr>
<td><strong>Total</strong></td>
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assigned by the BLM, preceded by 2012 to distinguish them from the comments in the 2008 case study.

**Entities across Case Studies and Discourses**

Many of the entities and agents in the 2012 PEIS comments are the same as those in the 2008 PEIS case study. *Land, development, energy, resources, and time* are all entities constructed through discourse in similar ways to the 2008 storylines. Although
the rank of these terms differs, they all appear again in 2012 among the most frequently used key content words shown in Table 6.4. For this and all subsequent frequency tables in this case study, key content words include functional words as defined in Methods, and exclude words in the stop list. As explained in Chapter 5, inaccuracies in text recognition introduce an element of error in counts. Word frequency counts single forms of a word.

The frequency of single words and the frequency of multiple forms grouped together in textual analysis may not always be the same. The word count for \textit{environmental} excludes instances with the word statement in the same sentence to avoid the phrase “environmental impact statement,” which acts as part of a document title in this case study. Count of the word \textit{national}\textsuperscript{16} excludes use with \textit{Argonne} and \textit{laboratory}, as Argonne National Laboratory was part of the address for submitting comments. Counts of the word land exclude bureau and management.

\textbf{Oil shale and tar sands.} In all 2012 storylines, \textit{oil shale} and \textit{tar sands} are constructed through discourse as resources from which energy may be obtained, as they are in 2008. However, in use as terms and as the title of the PEIS, they occur less frequently than in the 2008 case study, where they were ubiquitous. \textit{Oil} and \textit{shale} are used in 83\% of the sample, while \textit{tar} and \textit{sands} appear in only 46\%.

\textbf{Environment and environmental policies.} As in 2008, the environmental policies, governing practices, and authority of the BLM are acknowledged as a shared reality through engagement with the 2012 PEIS. The National Environmental Policy Act

\textsuperscript{16} The word \textit{national} only appears in the most frequently used words for the Protect Parks storyline.
<table>
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(NEPA), the requirement for an Environmental Impact Statement (EIS), and the Energy Policy Act of 2005 all contribute to the context for the 2012 PEIS and the process of public participation. The authority of the Department of the Interior and the BLM as regulatory and decision-making entities are recognized through acts of participation in the process. The construct of the environment is reified in the discussion of impacts, risks, and benefits in relation to it. The BLM, following the rules and customs surrounding NEPA and the EIS process, defines what the environment is, and sets boundaries for what it can and will consider the affected environment.

**Land, development, and energy.** Land, development, and energy are the top three key content words in terms of the number of documents using them. Overall, these words are used more frequently in the sample than in 2008, where none of them exceeded 50% of the texts. As in 2008, development refers to extractive activities, but in 2012, discussions of economic development and research and development also contribute to the frequency of the word.

- “No additional land for further tar sands and oil shale research and development.” (2012-50070)
- “I would favor continued research and development to immediately opening up lands for commercial exploitation.” (2012-50126)
- “With an unemployment rate stubbornly around 10% on the western slope, this is desperately needed economic development.” (2012-102)

**Leasing.** Leasing is the term used to represent not only the contractual arrangement, but also the exclusive use of land by energy production companies. It is used in similar ways to development, as a lease implies that development activities will
follow. However, it is one step further removed from the risks and consequences of energy production. Leasing often serves to represent the interests of the industry in an opaque way, neither identifying the companies, their motives, or purposes. Leasing implies releasing control over the land, its use, and utility.

- “Allowing this land to become available for leasing would not only have devastating, irreversible impacts on the land.” (2012-50113)
- “Once we open up this land, it may truly be destroyed and may not go back to ‘public/wildlife’ usage.” (2012-50077)

The discursive construction of the National Environmental Policy Act, Environmental Impact Statements, and Bureau of Land Management in 2012 parallel the 2008 PEIS case. Whether or not they are discussed in the comments, these entities are acknowledged as legitimate and made real by nature of participation in the public comment process. The BLM exists as an institutional entity, but in most storylines, it also appears as an agent with specific motives.

**Basic Assumptions across Discourses**

Aside from the taken-for-granted knowledge that oil shale and tar sands exist and might be capable of producing petroleum products, there are some additional basic assumptions that are shared across discourses in the 2012 PEIS. There is a basic assumption that the economy of the region is struggling, although there is not agreement on what would improve the situation.

- “We must reduce our dependency on this and look for alternative ways of fueling the economy.” (2012-50223)
“Nevertheless, it is clear that fossil fuel extraction in these areas will disrupt existing ranching and recreational uses in these dry western lands.” (2012-50047)

“Western Colorado is facing sustained unemployment levels of 9% and more, and these jobs would be key to turning this region's economy around.” (2012-171)

“Allowing for commercial development of oil shale is good for the local economy, national energy security, and is in line with the 2005 Energy Policy Act.” (2012-094)

Jobs are a concern for the authors among all the storylines. Whether OSTS is predicted to create new jobs or displace existing jobs in recreation and tourism, that there is a pressing need for more jobs is widely acknowledged. The number of jobs, the type of jobs, and who they go to are assumptions made about the risks of developing or not developing OSTS according to the storyline’s position on OSTS.

“Allowing gas development, a process that will almost certainly blight the surrounding landscape, poison groundwater and put stable revenue and jobs at risk is the wrong decision.” (2012-50256)

“Billions of dollars of tourist and sales revenue, the proposed plan will negatively effect a quarter of a million jobs.” (2012-50245)

“Would it benefit our economy more than the current jobs in that area?” (2012-50117)

“We welcome an industry that will bring good jobs…” (2012-142)
Positions on OSTS

Beyond these shared entities and taken-for-granted knowledge, discourses diverge. Public comments tend to be divided along views on OSTS development overall, rather than among the alternatives in the PEIS. These divisions are shown above in Table 6.3, with the storylines grouped by position on the PEIS Alternative 1, the No-Action Alternative, which would allow for the maximum OSTS development of the alternatives proposed. Those in favor of OSTS development advocate for a decision in favor of Alternative 1. A few of those in favor of OSTS development, found Alternative 4(a) acceptable as a close second to Alternative 1. As with the 2008 PEIS, some were confused about the “No-Action Alternative,” believing it to mean that no OSTS activities would take place.

Comments from authors expressing opposition to OSTS development either opine that an alternative prohibiting additional OSTS development on public lands should be included, recommend Alternative 3, or simply state that no OSTS development or exploration should be permitted. A small portion (2%) of the sample of directly submitted comments from the public advocated a go-slow, research-only approach, and supported the BLM’s preferred alternative, 2(b). No comments described a preference for Alternatives 2(a) or 4(b).

Discourses are described below according to these pro- and anti-Alternative 1 (A1) perspectives, rather than simply for or against OSTS. Most opposed to Alternative 1 are against OSTS in general, but there are enough who concede that OSTS may be developed in acceptable ways and express the position that some RD&D is reasonable. Each group, in favor or opposed to Alternative 1, has a set of discursive elements in
common. The entities and taken-for-granted knowledge for pro-A1 discourses is discussed here, and for anti-A1 discourses is discussed in a preface to those four storylines.

**Pro-Alternative 1 Storylines**

Discourses in favor of A1 are closely related in terms of the benefits they project for OSTS development. They encourage the BLM to choose A1 because OSTS will ultimately benefit the local economies and create jobs, as well as contributing to national energy security and independence. Comments favoring A1 tend to be longer and contain more explanation of the author’s position than those opposing A1. As mentioned previously, the similarity in content, rhetoric, form, and syntax suggest that the information, and perhaps the impetus for submitting a comment, may have come from an advocacy campaign.

These storylines are similar in the taken-for-granted knowledge, assumptions about relationships, and figured worlds that are the foundation of their arguments. These elements are described collectively here. Analysis of individual storylines and the differences that set them apart follows.

The vast majority (84%) of the pro-A1 comments in the sample come from Colorado and focus their discussion on oil shale while neglecting or minimizing the importance tar sands. Some even omit tar sands from the name of the PEIS. Two factors make this advocacy unsurprising: (1) oil shale research and development has focused on northwestern Colorado because of the quality of the resources there, and (2) technology for oil shale is closer to production capability than technology for Utah’s tar sands.
The structure of the form-like Pro-A1 texts starts with the assertion that the 2012 PEIS is a waste of time and taxpayer money. From that position, three different discursive themes come from these comments. Commenters often incorporate some elements or variations of the other themes, but each storyline emphasizes different risks or benefits presented by this development decision. Authors arrive at the same conclusion in favor of A1 for different reasons, providing evidence that the storylines may express different cultural worldviews, as described in the individual storyline discussions.

A small group ($N = 8$) of pro-A1 comments take a somewhat different approach. These texts take on the task of refuting taken-for-granted knowledge about oil shale and tar sands. The authors acknowledge and challenge the ideas that oil shale is inefficient or uses too much water in production, well-known arguments from the OSTS opponents.

- “Oil shale is an efficient source, providing more energy than it takes to produce it. Depending on the development process utilized, the efficiency ratio is between 1:3 and 1:6, units of energy consumed to units produced.” (2012-148)

- “The production of oil from shale uses far less water than its opponents would lead some to believe, in fact far less than some other fuel sources, such as biomass from corn, which requires irrigation.” (2012-107)

Public comments in support of OSTS development that do not appear connected to the pro-A1 campaign are more general and few in number. They state a desire to maximize energy production at all costs, to reduce consumer costs, and show lack of concern for the environment.

- “Stop the b.s. and drill baby drill” (2012-50293)
• “We should develop every viable oil producing means available to us. We certainly need oil as a nation, and as an economic contributor in this disaster of an economy! I fully support oil shale development in this nation, particularly on lands that are serving no real purpose for the people of this nation.” (2012-50033)

• “Stop holding up development of this valuable resource. Make us more energy and materials (plastics, etc.) self-sufficient. There are possible endangered species of historic sites everywhere, we can't live in the Stone Age because of fears about this. Companies are now very accomplished and low-impact energy development. Don't listen to the Luddites.” (2012-018)

While pro-A1 discourses express a nationalistic perspective as Americans, they take this a step further with a regional identity. Virtually all pro-A1 texts in the sample indicate that the author identifies as a local resident or has ties to the region, either through direct statements or return addresses. Four comments came from Utah, while the remainder had ties to Colorado, with return addresses in towns such as Silt, Grand Junction, Craig, and Fruita.

The authors in these discourses identify with and belong to a collective entity, the people of Western Slope. The Western Slope is the largely rural area of Colorado west of the Continental Divide. The oil shale considered in the PEIS lies in the northern part of this region, and the three pro-A1 storylines promote the interests of the people living there.

• “Oil shale development represents an incredible opportunity for northwestern Colorado, and indeed, the rest of the nation.” (2012-094)
• “We in Western Colorado take stewardship of our land and resources very seriously, and take great pride in our ability to provide for both economic prosperity and natural conservation.” (2012-116)

About 17% of the comments in the pro-A1 storylines refer to Shell Oil’s experimental projects or development taking place in China and Estonia as evidence that oil shale can be successfully commercialized. Some suggest that it would be wrong for America to not keep up with other countries’ advances in oil shale technology.

• “Here at home, Shell Oil, on one of its tiny research leases in Colorado, has already produced several hundred thousand barrels - off a research lease.” (2012-141)

There is an interesting but infrequently used variation on foreign development that is not exclusive to any of the pro-A1 storylines. This version adds an assertion that the superior environmental regulations in the United States make it a more environmentally friendly choice to develop oil shale resources here. This logic makes it possible to be an environmentalist and still support oil shale commercialization.

• “I also do not want to cede energy production of this scale to countries like Estonia and China, where the environmental controls are rather less stringent than what we are accustomed to.” (2012-126)

Land is a prominent entity in all storylines, as evidenced by its top rank as a key content word. In Pro-A1 storylines, land under federal management is not treated as publicly owned, but instead as a commodity to be allocated in ways that prioritize local needs over some notion of a broad public good. Because these perspectives come from the OSTS area, they have a distinctly regional focus on economics and land use, such as
recreation, tourism, hunting, and camping. But for one instance, there is careful avoidance of the term “public land” in the Pro-A1 texts. Land is simply land or acreage. It is not treated as scenic or aesthetic. Outsiders have no valid interest in these lands. Lands under BLM management should be used for the benefit of the local communities, and energy provides the best returns.

Certain taken-for-granted knowledge is shared among the three Pro-A1 discourses. First is the position that the 2008 PEIS was conducted properly. In that process, the BLM reached a good, moral, and correct conclusion. The decision was made for the right reasons - to “become less dependent on Middle Eastern oil and more self sufficient to make a more stable domestic economy” (2012-500006), which in turn provides national and regional benefits.

- “The product of that 2008 PEIS was a reasonable document that allowed opportunity for companies to expand their operations, and begin the long process of developing an energy resource that bears the potential to wean America off of foreign oil, and give out nation more control over fuel prices, all while providing an economic boon for the people of the Western Slope, and north eastern Utah.” (2012-188)

The 2008 PEIS is a significant presence in all three pro-A1 storylines, referenced in more than 75% of Pro-A1 texts. Alternative 1 equates to holding in place the decision resulting from the 2008 PEIS, and these discourses all defend the legitimacy of that outcome. This also provides an intertextual dimension, wherein the authors not only reference, but validate that text and presume that their audience is knowledgeable of it.
• “Alternative 1 keeps in place the findings of the 2008 PEIS, and is therefore the only responsible, balanced, and economically viable alternative available to the BLM.” (2012-184)

Other points of taken-for-granted knowledge are the certainty that oil shale exists as a resource, where it is located, and that it is capable of yielding petroleum products. The commonly cited amount of oil in the pro-A1 storylines for oil shale deposits in Utah, Colorado, and Wyoming is 4 trillion barrels of oil. The BLM states in its materials that estimates for the Green River Formation range from range from 1.2 to 1.8 trillion barrels, with a moderate estimate of recoverable oil at 800 billion barrels (BLM, 2012 WEB). This suggests that there is a common source of information other than the BLM and the PEIS among the Pro-A1 authors.

• “Northwestern Colorado, along with parts of neighboring Utah and Wyoming, holds up to 4 trillion barrels of oil, according to the U.S. Geological Survey. That is 5 times as much oil as in the Middle East, trapped in shale.” (2012-141, italics original)

While oil shale and tar sands have been known as resources for quite some time, and despite previous attempts at commercialization, they have not become viable commercial sources of energy. Despite this past, the cultural and historical specificity of modern industrial American energy needs, along with the presumed inevitability of technological progress have generated the taken-for-granted knowledge that “this is an important national resource that needs to be developed” (2012-106).

There is an assumption that America needs, wants, and can use the oil to be produced. Despite the economic crash in 2008, prices and demand were high in 2012.
Rising consumption and prices were seen as problems, and this made new a new, domestically-produced source of oil an attractive solution. There is a strong common-sense assertion that commercial oil shale production would mitigate the risks of energy dependence, energy supply, national security, and high prices.

• “Also, the sheer size and potential of this resource dictates that it is in the national interest to produce it. With gas prices reaching all time highs, and increasing turmoil enveloping the Middle East, it would make sense to encourage, not hinder, the development of such an extensive domestic energy supply.” (2012-178)

On the surface, the pro-A1 discourses carry forward the concerns expressed in 2008 about national security, security of the energy supply, and independence. Such statements are useful for creating a sense of national importance, but these risks are not the ones at the heart of the discourses. At issue are perceived risks that include economy, jobs, regional prosperity, fairness, procedure, and federal overreach.

• “It is as much a matter of national security that we develop this resource as it is an economic issue for the local region.” (2012-099)

• “I appreciate the natural heritage and beauty of Northwest Colorado. I also appreciate the fact that the people of this area are hurting due to double-digit unemployment; that Americans across the country are hurting from high fuel prices.” (2012-134)

• “This will benefit us as both a nation and as western Coloradans…” (2012-181)
Local and regional economies are key to the pro-A1 discourses. All storylines, even those opposed to OSTS development, acknowledge to some extent that local economies in the OSTS region are struggling and unemployment is high. However, in pro-A1 discourses, jobs and local economies are the problem that energy development can solve. Local economies and jobs are only of a certain type, based on extractive industries. Agriculture and ranching are overlooked, while “tourism and recreation industries are great, but cannot sustain themselves” (2012-187). There is a widely-held assumption that commercial development of oil shale will support and improve economies while providing much-needed jobs. As the decision-maker and agenda-setter at the PEIS stage, the BLM is asked to “decide for jobs and the economy of Western Colorado and Eastern Utah” (2012-155).

- “We have been hurting since the recession took hold, and have experienced high unemployment, layoffs, businesses closing, and families moving away.” (2012-142)
- “Allowing a commercial oil shale industry to establish itself will not just bring jobs to the region, but also increase revenues going to local, state and federal government, through individual income taxes, sales and business taxes, and lease payments. This will help restore some of the funding shortfalls experienced in recent years, mostly as a result of high unemployment.” (2012-117)

Among the pro-A1 storylines, there is a general agreement that the economy and unemployment are problems in the region, and that economic stimulus and jobs are the benefits to be gained through oil shale activities. In this case, the problem definition
clearly specifies the solution. However, the framing of this choice and different additional risks vary among the pro-A1 discourses. The shared knowledge across the pro-A1 storylines are summarized in Box 6.1. Adding onto these common elements of discourse, the following discursive storylines exist in the pro-A1 set.

Box 6.1. Elements of the Pro-A1 storylines

- Emphasis on oil shale
- Regionally-defined identity and priorities
- Land as a commodity, property, economic resource
- The 2008 PEIS was conducted properly, and the final decision was the right choice
- Oil shale and tar sands can produce vast quantities of oil
- Stated concerns about national security, security of the energy supply, and energy independence, but solutions are oriented toward local/regional problems
- Prolonged economic strife and joblessness are the risks of not developing OSTS

Environmentalists Have Hijacked the System Storyline

Twenty-four texts, or 11% of the sample, belong to this storyline. Table 6.5 lists the top 20 key content words for this storyline. The Hijacked storyline is one of the three discourses in the pro-A1 group, and appears to have been heavily influenced by a letter-writing campaign designed to garner grass-roots support for the energy industry.

Storyline. This storyline states that the lawsuit leading to the 2012 PEIS was frivolous, brought by extreme elements who must not be allowed to control the outcome. The BLM should not permit obstructionists to jeopardize progress on energy development or allow outsiders to make decisions that would impose their environmental values and anti-energy agenda on the region. To do so would put local jobs, economies,
### Table 6.5

*Frequency of Key Content Words in Environmentalists Have Hijacked the System Storyline*

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and autonomy at risk. Long-term risk lies in the potential for environmentalists to usurp legitimate processes of government and policy-making.

- “The BLM has given the anti-development groups a potent weapon they can use against any new energy project or expansion of an existing one - be it oil shale, gas drilling, or mining.” (2012-118)
- “It is abhorrent that a federal government agency would allow be used by any special interest, the way that the BLM has allowed its processes and procedures to be hijacked by the extreme environmentalists.” (2012-188)
- “The reason for redoing the PEIS is frankly appalling, and makes a mockery of the whole NEPA system.” (2012-172)
- “Putting limitations on oil shale development in this way points to a much larger problem. The larger problem I am referring to is the bullying being done by various environmental groups who brought a lawsuit against the outcome of the three-year Jong 2008 PEIS. The intent of these groups is to make it impossible to drill for oil because of their ideological belief that the use of this substance causes damage to our earth's atmosphere.” (2012-201)

**Entities.** Oil shale is a central entity in this storyline, but tar sands are completely ignored. As in all pro-A1 discourses, oil shale is characterized as an abundant resource, with “as much as 4 Trillion barrels of oil are trapped in shale under this region” (2012-131). Although copious amounts of oil to be had is not a perspective unique to this storyline, the optimism of this much oil and an imperative to make use of it are somewhat stronger in the Hijacking storyline than in others.
• “With gas prices constantly rising, and the international situation increasingly unstable, it only makes sense to permit a domestic energy industry of this magnitude.” (2012-154)

• “Oil shale exploration will help the United States reach 4 trillion barrels of oil lying below our soil.” (2012-199)

Taxes and taxpayers are important entities, with 50% of the comments addressing the harms they have suffered. Comments assert that redoing the 2008 PEIS is a waste of everyone’s time and effort, but it is ultimately the taxpayers who are paying for the new PEIS forced by the environmentalists. They have been forced to pay for a new study by the environmentalists, “at a cost of millions of tax dollars - despite the fact that nothing has fundamentally changed” (2012-141).

• “Even worse, is that as a result of their lawsuit, the taxpayer is now footing the bill for a whole new study, complete with a predetermined conclusion that oil shale development is bad, and should be severely limited.” (2012-130)

• “At the very least it is a massive waste of the taxpayer's money, since this is a redo of a PEIS finished in 2008.” (2012-136)

• “As a taxpaying citizen, I am frankly outraged that our federal government would be so flippant with my money.” (2012-200)

**Agents and their motives.** In this discourse, the BLM is portrayed in two ways. It is either afraid of radical environmentalists or in collusion with them. The BLM is an entity seen as part of the system of federal government, sometimes slow or politicized but generally fair. It made the correct decision in 2008, and the Hijacked authors insist it should stand up to the pressure and do right by locals. It should be mindful of the wishes
of “the people, who are the taxpayers and you are supposed to work for them” (2012-201).

- “The only possible reason for this is that the BLM is allowing itself to be held hostage by environmental extremists with an agenda that cares nothing for the economic and social well being of the people of the Western Slope.” (2012-205)
- “I am personally asking your group not to give in to the scare tactics of the environmental lobby; to decide for jobs and the economy of Western Colorado and Eastern Utah.” (2012-155)
- “Please do not continue to let this fringe element dictate how the BLM and the people of western Colorado conduct their business.” (2012-136)
- “Meanwhile, the people of Northwestern Colorado wait, struggling under double-digit unemployment.” (2012-141)

In addition to the risk of persistent economic struggle, environmentalists are a serious risk in this storyline. They are a threat to orderly decision-making and do not respect the proper systems of government. Giving them the power to change the 2008 decision will only serve to increase the risk.

- “By re-doing this PEIS, and tailoring the conclusions to the agenda of the environmentalists, the BLM has given the anti-development groups a potent weapon they can use against any new energy project or expansion of an existing one - be it oil shale, gas drilling, or mining.” (2012-118)
- “Wasting taxpayer dollars to produce a new PEIS sets a dangerous precedent of manipulating the courts to dictate public policy.” (2012-199)
Radical environmentalists, in this storyline, are a nefarious force, obstructionists, extremists, and irrationally opposed to energy development. Environmentalists “seem to have only one agenda, and that is to stop anything that could be considered development in its tracks, and do so through any means possible” (2012-126). They want to “force the BLM to undermine all the work done on the 2008 PEIS, and ram through their anti-energy development agenda instead” (2012-118). The reasoning behind this agenda is not well explored or explained, although the consequences of their progress-stopping agenda are contemplated beyond this PEIS decision.

- “Just think what these environmentalists would have had to say about the expansion and growth of our country, the industrial revolution, the inventions of the automobile, airplanes, space rockets.” (2012-201)
- “What is to stop them from doing the same every time any energy project is proposed on federal lands…” (2012-118)

People in this discourse are portrayed as groups. Emphasis is on the collective, not individuals. Aside from people belonging to the extremist environmentalist groups, only locals are recognized. Together they constitute a local and regional identity, and they must work together to prevent harm and protect their economic interests. No contradicting viewpoints among them are acknowledged. They are good custodians and ask the BLM to trust them to choose appropriate risks and to know how to balance protection with development.

- “We do not wish any harm to the environment, and would never countenance any; we just want a viable industry to be allowed to establish itself here.” (2012-141)
• “I consider myself an environmentalist; I care deeply for the land, air, and water, enjoy spending time outdoors, and hope that this beautiful landscape will be around for my great-grand children to enjoy.” (2012-126)

In the Hijacked discourse, the collective term “industry” is favored over other terms such as businesses, companies, or proper names for the commercial entities. The term is used in 70% of the texts, where companies are referred to in only 29%. Industry is friendly in its interactions locally, “a vibrant industry creating jobs in our own backyard… the people of the region overwhelmingly support the establishment of a viable oil shale industry” (2012-123). It is an agent and can take actions, but is not shown to take an advocacy position in this particular decision process. Industry simply awaits an opportunity.

• “Industry has been researching this for years, and is now at the point where the technology is there to produce this oil… Clearly, the industry is ready to move on to the next stage.” (2012-141)

• “Allowing a commercial oil shale industry to establish itself in this region would mean prosperity, growth, and opportunity for the people who live here.” (2012-166)

Metaphors, rhetorical devices, and situated meanings. Descriptions of the OSTS region as home and “our own backyard” (2012-201) reinforce the idea of land belonging to the locals. The potential of a resource right here at home is contrasted with the idea of foreign energy.

• “Oil shale has an important impact on our nation's economy, security and future of our country especially in my home state of Colorado.” (2012-199)
• “This is more oil than in the entire Persian Gulf, right in our backyard.” (2012-160)

• “This is enough resource to make America energy independent, and supply our demand for oil for generations.” (2012-123)

On the other hand, environmentalist groups hijacking and taking hostages invokes images of lawlessness and terrorism. They are described as radical, extreme, and “a small group of environmental extremists” (2012-130). Equating environmentalists with terrorists is a controversial but attention-grabbing strategy previously used by Americans for American Energy, as described in Chapter 5. This storyline also echoes the tactics of painting environmentalists as corrupt and unethical. Authors describe them as lobby groups with a political agenda, and use terms like “environmental obstructionism” (2012-154), “scare tactics” (2012-155), and “legal interference” (2012-166).

• “It is outrageous that a handful of extremists would be able to hold jobs and economic development hostage, and more so that the BLM, an agency of the federal government, would allow it to happen.” (2012-136)

• “It should not have to be held hostage by a process that seems intent on delaying it to death.” (2012-200)

Science is construed as a legitimate basis for policy-making. This is put to use in assertions that there is no new scientific evidence to support either a new process or different conclusions. This storyline expresses a rationality based on the same presumptions that the BLM makes in its administrative role - find a balance between the needs of humans and the environment based on science, social, and economic evidence. The authors argue that because the BLM previously made a decision in favor of wide-
scale OSTS development on the basis of scientific evidence, it should again reach the same conclusion because the information has not changed.

- “If nothing has changed in terms of science, environmental analysis, economics, or any other factor, why such a drastic change in the BLM's conclusions?” (2012-205)
- “There was absolutely no new information develop between the 2008 PEIS and the current one, and still the BLM pursued this new one.” (2012-136)
- “There has been nothing in terms of new evidence or information emerge since that time.” (2012-172)
- “The BLM's new conclusion from this PEIS is that most of the land deemed fit for consideration just 4 years ago, is now off limits.” (2012-184)
- “The three land allocation alternatives in the 2012 PEIS completely disregard science, economics, and the input of many people from many fields…” (2012-194)

**Assumptions about relationships and figured worlds.** Conflict is the dominant relationship in this storyline. In a mindset of “us versus them,” the relationships tend to be Americans versus foreign countries and reasonable locals versus radical environmentalists. There are hints that conflict could arise between locals and the BLM if the decision is unfavorable.

- “It makes no sense for the BLM to continue on the path it is on, and willfully back an alternative that clearly breaks the law.” (2012-210)
• “This is in violation of the 2005 Energy Policy Act, which explicitly called for a separate and concurrent commercial development program for oil shale.”

(2012-160)

The BLM has two choices. It can “completely disregard science, economics, and the input of many people from many fields, and instead draw up plans from thin air to reduce acreage available for oil shale development, and impose restrictions on the industry… at the behest of a small, noisy bunch of extremists” (2012-194). Alternatively, the BLM “should start looking out for the people who live and work in and around the land they manage” (2012-203).

In this storyline, authors express the position that decisions should be made “utilizing the processes in place to ensure proper environmental protections” (2012-154). There is a correct way to go about making policy, and litigation is not a proper part of that system, at least in this case. No party should be able to control the outcome of the deliberative process by “manipulating the courts to dictate public policy” (2012-199).

• “This is a terrible precedent that is an affront to the way public policy decisions are supposed to be made in America” (2012-179)

• “It is important that extremists on all sides get the message that they cannot use the courts to so flagrantly manipulate the public policy process.” (2012-130)

• “Our nation is experiencing ever increasing fuel prices and an energy policy that has us reliant on hostile foreign governments for a good deal of our oil.” (2012-160)
• “What does this say about the systems we have in place, and the EIS process? That every time the outcome of the long, expensive process is disputed, some group can sue until it receives a decision they like? Where does this end?” (2012-200)

**Worldview.** There are indications that this position represents a hierarchical communitarian worldview, although the desire for local control suggests some authors may have a hierarchical individualist perspective. Intolerance of social deviance also hints at hierarchical individualism, but this worldview is more strongly expressed in another pro-A1 discourse. For the most part, authors make statements about respect for the process and decisions made on the basis of “support and input of many different specialists, industry experts, county and local governments, development agencies, environmental interests, scientists, and more” (2012-172). Comments in this storyline express the belief that expertise should guide decision-making and management, the system works, that nature is subordinate to human needs and interests, and is tolerant of disturbance. These positions align with hierarchical communitarian worldviews. Hierarchical worldviews also support the status quo, and seek to balance needs and resources.

**Framing.** Framing in this storyline is mixed, although both approaches are presented in positive framing. Comments focus on the benefits of good jobs and a thriving economy to be gained by making the desired selection, Alternative 1. In terms of goal framing, this represents a positive frame for goal behavior. The second risk, partially realized through the settlement of the lawsuit, is that the obstructionists will gain control of the decision-making process. By selecting A1, the environmental extremists are
thwarted in their efforts to prevent OSTS development. Therefore, a decision in favor of A1 is a loss avoided. At the same time, the region gains a better economy.

**Summary.** The 2012 OSTS PEIS is a waste of time and taxpayer money, the result of a wrongful lawsuit brought by extreme environmentalists. The BLM’s kowtowing to the green lobby would be a breach of proper governance and policy-making. Furthermore, handing the environmental groups a victory by restricting the land available for OSTS development would set a precedent for regressive energy policies that would prevent America from gaining energy independence. Knowing that the regional economy is struggling with the economic downturn and high unemployment, the only logical, appropriate choice for the BLM is to adopt Alternative 1 and allow development to proceed with as few restrictions as possible. To do otherwise would be unfair to the local residents and would risk their communities’ growth, prosperity, and way of life. Discursive elements of the Hijacked storyline are summarized in Box 6.2.
**Storyline:**
The lawsuit by environmental groups threatens the integrity of the systems and processes for making these types of decisions, and in turn will jeopardize jobs and local economies.

<table>
<thead>
<tr>
<th>Entities:</th>
<th>Metaphors, rhetoric, and situated meanings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Oil shale</td>
<td>· Home, backyard</td>
</tr>
<tr>
<td>· Taxes and taxpayers</td>
<td>· Science-based decisions</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Agents with motives:</th>
<th>Assumptions about natural relationships and figured worlds:</th>
</tr>
</thead>
<tbody>
<tr>
<td>· BLM</td>
<td>· Conflict</td>
</tr>
<tr>
<td>· Radical environmentalists</td>
<td>· Rational decision-making</td>
</tr>
<tr>
<td>· Locals</td>
<td></td>
</tr>
<tr>
<td>· Industry</td>
<td></td>
</tr>
</tbody>
</table>

**Worldview:**
Hierarchical Communitarian

**Goal framing:**
Positive goal framing - Gain benefits of good jobs and economic growth and avoid the loss of environmentalists gaining control by allowing maximum OSTS development.

**Box 6.2. Environmentalists have Hijacked the System**

**Obstacles are Unfair to Companies**

**Storyline**

This storyline consists of 21 documents and 10% of the 2012 sample. It is the second of the pro-A1 group, and amplifies industry concerns over the possible reduction in acreage. The top 20 key functional words are listed in Table 6.6. Like other pro-A1 storylines, much of the rhetoric appears to be scripted by an advocacy campaign. However, there is a single exception, a text authored by a Colorado educator, promoter of oil shale technology, and director of a technology and research center sponsored by industry. This author advocates for Alternative 4 or 1, stating, “I believe that the preferred alternative reflects a drastic and unnecessary reduction in the lands available for companies to investigate and eventually produce shale oil” (2012-50271).
### Table 6.6

*Frequency of Key Content Words in Obstacles are Unfair to Companies Storyline*

<table>
<thead>
<tr>
<th>Word</th>
<th>Times Used</th>
<th>Number of Documents</th>
<th>Documents %</th>
</tr>
</thead>
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<td>66</td>
<td>21</td>
<td>100.0</td>
</tr>
<tr>
<td>Lease</td>
<td>91</td>
<td>19</td>
<td>90.5</td>
</tr>
<tr>
<td>commercial</td>
<td>62</td>
<td>19</td>
<td>90.5</td>
</tr>
<tr>
<td>Allow</td>
<td>30</td>
<td>19</td>
<td>90.5</td>
</tr>
<tr>
<td>Land</td>
<td>42</td>
<td>17</td>
<td>81.0</td>
</tr>
<tr>
<td>available</td>
<td>33</td>
<td>15</td>
<td>71.4</td>
</tr>
<tr>
<td>company</td>
<td>30</td>
<td>15</td>
<td>71.4</td>
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<tr>
<td>2008</td>
<td>28</td>
<td>15</td>
<td>71.4</td>
</tr>
<tr>
<td>economic</td>
<td>22</td>
<td>15</td>
<td>71.4</td>
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<tr>
<td>industry</td>
<td>38</td>
<td>14</td>
<td>66.7</td>
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<tr>
<td>prefer</td>
<td>24</td>
<td>14</td>
<td>66.7</td>
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<tr>
<td>resource</td>
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<td>12</td>
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<td>current</td>
<td>24</td>
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<tr>
<td>Place</td>
<td>24</td>
<td>12</td>
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<td>energy</td>
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<td>government</td>
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<td>57.1</td>
</tr>
<tr>
<td>Take</td>
<td>15</td>
<td>12</td>
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<td>Plan</td>
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<td>11</td>
<td>52.4</td>
</tr>
<tr>
<td>Acre</td>
<td>18</td>
<td>11</td>
<td>52.4</td>
</tr>
<tr>
<td>Job</td>
<td>17</td>
<td>11</td>
<td>52.4</td>
</tr>
</tbody>
</table>
**Storyline.** This storyline states that the 2012 PEIS and the BLM’s Preferred Alternative are creating “perpetual delays, an unfriendly environment of uncertainty for current and potential producers, and a denial of economic activity to one of the hardest hit regions in the state” (095). These restrictions are unfair to companies wishing to develop oil shale. Only allowing leasing of small, isolated parcels would make commercialization untenable. The local and regional residents will be harmed as a result of companies’ lack of interest in pursuing oil shale development.

- “However, it appears that the scales are being tilted dangerously towards no development at all.” (2012-094)
- “The largest obstacle to unlocking this treasure remains the federal government and its regulations and restrictions.” (2012-120)
- “The BLM will be effectively shutting down the potential for long term job creation and sending a very bad message to the industry.” (2012-50018)

**Entities.** Development is discussed in every comment in this storyline. The objective of development is understood to be commercial-scale production. Eleven of the 21 texts refer to the RD&D leases, which are regarded as a pathway to commercialization rather than a means to test technology and feasibility. Only six texts discuss economic or community development. This is fewer than in other Alt-1 discourses, although OSTS development is still seen as a pathway to economic prosperity.

- “By keeping the same amount of acreage available for application for commercial leasing as was allowed in the previous 2008 PEIS, the BLM would allow not only for the widest range of options to be available to the industry for expansion and commercial development, but for an orderly
system to be established for the commercial development of this important strategic resource.” (2012-097)

• “Enough study has been done, we need to progress with research and development. Do no restrict these to research only. Provide surety that development of the resource is going to happen if the research works.” (2012-119)

• “As for the Alternatives, 3 makes absolutely no allowance for commercial development, limiting oil shale work to only the existing RD&D leases.” (2012-180)

• “Alternative 3 restricts leasing to existing RD&D leases only, without even pretending to be open to the possible of expansion.” (2012-207)

This storyline constructs companies as entities but not agents within the context of the PEIS decision. Companies need “flexibility to be able to plan ahead in an orderly manner for commercial development” (2012-096). They want to plan and develop, but according to this storyline, they are not actively advocating for their interests.

• “This will only deny companies the planning option of securing commercial land while perfect their process.” (2012-180)

• “Placing such heavy limitations on land availability needlessly restricts the flexibility of companies with an interest and a right to apply for leasing of the lands that contain this potentially vital national resource.” (2012-50271)

• “Not all, perhaps even not most, of the land made available will ever actually developed - but keeping that acreage available at least presents more options to companies wishing to expand and commercialize…” (2012-097)
Referring to energy producers as companies makes them less monolithic than industry, creating a possibility of competition among them. Only one energy company, Shell Oil, is named and constructed as a specific entity, and this seldom occurs outside the Unfair to Companies discourse. Shell Oil is not an agent because it is not an active participant, nor is it attributed motives. Shell is only acknowledged to provide evidence that it has extracted oil from oil shale in the region.

- “These terms are a disincentive to oil shale development, make it much harder for smaller companies to enter into the market…” (2012-135)
- “This acreage allows oil shale developers the most flexibility and options in determining their long-term commercial plans.” (2012-100)
- “Eliminating commercial leasing also shuts out smaller companies that might have otherwise been in a position to invest in oil shale development, and bring their operations, shops. money and jobs into the region.” (2012-119)
- “Shell successfully produced several thousand barrels of oil just off one of its RD&D leases, and has done so with the utmost care being given to the environment. (2012-161)

This discourse recognizes that there are environmental protections and policies, but only to a minimal extent does the environment exist. Instead, there is only land. Land is an entity that offers economic opportunity, and prospects. In the Unfair to Companies storyline, land is constructed as acreage, areas, and parcels. Authors complain that the area is greatly reduced in all alternatives but A1, and that the parcels are not contiguous. This makes it difficult to plan for expansion when the land made available is in “widely
scattered, tiny, parcels, too small and isolated to adequately support commercial 
development” (2012-178).

- “The acreage that remains is widely scattered in small, isolated pockets, the 
locations decided upon with no regard as to commercial suitability, access, or 
geological consideration.” (2012-180)

- “Keeping these lands open for consideration is a much preferable approach 
than arbitrarily excluding huge tracts of land…” (2012-097)

- “We need to provide as much area as possible to make any future 
development viable.” (2012-119)

Although these comments express the interests of the energy developers, jobs and the 
economy are important to commenters. All but one discuss jobs, the economic benefits, 
or both. Authors state that Alternative 1 provides “the best possibility for 
commercialization, expansion, job creation and economic development” (2012-128) and 
that it will “pave the way to job growth and economic development stemming from a 
productive commercial oil shale industry” (2012-182). The BLM’s Preferred Alternative 
is “a program purposely designed to delay and hinder commercial development of oil 
shale, at a time when there can be no argument that the jobs are needed” (2012-180).

- “The real tragedy of this is the denial of economic progress and prosperity to 
the people of the regions involved.” (2012-178)

- “This development would create hundreds of jobs in the region, both directly 
and indirectly. The income generated from these jobs will help backfill the 
shortfalls in local and state funding of infrastructure, schools and other
services, and spur further economic activity in a region experiencing over 10% unemployment.” (2012-161)

Agents and their motives. The primary agent in this discourse is the BLM, which, by its choice of Alternative 2(b) as the Preferred Alternative, is being unfair. That possibility “severely limits the options available to the nascent industry by eliminating hundreds of thousands of acres of land from availability for leasing, and restricting what little bit is left to only RD&D leasing” (2012-182). Authors suggest that the BLM has an agenda to “prevent oil shale from becoming a viable commercial industry” (2012-209).

- “The biggest obstacle to progress, the reason oil shale is "always 10 years away", is largely due to land use restrictions, and failure on the part of government to enact a long-term management plan.” (2012-096)
- “There is no excuse for the BLM to stand in the way of this industry from creating jobs and prosperity for western Colorado by adopting a more restrictive option.” (2012-161)
- “Most of the tiny, isolated pockets that are not placed forever off limits to even consideration for leasing are far too small to support a commercial operation. In the meantime, the alternative also places the current Preferred Acreage leases, designed to allow commercial expansion of existing research and development leases, mostly or, in some cases, completely off limits as well.” (2012-207)

As in other pro-A1 discourses, industry is important, but in the Unfair to Companies storyline, the industry is depicted as if it is an agent with motives. It is a “nascent industry” (2012-182) on the verge of becoming a “viable commercial industry…
[and it] is not asking for special treatment or for the subsidies being granted other energy industries - most notably renewable energy” (2012-209).

Industry is recognized as having interests in commercialization, leasing, and development (but not drilling, mining, or extraction). Industry is guided by economic motivations, which are nobody’s business but their own. It is “in a position to invest in oil shale development, and bring their operations, shops, money and jobs into the region” (2012-119). There needs to be “incentive for industry to invest their monies into this resource” (2012-50018).

- “The industry needs predictability in the regulatory and land allocation framework in order to make the investments needed to commercially develop oil shale.” (2012-106)

**Metaphors, rhetorical devices, and situated meanings.** There is an imperative to develop oil shale that is particularly strong in this discourse. An untapped resource is seen as a wasted opportunity. Oil shale needs to be developed “for the sake of national security, economic prosperity, and fuel supply stability” (2012-106).

- “This vital resource can and will be developed responsibly.” (2012-107)
- “T this region sits on top of enough energy resource to keep these people and many others employed, and the nation's engine running, for years to come.” (2012-100)
- “Also, the sheer size and potential of this resource dictates that It is in the national interest to produce it.” (2012-178)

The preferred alternative “certainly serves as a disincentive for any new company to move into the area” (2012-102). Without support from the BLM and federal
government, the energy industry is seen as likely to abandon the Western Slope. The region needs the benefits of OSTS development, and therefore the BLM should adopt A1 that preserves the maximum land available for the industry to lease.

- “Chances are they would set up shop somewhere else, perhaps Estonia or China where commercial oil shale development is already taking place….” (2012-119)
- “It certainly makes the region unattractive to new oil shale development.” (2012-180)
- “If this is not a disincentive to commercial development, I would hate to see what is.” (2012-119)

Besides limiting land availability and leasing opportunities, authors also charge that the BLM is treating the OSTS industry differently by requiring that companies demonstrate a viable technology before applying for commercial leases. Not only are the BLM’s conditions unfair, they also constitute preferential treatment for other energy resources. The RD&D first requirement is the BLM’s attempt to cross over from land management decisions into business management.

- “The requirement for companies to demonstrate their recovery technology is an unreasonable request that does not apply to any other industry to my knowledge, certainly not to any other energy sub-sector including oil and gas, solar or wind.” (2012-209)
- “The BLM's preferred alternative, 2b. goes even a step further, by requiring that a viable recovery technology first be demonstrated before a lease permit will be granted. This is a requirement unique to the oil shale industry-no other
industry, including other energy industries, are subject to that test before they are allowed to secure leases.” (2012-180)

• “It should be left to the Individual companies to make these sorts of management decisions. If a company wants to secure a lease without yet possessing the ability to develop it, it is on that company to decide for itself if the long term strategic planning interests of having the lease outweigh the costs of paying for it every year. That is NOT a decision for government to make.” (2012-195)

• “It should be none of the governments business to pass arbitrary judgment on a company's tools and processes before it grants a lease. If a company wishes to take the risk of renting a lease before its technology has caught completely up, that is the business of that company; if they want to make the lease payments while perfecting their systems, let them. It is their call whether or not the reward is worth the risk, and laws of economics dictate that only companies that think they will be able to turn a profit relatively quickly off their investment will go ahead and bear the risk.” (2012-207)

**Assumptions about relationships and figured worlds.** Competition dominates the relationships in this discourse, but instead of being ideological, competition is economic. There is global competition among energy-producing countries, and potentially market-driven competition among energy companies if they are allowed access to resources. The BLM is making oil shale “artificially unattractive” (2012-120) with the obstacles it is contemplating putting in place. The BLM jeopardizes the viability of the U.S. oil shale industry overall with “a serious barrier to future planning,
commercial expansion, as well as to the decision to go commercial in the first place” (2012-180). It also risks the creation of an unfair marketplace if it chooses the preferred alternative.

- “This is just the kind of government interference, buoyed by an unaccountable, yet powerful, environmentalist lobby that prevents private sector job creation and economic recovery.” (2012-182)
- “Combined with the proposed policy of only granting RD&D leases until it approves of a particular technology, this represents an egregious intrusion of government into private business decisions, and blesses the government with the sole, Caesar-like discretion of which companies and which technological processes succeed and which fail.” (2012-215)

The regulations of government are viewed as choking opportunities for development, leaving companies at the whims of the BLM and federal government. As in other pro-A1 discourses, development of oil shale is seen as the key to resuscitation of the region’s economy. Although not explicitly stated, the region has a right to make the most of the economic opportunity oil shale has to offer.

- “It is unconscionable that this sort of economic development would be delayed further, at a time when the region is experiencing heavy unemployment, when families who have lived in the area for years, have made roots here, have aging parents living nearby, and kids in local schools, are forced to follow energy jobs to other parts of the country - and take their money with them…” (2012-100)
• “Most of the people who live out here welcome the introduction of a major industry that produces a vital product, and provides jobs and income for thousands of families” (2012-106)
• “There is no excuse for the BLM to stand in the way of this industry from creating jobs and prosperity for western Colorado by adopting a more restrictive option.” (2012-161)

The energy industry and companies are said to be capable of protecting the environment while they develop and commercialize their operations. The authors assert that the BLM should trust them to take proper care in their use of the land. The industry has “a vested interest in looking after the land on which they operate, and in being good stewards of the environment” (OTS_161).

• “The people who live and raise their families on the Western Slope, and who would be the backbone of any commercial oil shale project, are not about to place their own environment or their children's health at risk.” (2012-182)
• “The main companies engaged in current oil shale RD&D have strict and well established environmental policies in place, and the track records to show successful stewardship.” (2012-107)

In short, the BLM should “allow not only for the widest range of options to be available to the industry for expansion and commercial development, but for an orderly system to be established for the commercial development of this important strategic resource. (097)

**Worldview.** The Unfair to Companies discourse closely aligns with egalitarian individualism. The opposition to regulations that jeopardize free enterprise, belief that
economic growth raises the quality of life, and the attitude that nature is a benign entity that does not need protection are reflected in this discourse. The industry is capable of effective self-regulation and will implement appropriate environmental protections. Liberal capitalism has a strong presence. Companies, rather than the locals or the government, should be making the decisions. Locals will gladly welcome the prosperity they bring to the region. The government should not risk ruining the opportunity for economic growth, private enterprise, and job creation.

**Framing.** Goal framing in this discourse is flexible. When convincing the BLM to choose Alternative 1, the Unfair to Companies storyline concentrates on positive framing of loss avoidance. These texts describe how A1 “will restore the acreage and use plans developed and accepted in the initial, legitimate PEIS” (2012-110), thus avoiding the loss of the industry’s interest and investment in the region. In some texts, authors use a negative frame that invokes anticipated regret. They portray forgone gains for companies and local economies for any decision other than the desired selection of A1, which would cause “an indefinite delay in the economic benefits that could be reaped by the communities in the area” (2012-209).

**Summary.** OSTS should be developed, and in order to do so, the industry needs access to as much land as possible to develop their technologies, make strategic business plans, and expand into commercial production. OSTS development would bring jobs and economic benefits that would result from the industry’s investment in the region. The BLM should promote OSTS commercialization, not restrict lands for leasing or impose requirements that intrude on business decisions. Any Alternative other than A1 is a risk to energy development, and by extension, an unfair risk imposed on local communities...
that would benefit from OSTS development. Discursive elements from the Obstacles are

Unfair to Companies storyline are summarized in Box 6.3.

**Storyline:**
The BLM’s regulations and reduction of land available to OSTS makes commercial development unattractive to companies and denies local communities of the investments and jobs that OSTS companies would bring.

<table>
<thead>
<tr>
<th>Entities:</th>
<th>Metaphors, rhetoric, and situated meanings:</th>
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<tbody>
<tr>
<td>· Development</td>
<td>· Resources need to be developed</td>
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<tr>
<td>· Companies</td>
<td>· Restrictions are a disincentive to</td>
</tr>
<tr>
<td>· Shell Oil</td>
<td>COMPANIES</td>
</tr>
<tr>
<td>· Land</td>
<td>· Technology viability requirements</td>
</tr>
<tr>
<td>· Jobs and economic benefits</td>
<td>are unfair</td>
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</table>

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<th>Agents with motives:</th>
<th>Assumptions about natural relationships and figured worlds:</th>
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<td>· BLM</td>
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<tr>
<td>· Industry</td>
<td>· Right to develop resources</td>
</tr>
<tr>
<td></td>
<td>· Companies will protect the environment</td>
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</table>

**Worldview:**
Egalitarian Individualism

**Goal framing:**
Positive goal framing - Avoid the loss of industry's interest in OSTS.
Negative goal framing - Forego the gains of investment, jobs, and economic opportunity if OSTS is restricted.

*Box 6.3. Obstacles are Unfair to Companies*

**Regulations Hurt Local Economies**

**Storyline**

This is the largest of the pro-A1 storylines, with 31 texts and 15% of the sample.

The 20 most frequently used key content words are listed in Table 6.7. This storyline directly addresses the risks to the economic interests of the region, whereas the other two pro-A1 storylines approach them as indirect benefits or consequences. In the Unfair to Companies storyline, jobs and economic benefits flow from fairness to the industry,
Table 6.7
Frequency of Key Content Words in Regulations Hurt Local Economies
Storyline

<table>
<thead>
<tr>
<th>Word</th>
<th>Times Used</th>
<th>Number of Documents</th>
<th>Documents %</th>
</tr>
</thead>
<tbody>
<tr>
<td>development</td>
<td>69</td>
<td>26</td>
<td>83.9</td>
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<td>region</td>
<td>45</td>
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</tr>
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<td>41</td>
<td>26</td>
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</tr>
<tr>
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<td>25</td>
<td>80.6</td>
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<td>24</td>
<td>77.4</td>
</tr>
<tr>
<td>lease</td>
<td>72</td>
<td>24</td>
<td>77.4</td>
</tr>
<tr>
<td>concern</td>
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<td>22</td>
<td>71.0</td>
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<tr>
<td>land</td>
<td>42</td>
<td>21</td>
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<td>34</td>
<td>19</td>
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</tr>
<tr>
<td>available</td>
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<td>19</td>
<td>61.3</td>
</tr>
<tr>
<td>benefit</td>
<td>26</td>
<td>18</td>
<td>58.1</td>
</tr>
<tr>
<td>place</td>
<td>26</td>
<td>18</td>
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<tr>
<td>energy</td>
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<td>provide</td>
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<tr>
<td>year</td>
<td>21</td>
<td>17</td>
<td>54.8</td>
</tr>
</tbody>
</table>
while the Hijacked storyline warns of a future where environmentalists can block energy development, thereby threatening jobs and economic recovery.

Although this storyline prioritizes the interests of local people, the texts contain some of the same talking points about companies’ needs and the unreasonable requirement for a new PEIS. There is little doubt that this storyline is tied to the other two pro-A1 discourses and the same advocacy group’s letter writing campaign.

**Storyline.** This storyline proposes that oil shale development will provide jobs and economic benefits. Those benefits will have cascading effects for local economies, improving quality of life for all who live there. OSTS development will create more than just energy jobs. It will nurture diverse economic opportunity and create thriving communities. Alternative 1 is the only viable option for local residents, who desperately need jobs and economic stimulus. Any restrictions to OSTS development are perceived as a risk to towns, families, and businesses in the region.

- “Commercial oil shale development will bring hundreds of jobs to the region, in the form of construction, operations, homebuilding, and various support industries. These jobs will support the economies of the local municipalities and counties, and provide for growth and increased tax receipts for those local governments. These are good paying jobs that this industry will create, and that income will have a ripple effect on the region, and will benefit all local industries, including recreation and tourism.” (2012-101)

- “This is a very important issue for many of us who live in the region, due to the tremendous economic impact that commercial oil shale development will bring. I think it is difficult for people who don't live here to understand just
how important oil shale development would be to our small towns in Western Colorado.” (2012-111)

• “The tragedy of this is the loss of job growth that will result from overly restrictive BLM practices.” (2012-102)

• “This development, and directly related projects, will also be responsible for area population growth that will spur further economic activity, absorb housing vacancies, and attract even more, diversified services and industries to the region” (2012-125)

**Entities.** The regional economies and jobs are prominent entities that appear in every text in this storyline. All pro-A1 discourses are concerned with economic prosperity, but this storyline places it firmly at the center of risk discourse. The course of action the BLM chooses will set the region up for success or struggle. Without oil shale development, there will be no jobs, economic growth, or quality of life in the region.

• “Many families and businesses have already moved out of the area, and without a solid industry to sustain the local economy, many more will…. Please help us preserve our economy, our communities, and our way of life by selecting Alternative 1 for this current PEIS.” (2012-192)

• “On the regional side, the job growth that this industry would spur would generate enough wealth, income and revenue to lift the state out of the recession that has been holding us down for years now.” (2012-181)

• “What all of this means for business people such as myself, is yet another delay in the job growth and economic development we are all hoping for to salvage our livelihoods.” (2012-185)
• “The job growth that the adoption of Alternative 1 is estimated to generate will have direct and positive impacts on the quality of life within the region, not only through the direct jobs and income produced by the oil shale industry itself, but the residual job growth that such development will bring, from housing construction, to service industries, to retail growth.” (2012-116)

Local people exist in a more personal way than other pro-A1 discourses. They have families, want jobs, run businesses, and are concerned with infrastructure and amenities in their hometowns. A thriving economy will provide a healthy tax base for local governments, which in turn will support “local infrastructure needs, public schools, and police, fire, and ambulance services, along with other public amenities” (2012-116).

• “With the international situation being what it is, and the price of fuel continually rising to the point where families are going to have to choose between gas to get the kids to school, and groceries to get through the weekend…” (2012-187)

• “The tax revenue generated by a healthy and vibrant commercial oil shale industry will also ease the strain on local, state, and federal budgets, and help fund schools, roads, emergency personnel, and other key local government functions.” (2012-134)

The industry is constructed as an entity in 80% of the Local Economies texts. According to the commenters, the OSTS industry should be allowed to establish itself in the region. The fate of the industry and the region are intertwined. Selection of A1 will “help put in place the framework needed to establish a commercial oil shale industry in northwestern Colorado” (2012-142). Although the OSTS industry is critical, it is not
understood to be the only job provider in a healthy Western Slope economy. The OSTS industry provides the seed money that allows for a robust economy to grow up around it.

- “Alternative 1 is the only option on the table that will allow this industry, and this region, a future.” (2012-144)
- “It is unfortunate that these few can hold up the advancement of an entire industry that is as important to our nation’s energy strategy as it is to our regional economy.” (2012-111)
- “The job growth that the adoption of Alternative 1 is estimated to generate will have direct and positive impacts on the quality of life within the region, not only through the direct jobs and income produced by the oil shale industry itself, but the residual job growth that such development will bring, from housing construction, to service industries, to retail growth.” (2012-116)

**Agents and their motives.** The BLM is portrayed in the Local Economies storyline as a somewhat removed, uninvolved, and insensitive decision maker. It has disregarded the needs of locals by selecting Alternative 2(b) as the preferred alternative. Comments request, respectfully in most instances, that the BLM set aside this choice in favor of Alternative 1. Most appeal to reason and fiscal responsibility, although some express disappointment and distress at the selection of the Preferred Alternative.

- “Reducing the land available for application for potential leasing to a few thousand acres, on small, widely dispersed parcels, is a clear signal to the oil shale industry that the BLM does not support commercial development - nor apparently the jobs and economic opportunity that comes with such development.” (2012-157)
• “All of these benefits could be enjoyed by the people of western Colorado, and the tri-state area, if the government would just get out of the way, and let the industry establish itself.” (2012-169)

• “It is therefore somewhat distressing to see that the BLM, this time around, favors a plan that would all but stop commercial oil shale development before it even has a chance to get started. The draconian land restrictions, along with unreasonable demands on oil shale companies to prove to the satisfaction of government officials that their production technology is good enough before a commercial lease is even considered, essentially ensure that no commercial production will ever take place...” (2012-185)

• “Western Colorado relies heavily on energy production for our economic survival. We have seen what happens when government gets in the way of energy development.” (2012-192)

• “The BLM is placing itself directly at odds with the people of the region, who are tired of rehashing old arguments, and simply want to see the industry establish itself, and bring in jobs and economic opportunity.” (2012-204)

Local communities are the other significant agent in this discourse. Individuals, as members and representatives of their communities, are taking a stand to protect their interests. Local economies, governments, businesses, communities, infrastructure, and more are widely represented in these texts. Locals are capable of protecting the environment from harm, and want to be trusted to know what is best. In the Local Economies storyline, as in the Hijacked discourse, locals are portrayed as unified and without dissent in their views. Local is a strong theme in this set of documents.
• “Increased oil shale investment, development, and commercial production will bring employment opportunities to the region, and people to fill them. The resulting increase in both population and income will provide immediate benefits to businesses such as mine. We do not live in an economic vacuum, and the ripple effects of a successful and vibrant oil shale industry will reverberate throughout the region.” (2012-185)

• “This is a very important issue for many of us who live in the region, due to the tremendous economic impact that commercial oil shale development will bring.” (2012-111)

• “It seems almost every day that we see another local business shut its doors or a family move to another state because there is such limited job growth here. The saddest part of that is that it is entirely unnecessary, given the amount of natural resource contained in the area.” (2012-157)

• “We who live and raise our families in western Colorado are as much or more concerned than any over the conservation and stewardship or our natural environment, in conjunction with our economic health and future. We believe that the two goals are not mutually exclusive; we trust that the BLM can make wise decisions regarding the approval of individual leases - we only ask that the BLM trust us enough to keep in place the acreage deemed suitable for application 4 years ago.” (2012-165)

• “I doubt very much that there is any one of us who would support anything that would truly pose a serious risk to the environment, but we are not willing to stand aside and watch our businesses and families suffer…” (2012-185)
Metaphors, rhetorical devices, and situated meanings. Authors presume that outsiders do not know or understand their way of life or the struggles they face. Despite their difficult economic circumstances, progress and persistence will prevail. With OSTS development, jobs and economic recovery are possible, but the BLM and federal government must not stand in the way. One author uses Canadian tar sands as an example of the benefits to be had if the BLM allows oil shale development and adopts A1.

- “The town of Fort McMurray is thriving, Alberta's unemployment rate is low, and many smaller companies are investing and entering the industry, creating even more jobs and income. The Alberta government runs a surplus that they do not know what to do with, and there is still hunting, fishing and related activities going on in northeastern Alberta.” (2012-169)
- “Despite what some misinformed opponents might say, this is not a choice between economic development and the environment. Both development and conservation can work hand in hand, as they have for many years in this very region.” (2012-204)
- “The ingenuity inherent in the American private sector will find a way to produce this safely, responsibly, and profitably, if only it is allowed to do so.” (2012-144)
- “We are not asking for any industry to receive handouts or subsidies; we do not want the government picking winners and losers. We simply ask that the roadblocks be removed, so that a viable oil shale industry can be allowed to proceed and bring with it the many benefits of a healthy, stable, long term industry.” (2012-157)
The Local Economies storyline advocates putting a structured process for commercialization in place that will “give local governments a cushion to be able to plan for the complications that tend to arise from such growth” (2012-101). This rhetoric acknowledges the risks of rapid growth as extractive economies boom. Authors use that risk to advocate for establishing an orderly\textsuperscript{17} process early to mitigate growing pains or in case of “national emergency, geo-political turmoil, external market conditions, etc.” (2012-140). However, there is no explicit acknowledgement of risks of the bust cycles. Two authors make a point of explaining that important characteristics of the oil shale industry have changed, and that the bust cycle of the past is no longer possible.

- “The question is, do we put an ordered system, and a long range plan in place now, or when we have no time for such steady, incremental growth?” (2012-103)

- “Having such a program in place will also provide for an orderly adjustment on the part of local municipalities to cope with the effects of this development, including population increase, housing construction, infrastructure demands, and the like.” (2012-140)

- “There is little if anything of substance for opponents of oil shale development to intelligently debate about; the technology has made great strides since the much-ballyhooed "Black Sunday" crash back in 1980, as evidenced by

\textsuperscript{17} The repetition of the words *ordered* and *ordered system* are one example of language use that suggests information and talking points have been supplied by a common source. This use occurs in all three pro-A1 storylines, but is more frequent in the Local Economies storyline (23%) than in Hijacked (8%) or Unfair to Companies(14%).
successful operations in other parts of the world, and exciting recent developments on Shell's oil shale RD&D lease in Colorado.” (2012-197)

- “This is not 1980 either; many things have changed, including the technology, management practices, and the source of capital - all of the current investment in oil shale is private, meaning that it is far less prone to being carelessly risked than was the government money that funded the industry prior to "Black Sunday".” (2012-102)

Authors challenge the thoroughness with which the BLM evaluated the socio-economic impacts of the alternatives. These criticisms are lengthy, and suggest that the BLM did not take seriously its responsibility to assess the “job creation, income, and housing impacts” (2012-147) on local communities. They also imply that the BLM did not give A1 full consideration in its process of selecting a Preferred Alternative.

- “Chapter six of the document outlined the job growth and income generation that is projected to occur if Alternative 1 is adopted, as well as housing construction impacts. A similar analysis of Alternative 3 demonstrates dramatically how these benefits would be reduced. No such detailed analysis was conducted for either the Preferred Alternative or Alternative 4. This is, in my opinion, a critical oversight. I do not believe that a land allocation plan should be prescribed without first assessing how that plan will impact the people, businesses and communities of the affected region.” (2012-117)

- “In contrast, the economic impacts of the BLM's Preferred Alternative, 2b, were not analyzed, the document simply stating that the impacts would be similar to alternative 1, but lesser in scale due to the decreased acreage. This is
not only an understatement but signals to me that the BLM did not sufficiently
do its homework in this regard before settling on a Preferred Alternative. The
same is true of Alternative 4. The socio-economic impacts of Alternative 3
were analyzed, and the results are a tiny fraction of the job creation and
income generation that Alternative 1 would produce.” (2012-125)

Assumptions about relationships and figured worlds. Competition is present in
this discourse, but the opponents are less clearly defined. National security, energy
security, and energy independence suggest that America is at odds with foreign interests.
However, these risks are upstaged by the desire for local independence in decision-
making. Locals do not seem to believe the federal government owes them support. The
interference of the regulatory agency is the biggest risk they face. The BLM simply needs
to stay out of the way and let progress take its course.

• “There is no question, of course, that oil shale is a complex resource that
requires time and cutting-edge technology to bring on-line, but that is all the
more reason to stop the endless delays and restrictions. The ingenuity inherent
in the American private sector will find a way to produce this safely,
responsibly, and profitably, if only it is allowed to do so.” (2012-144)

Perhaps the biggest assumption of all is the belief that oil shale will provide the
expected benefits. In the past, development has provided only short-term benefits, with
painful consequences for local communities. Energy price fluctuations and the cost of oil
shale production have prevented commercial-scale production from taking off, despite
100 years of efforts to make it viable. Statements such as “It is as much a matter of
national security that we develop this resource as it is an economic issue for the local
region” (2012-099) recall the creation of the Naval Oil Shale and Petroleum Reserves, although oil shale did not contribute to national security then, nor has it been able to since. Similarly, the relationship between oil shale and job creation has not been realized.

In anticipation of oil shale commercialization, a 1973 Environmental Impact Statement estimated that there would be 6,812 temporary and 13,032 permanent jobs in the industry in 1980 (Department of the Interior, p. III-204). The optimism about jobs and the economy is tightly held, but past history and the risk of the bust cycles is ignored.

**Worldview.** This discourse most closely aligns with Kahan’s (2012) revision of the fatalism worldview as hierarchical individualism as part of cultural cognition theory. This worldview seeks localized control and resents the interference of a distant, centralized government. It cares about traditional values and promotes small, independent but hierarchically structured systems of self-governance. However, this worldview is not a perfect fit. The emphasis on industry as an economic driver might lean toward egalitarian individualism. Eagerness to generate tax revenues and appeals to the authority and reasonableness of the BLM could tilt in the direction of hierarchical communitarianism. In spite of these tendencies, hierarchical individualism appears to be the closest match.

**Framing.** The Local Economies discourse focuses on the gains that will come to the region with the selection of Alternative 1. This storyline has a predominantly positive approach to goal framing. Authors portray the benefits of an oil shale industry that will lead to flourishing towns relieved of the economic stress they now suffer.

There are minor elements of forgone gains if the BLM does not keep the management plan of the 2008 PEIS. In those texts, authors describe friends and neighbors
moving away because energy jobs have left, leaving businesses and families suffering. Although there are a few cautionary tales, the majority of texts provide vivid predictions of a better life resulting from the gains that oil shale development will bring.

**Summary.** Despite the past booms and busts, the authors in this storyline advocate for oil shale development on the basis of the jobs and economic prosperity that the industry will bring to the region. An increased tax base and the flow of personal income will create healthy local economies and improved the quality of life for residents. The BLM needs to choose A1 and not limit the industry so that it may grow to its full potential as an economic driver. The Regulations Hurt Local Economies storyline is summarized in Box 6.4.

<table>
<thead>
<tr>
<th>Storyline:</th>
<th>Metaphors, rhetoric, and situated meanings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil shale and tar sands will provide jobs and economic stimulus. They will create a healthy tax base for local governments and improve the quality of life in the region.</td>
<td>· The BLM needs to stay out of the way</td>
</tr>
<tr>
<td>Entities:</td>
<td>· Orderly development</td>
</tr>
<tr>
<td>· Regional economy</td>
<td>· The PEIS is not a through assessment</td>
</tr>
<tr>
<td>· Jobs</td>
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<tr>
<td>· Industry</td>
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<table>
<thead>
<tr>
<th>Agents with motives:</th>
<th>Assumptions about natural relationships and figured worlds:</th>
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<tbody>
<tr>
<td>· BLM</td>
<td>· Let development take its course</td>
</tr>
<tr>
<td>· Local communities</td>
<td>· Oil sale will bring great benefits</td>
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<th>Worldview:</th>
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<tr>
<td>Hierarchical Individualism</td>
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<table>
<thead>
<tr>
<th>Goal framing:</th>
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</thead>
<tbody>
<tr>
<td>Positive goal framing - Gain the benefits of a thriving oil shale industry.</td>
<td></td>
</tr>
</tbody>
</table>

*Box 6.4. Regulations Hurt Local Economies*
Discourses in Opposition of Alternative 1

Texts opposed to Alternative 1 have been grouped into four storylines. These are Stop Climate Change, OSTS Uses Too Many Resources, Unsafe for People and the Environment, and Protect Parks. The numbers of texts in each storyline and the percentage of the sample are shown above in Table 6.3. A general discussion of anti-A1 comments and their shared discursive elements is followed by storyline descriptions and analysis.

The discourses advocating for the BLM to make a decision other than A1 are broader in content than pro-A1 discourses. At the same time, there is a greater variety in styles, length, and structure. The shortest consists of only three words, “ALTERNATIVE THREE, PLEASE” (2012-50199). Many of them simply object to energy development or suggest developing renewable energy but do not include discussion of any perceived risk. Comments such as “I strongly oppose any tar sands development” (2012-50369) do not provide the opportunity to analyze discourse for perceptions of risk and were eliminated from the sample selected for final analysis.

Comments opposed to A1 show evidence of campaign-letter influence, but not to the same extent as pro-A1 texts, where greater than 90% appear to be variations on formulaic language or derive from talking points. Overall, the anti-A1 texts in the sample appear more likely to be independently authored. It is possible that anti-A1 commenters may have copied or followed forms more closely, making form-influenced letters easier to screen in the sample selection process. However, the low incidence of anti-A1 texts with form language and the high numbers of signatures submitted by groups such as the
Sierra Club or Earthjustice suggest that people were more likely to comment through an advocacy group if they wanted to use form language or talking points supplied by an organization.

The Anti-A1 comments come from people outside Colorado, Utah, and Wyoming as well as within. In pro-A1 storylines, for comments in the sample where a state of origin is indicated, all come from the three states designated for OSTS development. Comments in the group opposing A-1 were submitted in person, by mail, and electronically. This is a sharp contrast to the pro-A1 group, where 92% of the comments in the sample were submitted by mail.

Compared to pro-A1 comments, the anti-A1 texts encompass a much wider range of things of value that are perceived to be at risk. Anti-A1 comments have greater variety in their discourses, problem descriptions, and solutions than pro-A1 comments. Where pro-A1 authors tend to be respectful, anti-A1 texts have a wider range in tone, including insults, expletives, and shouting in all caps.

Anti-A1 discourses share the across-the-board discursive elements discussed above. These include oil shale, tar sands, leasing, and development as entities constructed through discourse. Tar sands receive attention in these discourses, although oil shale is still more frequently mentioned. They also share the taken-for-granted knowledge of a post-crash struggling economy. In anti-A1 discourse, energy producers are seldom referred to as businesses (4%) and companies (6%). Industry is the preferred term (18%).

There are several additional entities, assumptions, and points of taken-for-granted knowledge embedded in all anti-A1 discourses. All four of the storylines and 61% of the
texts discuss water. The OSTS region is, according to common knowledge, an arid region that frequently suffers from drought. OSTS development poses a threat to water quality and quantity. The word “supply” is frequently associated with water.

- “Oil shale may be very harmful to our water supplies.” (2012-50077)
- “It is my understanding developing tar sands has the potential to contaminate water supplies. Contaminated water makes life for humans, livestock, wildlife and plants challenging if not fatal.” (2012-50282)
- “In an area where water is scarce and sunlight is not, we should not be wasting resources pursuing non-renewable energy sources” (2012-50182)
- “Additionally the water requirement will undoubtedly cause strain to the already fragile conditions of southeastern Utah and southwestern Colorado.” (2012-50244)

Declining air quality is another frequently cited risk. Carbon, pollutants, and dust are perceived risks to air quality that come from the lifecycle of OSTS, from production to end-user combustion. Climate change is a widely-acknowledged risk in all storylines, and is cited as a risk intensified by OSTS in 35% of the anti-A1 texts. One group of texts make climate change the primary risk, and this is described below as the Stop Climate Change storyline. For others, climate change is seen to be a less prominent risk or a delayed effect.

- “As is evidenced by the fact that we are debating the development of an entirely NEW fossil fuel, ifs clear that we have yet to come to terms with the implications of climate change for U.S. energy and land management policy.” (2012-001)
• “It may be harmful to our water clean air and wildlife. (OTS_034)
• “No matter your position on climate change, we’re experiencing drier, hotter weather and water-availability issues that affect tourism, recreation, agriculture and threaten associated “bird in the hand” jobs.” (2012-50173)
• “Scenic beauty gone and air that made me cough even as we stopped to briefly stretch our legs.” (2012-50128)
• “Not only will these fuels exacerbate the climate crisis, but they also will have a detrimental effect on society at large by inhibiting the urgent transition to renewable energy and less consumptive lifestyles.” (2012-50198)

Pollution in general is a construct that is widely perceived as a risk to human wellbeing. Clean water and air are also tied to the health of wildlife. In the pro-A1 storylines, cleanliness and dirt are important entities. Energy is portrayed as dirty or clean. People express a desire for clean air, water, and environment, and object to dirty energy.

• “Change to conservation and development of clean energy sources must be our long-term strategy for Utah and the planet.” (2012-017)
• “Please, no development of more things that potentially pollute…” (2012-50220)
• “I want my public lands clean, my water clear and safe and my wildlife protected.” (2012-50444)
• “For all the unknowns about oil shale, what is known is that it threatens water resources and clean air.” (2012-175)
• “It produces dirty energy that pollutes the environment.” (2012-50285)
• “Tar sands oil is one of the dirtiest and most corrosive forms of oil.” (2012-50113)

• “I hope that in the future there will be zero extraction of this type of dirty energy that is killing my future.” (2012-50014)

Aesthetic value is a construct shared across all anti-A1 discourse. Commenters express great affinity for the beauty and pristine qualities of the landscape. These are subjective assessments, but in discourse they are treated as entities that are threatened by OSTS development.

• “We treasure the beauty of everything we have here.” (2012-50284)

• “We should not risk our water, air, pristine lands, crucial species habitat and outstanding recreation opportunities for any energy development, much less one dependent on unproven technology.” (2012-175)

• “These parks are our links to the natural beauty of our country, to be preserved for posterity.” (2012-50223)

• “I do not think that it is worth destroying millions of acres of natural beauty to meet a fleeting need.” (2012-50259)

• “We treasure the beauty of everything we have here” (2012-50084)

• “These activities will degrade our landscape on a scale that will significantly damage our national heritage.” (2012-50190)

The anti-A1 authors recognize and even emphasize the destructive aspects of obtaining oil from OSTS, unlike the pro-A1 storylines, which tend to use words such as development and leasing. Anti-A1 comments include the words extraction, mining,
drilling, and refining in addition to development to represent the processes of removing oil from the rock.

- “It seems that regardless of the lack of technology, there will still be massive mining operations occurring at these sites.” (2012-031)
- “Fracking, drilling and destroying habitat as the byproduct of attempting to remove oil deposits from tar sands and rock are short term ways of getting oil…” (2012-50223)
- “Pity the poor ranchers that will go bankrupt when their properties are destroyed by the degradation attendant upon this type of drilling.” (2012-50027)
- “I believe bringing these destructive mining and refining processes to the U.S. would be entirely unethical.” (2012-50276)
- “As gasoline prices inch upwards, there is pressure to drill and extract more.” (2012-50065)
- “Don’t open up more land to surface strip mining for tar sands…” (2012-50364)

In the PEIS documents, the BLM takes care to point out that oil shale is distinct from shale oil. They explain that oil shale and shale oil were formed by different geologic processes, and they require different technologies for petroleum production. Neither are tar sands in Utah the same as the oil sands in production in Canada. Their composition is not the same, and the extraction technologies that work in Canada cannot be directly applied to Utah tar sands. Despite these clarifications, it is evident in the public comments that the differences are not well recognized.
There is also some confusion about what the PEIS is considering. Some comments focus on hydraulic fracturing (commonly known as “fracking”), a technology used in production of shale oil and gas. Fracking is a possibility but not an inherent practice in various OSTS retorting technologies. One commenter seems to believe the issue is a pipeline project, which is likely the Keystone XL project. Keystone XL was to deliver oil from the Canadian tar sands to refineries in the United States. and was in the news at the time of the PEIS.

Where much rhetoric in pro-A1 discourse is focused on the benefits but not the costs of OSTS development, the anti-A1 discourses reverse this pattern. Costs considered include monetary, environmental, and opportunity costs. Within the anti-A1 texts, 6% discuss the cost/benefit ratio of OSTS production.

- “The economic cost of this is not being holistically evaluated…” (2012-50260)
- “Large-scale development of oil shale and tar sands on our public lands would also come at a major cost to the West’s land, wildlife, air quality, and water resources.” (2012-50165)
- “Oil shale and tar sands carry onerous environmental costs to our air, water, landscape and climate that could be avoided by developing clean renewable energy resources.” (2012-50038)
- “I certainly perceive the negatives to outweigh the positives of opening up vast scales of land to commercial shale and tar development” (2012-50126)
- “Not worth it! Too little return for too much expense and sacrifice.” (2012-50229)
Many anti-A1 authors suggest that the solution is not to develop OSTS, but instead to put efforts into developing renewable energy or alternative energy sources. Conservation or some form of alternative, renewable, or clean energy is suggested in 42% of the anti-A1 comments.

• “We need to put our resources into developing clean energy.” (2012-025)
• “STOP DRILLING AND START INVESTING IN ALTERNATIVE, NON-POLLUTING ENERGY SOURCES.” (2012-50289)
• “As a nation, we need to invest in clean energy that gets a high return on energy invested, such as wind…” (2012-50012)
• “Develop clean energy to stop global warming.” (2012-025)
• “If our public lands are to be used for any sort of energy exploration or production, then only for renewable, non-polluting projects such as wind and solar.” (2012-50041)
• “We should do everything possible to save energy by using it efficiently.” (2012-50080)
• “BLM should be prioritizing solar, wind and geothermal sources of energy.” (2012-50024)

In anti-A1 storylines, the United States is constructed through discourse as a proud liberal democracy with an environmental consciousness. The nation is endowed with national treasures, heritage, and resources it should be protecting. There are regional identities, but people tend to refer of themselves as citizens.

• “As a tax paying, law abiding, active voting citizen I am absolutely against this proposal.” (2012-50244)
• “Thank you for your help on behalf of America's irreplaceable lands, water and wildlife.” (2012-175)

• “It is the time for us as American citizens to use our God and country-given rights to ensure our lands, our history, and our futures are protected” (2012-50017)

• “This proposal also highlights America's increasingly hazardous dependence on fossil fuels, the present trajectory of which will place this dependance before the preservation of our wild lands” (2012-50182)

• “The 2008 proposal was nothing more than an industry land grab that was not in the best interests for the citizens of the United States both economically and environmentally.” (2012-50171)

Those opposed to large-scale OSTS development frequently refer to “public lands,” while advocates almost never do so. For opponents, the land under consideration for OSTS development is common property that should be managed in the interests of the people of the nation, not only the people in the region. It is seen as capable of providing more than energy resources. Many of those uses are viewed as non-destructive and compatible, including recreation, wildlife habitat, and grazing.

• “It's hard to imagine a less prudent use of our public lands.” (2012-216)

• “This is an obscene amount of public land to be tied up for potential commercial leasing…” (2012-50162)

• “There should be NO extraction or "development" of fossil fuels on public lands.” (2012-50048)
• “BLM, U.S. citizens trust you to make wise decisions, and to protect our land.” (2012-50140)
• “It is my understanding that these public lands belong to all of us.” (2012-50230)
• “Oil shale development is inconsistent with the principal of multiple use, because all lands so developed are destroyed forever.” (2012-001)
• “We are also concerned about the impacts to our public lands that the oil shale industry would have.” (2012-50366)

In anti-A1 discourse there is little concern with national security or energy security. Other countries are not portrayed as threats. Only Canada appears, serving as an example of the dangers of unconventional energy development. Energy independence receives only one mention, but the limited supply of oil does arise in these discourses.

• “This OIL is for EXPORT and oil is a FINITE resource so there may come a day where we need to produce that oil for AMERICA and not global markets.” (2012-50193)
• “The public seems unaware of the environmental cost and the finiteness of oil.” (2012-50170)

There is little talk of balancing conservation and development. Authors insist that the environment needs to be protected from OSTS development. This perspective that nature is fragile and needs to be conserved points all the anti-A1 discourses toward the worldview of egalitarian communitarianism. Anti-A1 discourses align with the with the egalitarian communitarianism ideas that we need to think about future generations, that we need to live lightly by managing needs, and that nature is ephemeral. Some texts may
express slight variations on those perspectives, but as a whole, these discourses fit this cultural worldview. The one possible exception is the Protect Parks discourse. These texts specify certain areas, primarily national parks, as deserving and in need of protection. The implication is that other areas may not need protection, or that they may be resilient enough to tolerate development. These opinions are not explicitly stated, but they could shift that particular discourse toward another cultural worldview.

The discursive entities, relationships, and taken-for-granted knowledge that are present in the four anti-A1 storylines are summarized in Box 6.5. Analysis of the individual storylines included in this group follows, along with the elements of discourse that define and differentiate them.

| · Water is in short supply, the OSTS region is arid and prone to droughts |
| · Air quality and climate change are risks |
| · Pollution and cleanliness |
| · Aesthetic value |
| · Language use reflects destructive nature of OSTS use |
| · Focus on costs and risks of OSTS development |
| · Put efforts into alternative energy |
| · Identity as American citizens |
| · Lands belong to the public |
| · The environment needs to be protected |

*Box 6.5. Shared Elements of the Anti-A1 Storylines*

**Too Many Resources to Gamble Storyline**

This is the largest group of comments in the sample, with 50 texts and 24% of the total. The Too Many Resources storyline offers better explanations of risks and agents are
than in other discourses in the anti-A1 group. Table 6.8 shows the top 20 key content
terms for this storyline.

**Storyline.** This storyline contends that OSTS development and commercialization
will use too much water, a precious resource. It is a destructive use of land, and it
requires vast amounts of energy to produce. The immaturity of the production technology
makes OSTS an even bigger risk. Water, land, and energy are the primary resources at
risk due to the consumptive nature of OSTS, but other things of value, such as clean air,
jobs, aesthetics, wildlife, and recreation, are also at stake. Authors in this group show
some variation in their perspective on whether OSTS should be allowed to proceed at all,
on public lands, or only on RD&D leases until they can be shown to be more
conservative in resource use. What unifies these comments is the idea that OSTS
development should be limited because it will use too many resources. The top 20 key
content words for the Anti A-1 storyline are listed in Table 6.8.

- “We should not risk our water, air, pristine lands, crucial species habitat and
  outstanding recreation opportunities for any energy development, much less
  one dependent on unproven technology.” (2012-175)

- “We accept that some of what’s left will have to be sacrificed for energy
  exploration, but it is beyond us that we are asked to gamble on a form of
  energy that requires large amounts of our scarce water and more energy than it
  will produce to make use of it.” (2012-198)

- “We already face chronic water shortages in the arid steppes of Wyoming. We
  have no clear answers from industry about what potential oil shale
Table 6.8
*Frequency of Key Content Words in Too Many Resources to Gamble Storyline*

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development would mean for our water. It is simply not worth gambling away our water and real jobs we have now in farming and ranching.” (2012-50123)

Entities. Water is the most-often mentioned of the resources that are too valuable to waste on OSTS development. It is the most frequently used key content word, with 70% including some reference to water resources. There is concern over water contamination, but the consumptive use is seen as the greater water-related risk.

- “Do we want to divert water to an unproven process that after 100 years hasn’t yielded one commercially-produced barrel?” (2012-50123)
- “Three barrels of water are required to extract one barrel of oil. Ninety percent of this polluted water is dumped into tailing ponds. The discharge water is polluted with heavy metals, cyanide and ammonia.” (2012-50065)
- “Since you come from a ranching and farming family too, we know you understand the importance water and shared natural resources to our way of life in the West” (2012-50366)
- “For these we sacrifice large amounts of water for little gain. While 75% of Earth is covered with water only the smallest fraction is fresh water, which will be being used for this development.” (2012-50327)
- “Water is the most valuable commodity on earth...protect it at all costs.” (2012-50217)

Discussions of water supplies in the region figure prominently in this storyline, appearing in 30% of the texts. Water shortage is an existing risk that OSTS development would exacerbate. This perception is based upon the taken-for-granted knowledge that the region is arid, prone to droughts, and likely to become drier due to climate change.
• “And since this development would be taking place in western states like Colorado, water is already a very precious commodity, often in short supply.” (2012-175)

• “Additionally, too much water is used in the extraction process, particularly in areas where water is scarce (consider availability in severe to extreme droughts which are inevitable)” (2012-50024)

• “We already face chronic water shortages in the arid steppes of Wyoming.” (2012-50123)

• “As you are well-aware, Utah is second-driest state in the country…” (2012-50366)

Authors question the decision to dedicate water to an unproven activity, especially when there are so many other competing uses. Authors take a long view of this risk, anticipating the water demands of a commercial-scale industry and the stress that will be put on an uncertain water supply.

• “There is already concern about stretched water resources in this area, particularly in light of the proposed Blue Castle nuclear power plant on the Green River.” (2012-50313)

• “Water is scarce in Utah and oil shale demand will harm agriculture and future populations.” (2012-50025)

• “Annual commercial oil shale production could require one-and-a-half times the water needs of all 1.3 million Denver Water customers. Where would that water come from?” (2012-50034)
• “In particular, studies on water demands for oil shale extraction clearly indicate that the industry will require more water than is available in this over-appropriated section of the Colorado/Green River basins” (2012-50354)

• “Commercial-scale development is guaranteed to have major consequences for our way of life here.” (2012-50366)

Energy appears in 60% of the comments in this storyline. Authors recognize energy in various ways. They write of energy resources, energy development, energy consumption, renewable energy, and energy required for OSTS production. Renewable energy, energy alternatives, and clean energy are suggested as better choices than the pursuit of OSTS. “Alternative” and “clean” are understood to mean non-fossil energy sources. Authors name geothermal, solar, and wind energy as specific sources of renewable energy that could replace the need for energy from OSTS.

• “I encourage Utah’s elected officials and business community to be leaders in developing clean energy alternatives.” (2012-50284)

• “Try focusing your overly generous land giveaways onto the country’s transition to alternate means of energy, ones with a small and clean footprint. Renewable Energys such as Solar, Wind and a Smart Grid Infrastructure.” (2012-50070)

• “As a nation, we need to invest in clean energy that gets a high return on energy invested, such as wind, and hugely reduce our carbon dioxide emissions in order to stave off the worst effects of global climate change.” (2012-50012)
Energy resources and the business of energy development are topics of discussion in this storyline. Authors consider where energy should come from, and conclude that fossil fuels, and OSTS in particular, are not prudent ways to supply energy needs. Energy, and in particular fossil energy, is recognized as a limited resource.

- “We’re scraping the bottom of the barrel for this energy and once it’s gone, then what?” (2012-50284)
- “We live on a finite planet and must greatly reduce use of fossil fuels in the near future if the planet is to sustain our children.” (2012-50025)
- “Is drilling really the best LONG TERM economical, environmental, energy producing option?” (2012-50117)
- “We will not choose to dedicate this limited electricity resource to oil shale development at the expense of our way of life.” (2012-50354)
- “Oil and gas companies are abandoning oil shale research independently, yet the State of Utah is still preparing to turn over public resources for speculative development.” (2012-50034)

This storyline recognizes that OSTS requires energy inputs, and that the amount of energy required is unacceptable. Terms such as intensive and inefficient are frequently used to describe the consumption of energy in the production of OSTS.

- “Extraction of tar sands oil is also very energy-intensive and costly and the refining process also uses obscene amounts of energy and water.” (2012-50113)
- “Tar sands and oil shale extraction is energy intensive, which means more expense and more CO2 released.” (2012-50024)
• “Because producing oil from oil shale involves using other natural resources and energy-consuming processes to convert fossilized organic matter embedded between layers of shale into conventional crude oil instead of letting Mother Nature do it for us!” (2012-50173)

• “In addition, the electricity needed for extraction technologies such as freeze-wall concepts will be enormous and require new power plants to be constructed.” (2012-50354)

Land is another prominent entity, referenced in 54% of the comments. Comments describe land as a valuable resource, capable of serving multiple uses. It is a resource that, like water, requires judicious and careful allocation. Land use for OSTS is described as consumptive and degrading. The damage caused is portrayed as permanent and pervasive.

• “[It] uses precious water and destroys lands that cannot be reclaimed despite what the oil companies say.” (2012-50085)

• “The extraction process completely devastates land; removing the oil and leaving the land unusable.” (2012-50113)

• “BLM proposals involve approximately 175K to over 1M acres in Wyoming - mostly in the Green River Basin - plus more in Utah and Colorado; that’s a whole lot of land to be given over to commercial leases…” (2012-50173)

• “These canyons are some of the last pieces of land on earth that have not been developed, they are truly unique. Giving such a large amount of land for mining poses a serious threat for the conservation of these places.” (2012-031)
• “There is much pristine wilderness there, as well as abundant wildlife and recreation areas that could be harmed.” (2012-50313)

• “What about sensitive wildlife habitats? What about the few remaining horses that are wild? What about treasures such as ancient tribal lands? Ancient ruins? Beautiful rock art? What about recreational opportunities?” (2012-50084)

Other, non-energy economic drivers are entities in this discourse. Recreation, tourism, agriculture, and ranching are all included. In the pro-A1 storylines, none of these were acknowledged as providing any significant benefits to the economy of the region. In the Too Many Resources storyline, other sources of economic activity and the people whose livelihoods depend on them stand to be harmed by OSTS development. This storyline also refutes the taken-for-granted knowledge in pro-A1 discourses that OSTS will bring jobs and economic benefits.

• “This plan would then not only negatively effect the outdoor industries of those states.” (2012-50245)

• “This likely will effect rivers, outdoor recreation (economy) and wildlife.” (2012-50077)

• “We will never choose to give up our river ecosystems, our agriculture, our non-industrial economy, and our lifestyles to support this industry.” (2012-50354)

• “The recreation industry in Colorado alone generates $3 billion of economic activity every year.” (2012-175)
• “Outdoor recreation, tourism, and agriculture are huge economic drivers in Wyoming…. It is simply not worth gambling away our water and real jobs we have now in farming and ranching.” (2012-50123)

• “The loss of jobs from outdoor recreation and tourism far outweighs this small bump in oil production.” (2012-50260)

• “Most mining is not sustainable long term. It is a superficial way to bring money to a community.” (2012-50117)

Agents and their motives. There are three main agents in the Too Many Resources storyline: the public, the energy companies/industry, and the BLM. The BLM is characterized as responsible for protection and management of land, but it may be swayed by the interests of the energy companies. The BLM’s duty is to represent the public’s interests, but not to determine them. By advocating for any given outcome, the commenters have already decided what is in the public interest. The actions of the BLM are portrayed as bordering on recklessness, negligence, and dereliction of duty. It risks taking the easy path with fossil fuels development.

• “Leasing our public land to corporations who will destroy the very face of our country to make a buck.” (2012-50190)

• “If the BLM truly cared about our natural resources they would protect them, rather than exploit them.” (2012-50031)

• “Allocating water rights to companies extracting oil seems to be a misuse of an important regional resource.” (2012-50236)

In this discourse, companies are interested solely in profits. They are uncaring about people or the environment. Overall, OSTS producers are “a potentially harmful and
economically nonsustainable industry” (2012-50077). Companies and industry are recognized as agents with motives and interests, but remain vague, unnamed figures. They are deceitful, greedy for land and resources, and willing to sacrifice the public good for gain.

- “However, propaganda from the fossil fuel industry, has 60% of the general public in doubt.” (2012-50025)
- “These are not sacrificial lands for the gas and oil industry or wall street, they are our lands.” (2012-50070)
- “If the “energy” companies were truly about “energy” they would put their valuable time and money into energy sources that don't obliterate the environment and make people sick.” (2012-50031)
- “We cannot give away the water rights of other human beings, or allow ecosystems to dry up, so companies can profit from oil.” (2012-50276)
- “Yet the oil industry wants more of our precious public land and tax dollars for their speculation.” (2012-50123)
- “In a rush to develop, the companies often take shortcuts that prove harmful to the natural environment.” (2012-50236)

The public is constructed as a silent partner in American public land ownership and management. The authors are writing to voice their objections and concern over the misuse of those common pool resources, frequently represented as “our public lands,” “our way of life,” “our economy,” and “our air and water.” The public is being “asked to gamble” (2012-198) these shared resources on questionable energy that will benefit companies and industry more than the people of this country.
• “This is the trust Americans have left in your hands, to protect and handle them responsibly. Why are you giving them away?” (2012-50070)

• “I urge you to protect our American West from the short-sighted destruction we see in Canada.” (2012-50065)

• “The people of Wyoming deserve better than speculation and unavoidable environmental degradation. We deserve our open spaces, water, and agricultural heritage that we all value.” (2012-50123)

• “We are also concerned about the impacts to our public lands that the oil shale industry would have. Our public lands are what make Utah such a special place to live, and we count on these places for hunting, fishing, recreating and grazing our cattle.” (2012-50366)

Metaphors, rhetoric, and situated meanings. Where limited resources are concerned, this storyline has determined that OSTS production simply uses too much of them. Water, energy, and land are the primary resources for which consumption levels are unacceptable. The consumption and degradation of resources is the primary risk of OSTS development. Commenters object to the “excessive energy in the extraction” (2012-50085), consumption of “exorbitant quantities of water” (2012-50313), and the “use of massive amounts of land” (2012-031).

• “I certainly perceive the negatives to outweigh the positives of opening up vast scales of land to commercial shale and tar development” (2012-50126)

• “I would prefer that lands are only used for RD&D and that no commercial leasing be allowed until oil shale and tar sands technologies are made both safe to the environment and truly economical.” (2012-50077)
• “There currently is not enough water to go where it's needed, so exactly where do intend to get the Huge amount of water necessary for your proposed drilling?” (2012-50241)

• “Additionally in our already severely severely water-starved west: diverting this inconceivable amount of water just for the extraction of oil is completely out of the question.” (2012-50260)

• “The amount of energy needed to extract energy from oil shale or tar sands makes it a poor economic choice while the extent of its damage on the ground is intolerable.” (2012-50207)

The acreage of land to be made available to OSTS leasing is frequently used to back up the assertion that too much land will be used. Authors cite numbers associated with the 2008 PEIS, the 20012 PEIS alternatives, and existing projects. Acreage is discussed in 26% of the comments, often in very specific terms. Authors use these figures to argue that this is too much land to dedicate to OSTS activities.

• “So why does one need 461,965 acres to plan and research the extraction of these resources?” (2012-031)

• “Reducing the area to 325,000 total acres is a more reasonable approach for R & D. It preserves lands from being unnecessarily comprimised for development that may prove to be impractical, too costly, and too resource intensive to ever be implemented.” (2012-50370)

• “Just read an article by an environmental group about a push by an oil shale group wanting large acres of land in Colorado for oil shale development.” (2012-234 emphasis original)
• “It’s ridiculous to assign 91,000 acres for tar sand experiments when there is already a tar sands project just south of Vernal, Utah doing nothing. 252,000 more acres for oil shale is even more stupidity.” (2012-50070)

The quantity of oil to be gained from water investment is often cited as evidence of the unreasonableness of dedicating water to OSTS production. It is taken-for-granted knowledge in this storyline that OSTS requires a lot of water, but the exact quantity of water required is not consistently stated. Regardless of the ratios, the amount is deemed to be extravagant.

• “The BLM estimates that it takes 1 to 4 barrels of water to produce a barrel of oil.” (2012-50025)

• “To even attempt to generate a single barrel of oil from oil shale, 3-5 barrels of water are needed in the refining process alone.” (2012-175)

• “Annual commercial oil shale production could require one-and-a-half times the water needs of all 1.3 million Denver Water customers.” (2012-50034)

An important aspect of both water and land is that they are seen as belonging to the public. In the case of lands managed by the BLM, they truly are publicly owned property. Where water in the American West is concerned, rights to use water can be privately owned. However, there is a requirement of water rights holders that water be put to beneficial use. The Too Many Resources discourse treats water as a common-pool resource that should, like public lands, be used for the greatest public benefit. In the case of OSTS, the risks outweigh the possible benefits of using water in this way, given its scarcity and competing uses.
• “Allocating water rights to companies extracting oil seems to be a misuse of an important regional resource” (2012-50236)

• “Maintaining wilderness values and ecological integrity on our wild public lands contributes to our way of life and to our economy.” (2012-175)

• “This is not the time for our government to use our land and our heritage to leave their legacy behind. It is the time for us as American citizens to use our God and country-given rights to ensure our lands, our history, and our futures are protected.” (2012-50117)

• “I am concerned that this form of development is not the best way to use our lands and resources, nor the best way to improve the lives of our native citizens economically or otherwise.” (2012-50126)

• “Until I can be given convincing evidence that this is a good idea, I certainly perceive the negatives to outweigh the positives of opening up vast scales of land to commercial shale and tar development.” (2012-50126)

In the Too Many Resources storyline, more than any other, authors express concern over the energy inputs required for OSTS production. They charge that extraction is inefficient, energy intensive, and costly. In particular, the net energy ratios are the reason OSTS is so expensive and polluting, and provides so little benefits.

• “Tar sands and oil shale extraction is energy intensive, which means more expense and more CO2 released.” (2012-50024)

• “If none of this matters to you, what about the fact that it takes just about equal amounts of energy to create the energy received?” (2012-50084)
• “In addition, the electricity needed for extraction technologies such as freeze-wall concepts will be enormous and require new power plants to be constructed.” (2012-50354)

• “I urge a thorough analysis be taken on the ERoEI (Energy Return on Energy Invested) -- or net energy -- of these fuels, and compare them to the returns given from renewable sources.” (2012-50198)

Assumptions about relationships and figured worlds. The Too Many Resources storyline challenges the BLM’s decision to dedicate land and, by extension, obligate water and energy resources to OSTS development. Authors state the belief that the public should be able to trust the BLM to responsibly protect and manage public lands in the public interest. Comments express concern that the BLM may be swayed by the pressures of energy companies and the country’s fossil fuel dependency. Writers seek to remind the Bureau of its obligation to the people and the environment.

• “I have little faith that our government will have much foresight in this matter, but one can always hope.” (2012-50195)

• “We need leadership, not greed.” (2012-50190)

• “While I commend the BLM for reducing the number of available acreage for tar sands development, I believe that tar sands exploration/excavation in Utah should be completely prohibited.” (2012-50010)

• “If the BLM truly cared about our natural resources they would protect them, rather than exploit them.” (2012-50031)

Energy companies want too much and they do not care about cost. They put the interests of companies and industry over the needs of the people. This is a “wildly
speculative industry” (2012-50070) that will take profit making as far as the BLM allows. Producers will take shortcuts and harm the environment because “these companies do NOT have long term interests in the region” (2012-50236). Texts are relatively civil, and there are no allegations of collusion between the BLM and the energy industry.

**Framing.** The Too Many Resources storyline is a positive frame suggesting that the BLM make the choice to limit OSTS development. Commenters concentrate on the loss and harm that will be experienced if public lands and resources are dedicated to OSTS development. This is a positive goal frame that describes how to avoid the overuse of water and energy resources and the destruction of land.

**Summary.** OSTS development and commercialization is risky use of precious resources. It will consume and contaminate vast amounts of water in an arid region where drought is always a threat. Large tracts of public land will be laid to waste. Producing energy from OSTS is an inefficient process that requires almost as much energy as it generates. The energy industry is greedy for profits and doesn’t care about the risks. Instead of pursuing OSTS, effort should be directed toward renewable energy. Box 6.6 shows the discursive elements of the Too Many Resources storyline.
Unsafe for People and the Environment

**Storyline**

Thirty texts are in this storyline, 14% of the sample. In contrast to the Too Many Resources discourse, which is concerned with the natural resources required for production, the Unsafe discourse concentrates on the unnatural resources that will be required. The top 21 key content words (*extraction* and *people* tied for 20th place) are shown in Table 6.9.

**Storyline.** This storyline contends that the products, accidents, and unintended consequences of OSTS are a grave threat to human and environmental health. Not enough is known about production methods, and the inevitable but unforeseen problems make development untenable. Authors believe that fracking will occur, and the toxins,
Table 6.9  
*Frequency of Key Content Words in Unsafe for People and the Environment Storyline*

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</table>
solvents, and fracking fluids are all feared as uncontrollable risks. The potential for spills and seepage of the oil products is also a threat.

- “We cannot develop this resource without putting the health and safety of our citizens at risk.” (2012-0216)
- “…which again brings into question the preparedness to push a project like this through in any kind of safe manner [and furthermore there is an assumption that this project is a worthwhile endeavor. I believe that it’s questionable that tar sands can ever be a safe or sustainable product for extraction]” (2012-004)
- “Over life of a typical well, chemical additives (used in fracturing fluids) may account to 100,000 gallons of chemical additives.” (2012-034)

**Entities.** One of the primary valued entities at risk in this storyline is human health and safety. These are specifically discussed in 70% of the texts. Authors write of cancer, carcinogens, neurological disorders, respiratory ailments, and other threats. Solvents and other chemicals listed in comments are described as “dangerous toxic chemicals that threaten human health as well as wildlife” (2012-50311). Human health is something that authors are unwilling to compromise for energy production.

- “In Canada, this scenario has led to tumors and mutations in animals as well as increased rates of rare cancers in humans.” (2012-50276)
- “We cannot develop this resource without putting the health and safety of our citizens at risk.” (2012-216)
- “We need to protect our health and safety, and that of domestic and wild animals, not enrich foreign oil and gas interests.” (2012-50027)
• “There was no evidence regarding if people living near the sites suffered from environment related health problems nor was there any remark as to whether that research had been done.” (2012-50096)

Even though they are only possibilities in the production methods for OSTS, fracking and fracking fluids are prominent entities. This could be the result of confusion or misinformation. It is also possible that the lack of information and specificity about methods could be leaving a gap that people try to fill with other knowledge. Commenters may be substituting their fears and perceptions of risk about shale oil and gas production to OSTS methods. Several texts provide lists of chemicals used in fracking and in OSTS production and their corresponding human health risks.

• “I am against Fracking unless it is well proven to be safe for the environment as far as chemicals in the water table, discarded chemicals on the ground or in waterways, and earthquake risk. Do the science.” (2012-50015)

• “The 2011 US House of Rep. Found 750 compounds in fracturing products. These manufactures also withhold information and are injecting fluids containing unknown chemicals that they put down in our earth, water and air.” (2012-034)

• “Fracking creates many problems for wildlife besides increased mortality from toxic chemicals: increase of edge habitats, altered microclimates, increased traffic - noise - lighting - well flares” (2012-216)

The risk of poisoned surface and groundwater is a defining feature of the Unsafe discourse. In Too Many Resources, the focus was on the consumption of water. In the
Unsafe storyline, the concern is over contamination. Not only are spills and accidents a risk, the production of OSTS poses the unavoidable risk of water pollution.

- “Heating oil shale in the ground can contaminate vital groundwater supplies.” (2012-50266)
- “…any surface or groundwater contamination will not only affect the local population but will likely have a significant impact on water quality for the millions of downstream users.” (2012-50285)
- “For example, I have personally seen data from Anvil Points which indicated that in situ retort water contained arsenic in excess of 1,000 times the safe drinking water standard.” (2012-50162)

**Agents and motives.** In this discourse more than any other, authors refer to energy producers as corporations as well as companies and industry. They are never called businesses. Their motives are more often portrayed as greed and blatant disregard for human health, wildlife habitat, and the environment in general. They withhold information on fracking fluid and refuse to open their books on the techniques and chemical additives they use. They lie and make false claims to increase profits and stock prices.

- “These manufactures also withhold information and are injecting fluids containing unknown chemicals that they put down in our earth, water and air.” (2012-034)
- “A few greedy corporations should not be allowed to rape OUR land for their profits.” (2012-50311)
- “The companies are lying to make a profit.” (2012-50281)
People are agents in the Unsafe storyline. They are constructed in discourse as individuals more than in any other storyline. They take individual actions, such as drinking, moving, feeling sad, enduring economic hardship. As people, citizens, and humans, they are perceived to be at risk from OSTS extraction activities.

- “This leaks into and found to be in people’s drinking water and milk.” (2012-034)
- “Both the extraction and use of the product are hazardous to people.” (2012-50093)
- “Thirdly, it saddened me to read about peoples’ relationships in towns disappearing due to transient oil field workers.” (2012-50096)
- “The citizens of Western Colorado have been through several oil shale busts over the past years; the latest being 30 years ago.” (2012-50171)

People are objecting to OSTS risks in part because they are involuntary and may be unknown to those who are impacted. OSTS threatens people’s health, relationships, and livelihoods. People want protection and redress from a “state government sworn to protect their welfare” (2012-50128). They also expect to have a voice in the decision-making process. Without the opportunity to ask questions and be heard, the process is “ineffective and undemocratic” (2012-004).

- “Safeguarding the environment and our precious life sustaining resources against these hazards should be the first priority in protecting the public interest.” (2012-50353)
- “I personally know people in my county who have suffered greatly since oil shale sites have moved onto their properties.” (2012-50096)
• “How do their lobbyists get to influence our federal government and we don’t? I’ve sent e-mail after e-mail and I know others who have done the same.” (2012-50372)

The BLM is viewed as shirking its obligation to be a regulatory agency. It needs to think broadly as it considers the wide range of OSTS impacts. Instead, it has avoided addressing difficult topics in the PEIS, and is making a decision with incomplete information. The BLM lacks a willingness to protect against pollution and misuse of public resources. It is responsible for the “failure of the EIS to present a reasonably accurate description of the known data and issues” (2012-50162).

• “BLM, U.S. citizens trust you to make wise decisions, and to protect our land.” (2012-50140)

• “BLM also needs to identify and analyze real data from oil shale operations from all available sources, and incorporate them into its analysis.” (2012-50162)

• “It seems that none of the experts could give an answer for why (with so little information) this process is going through… Other than to defer responsibility to other people, and other bodies like Congress.” (2012-004)

• “Some European countries have banned fracking. I guess they value human life.” (2012-034)

Comments make the BLM responsible for safeguarding not only land, but also air, water, wildlife, and human health. The proposed OSTS development puts them all at risk. Rather than allowing mining and extraction, the BLM “should set the example” (2012-50041) in clean, safe, non-polluting energy production.
• “There should be no greater obligation for the BLM than protecting our water resources.” (2012-50353)

• “Perhaps someday the technology will exist to extract this resource safely and without threatening an entire ecosystem. That day is not today.” (2012-50233)

• “While the BLM is not an air quality agency, the quality of the air does impact the human and wild life population.” (2012-50279)

Metaphors, rhetoric, and situated meanings. More than in any other discourse, these texts evoke unfamiliarity and dread. Extreme risk to health is a prominent theme in the rhetoric of the Unsafe storyline. OSTS development poses threats, often invisible and insidious. The future of the region is illustrated with examples from other locations. Authors’ texts point out that very little is known about OSTS production, and that its methods are immature.

• “That will likely causes the groundwater to become contaminated with elements like arsenic and fluoride, creating a groundwater nightmare.” (2012-50285)

• “Fracking and tar sands extraction are a dangerous mess with no proven method of clean-up or protection for those in its path.” (2012-50044)

• “Towns large & small, across the country, have been so adversely effected by the practice of fracking, they will never recover. Air pollution compared to that of Los Angeles, tap water not only undrinkable, but flammable & livestock and wildlife dying in the fields and on the banks of streams & rivers. Grasslands once productive, now laid waste.” (2012-50128)
The examples used by authors refer to fracking for tight oil and gas in other locations as lessons on the risks and unpredictable nature of such practices. As an example of the damage that can come from tar sands production, authors cite the hazards of oil sands production in Canada. Both of these references indicate a misunderstanding of OSTS production. The substitutions may reflect a desire to fill in missing information for risks in a situation where there is a shortage of easily understood information, reference to similar projects, and data. If this is the case, it is likely an effect of the representativeness heuristic.

- “The research increasingly shows that fracking has contaminated groundwater resources from Wyoming to Pennsylvania.” (2012-216)
- “Have we learned nothing from N.Y., Penn., Ohio & Wy. to mention a few?” (2012-50128)
- “This waste cannot be easily contained. In Canada, it has become dispersed through waterways and ecosystems, directly affecting human health and harming wildlife. Even when companies claim to be following proper safety precautions, waste seeps out of the vast tailings dumps.” (2012-50276)

Spills and accidents are thought to be inevitable, and will result in contamination and pollution. Many of these predictions involve water, which will make cleanup difficult. In this discourse, water becomes a vector for the uncontrollable spread of contamination, causing widespread harm.

- “If there is a spill (and there will be), tar sands oil sinks to the bottom of rivers/streams and cleanup is almost impossible.” (2012-50044)
• “In case of a spill/leak/truck accident—if the product leaving the mining area gets into the Green River, or any other waterway, have studies been done on how this type of petroleum product affects waterways? Does this product float or sink? How would a spill be contained in low river situations? In a raging flood? In a blizzard?” (2012-50279)

• “I would like to see what kind of research has been done to assess water sources with close proximity to the existing oil shale and tar sand sites and what kind of health those streams are in. What effect does run off from oil leaks have on the streams and rivers? I would also like to see what chemicals exist in fracking fluid and what effect they have on rivers and streams.” (2012-50096)

An interesting feature of the Unsafe storyline is the use of questions in the text. These barrages of unanswered questions serve to highlight information that authors feel is missing from the PEIS. These are topics express the unaddressed fears and unmitigated risks perceived by commenters, particularly in worst-case scenarios.

• “In case of a spill/leak/truck accident—if the product leaving the mining area gets into the Green River, or any other waterway, have studies been done on how this type of petroleum product affects waterways? Does this product float or sink? How would a spill be contained in low river situations? In a raging flood? In a blizzard?” (2012-50279)

• “How much water is expected to be dewatered from underground mining operations? What are the exact water quality considerations and standards which must be met in order to apply this water in these ways?” (2012-50162)
Technology has a dual role in this discourse. It represents the possibility of better, greener, cleaner energy that would be preferable to OSTS. It also addresses the unready, unknown, and therefore risky production methods of OSTS. As a method of OSTS production, authors see technology as a risk. Technology for renewable energy production is the solution to the problem of energy needs.

- "Tar sands and oil shale technology itself is just evolving, and Utah, Wyoming, and Colorado would become glorified laboratories for the proprietary methods of industry." (2012-50276)
- "I agree that land use much be restricted especially since the technology is questionable at best." (2012-50044)
- "We have far better options—solar and wind, for example, preferably within and around cities—and the technology to pursue them." (2012-50276)
- "There are better alternatives for energy that do not destroy our earth and will secure a better future for our children and grandchildren. We must put this future above all else and put our energies and money into significant development of non-fossil fuel energy development." (2012-50081)

**Assumptions about relationships and figured worlds.** For the commenters in the Unsafe discourse, the PEIS decision is an ethical and moral choice that impacts people who live in the region. As in the pro-A1 discourses, authors recommend that the BLM trust the local residents to determine the management of public lands in their area. The difference is that in the Unsafe storyline, there is the assumption that the locals would decide against OSTS development.
• “It is immoral for corporations to harm others in their pursuit of economic gain.” (2012-50081)

• “I believe bringing these destructive mining and refining processes to the U.S. would be entirely unethical.” (2012-50276)

• “Let adjacent communities decide the best use of BLM land, e.g. grazing, hiking, fishing, hunting.” (2012-50027)

In this storyline, as in many others, the BLM is the custodian of public lands but may have lost its way in terms of what is best for the public. The United States should be more forward thinking and innovative in finding ways to produce energy while protecting people and the environment. Authors challenge the BLM to pursue “alternatives for energy that do not destroy our earth and will secure a better future for our children and grandchildren” (2012-50081).

• “Give us clean energy - the feds should lead the way. …Talk to the EPA - our air quality already ranks among the worst in the nation. My kids need clean air!” (2012-50041)

• “The United States should be the leader in environmentally safe energy. We should not be thinking of ways destroy the planet. We are the greatest country on earth, we need to act like it.” (2012-50045)

• “Safeguarding the environment and our precious life sustaining resources against these hazards should be the first priority in protecting the public interest. …I’m more than disappointed. I’m damn mad.” (2012-50372)
In the Unsafe storyline, the local communities and ecosystems will bear the risks and consequences of OSTS development, and receive no benefits. Even the economic impacts and jobs that OSTS will bring are undesirable.

• “Oil shale and tar sands might create thousands of jobs, but they are jobs given to migrant workers from out of state and those jobs are clearly detrimental to important community ties and employment.” (2012-50096)

• “We need to think sustainably in terms of our economy, investing in jobs that will better society and remain viable for more than a few years rather than degrading human health and the environment.” (2012-50276)

• “In fact, reliable studies indicate that it will negative affect the economy, as well as increase domestic gas prices.” (2012-50373)

**Framing.** Negative goal framing is the mechanism in the Unsafe discourse. Permitting OSTS development will lead to losses of things people value. There will be severe and widespread negative consequences that include death and disease. The goal is for BLM to make a choice that prevents OSTS development and protects people from the treacherous practices of the energy companies.

**Summary.** An unfamiliar activity with uncertain consequences is being imposed on the public. The risks associated with OSTS development are uncontrollable. Human and environmental health are endangered and people are fearful. Air and water, the most basic needs of life, are threatened. Companies are not transparent about the risks, and they might be lying outright. The government should be protecting people but cannot be entirely trusted. Concerns about fracking materials and methods for tight oil and gas are applied to OSTS production. More than any other discourse, this evokes the dread and
unfamiliarity of the psychometric paradigm of risk perception. Box 6.7 summarizes the
Unsafe for People and the Environment storyline.

<table>
<thead>
<tr>
<th>Storyline:</th>
<th>Metaphors, rhetoric, and situated meanings:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSTS resources cannot be safely developed with the current technology. Until it is demonstrated to be safe, the BLM should not allow companies to impose those risks on humans, animals, and the environment.</td>
<td>· Unfamiliarity and dread</td>
</tr>
<tr>
<td>Entities:</td>
<td>· Examples of hazards from hydraulic fracturing and Canadian oil sands</td>
</tr>
<tr>
<td>· Health and Safety</td>
<td>· Spills and accidents</td>
</tr>
<tr>
<td>· Hydraulic fracturing</td>
<td>· Unanswered questions</td>
</tr>
<tr>
<td>· Water</td>
<td>· Technology</td>
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<tr>
<td>Agents with motives:</td>
<td>Assumptions about natural relationships and figured worlds:</td>
</tr>
<tr>
<td>· Energy companies/industry</td>
<td>· OSTS development is a moral and ethical issue best left to local people</td>
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<td>· People as individuals</td>
<td>· BLM should be a leader in clean energy</td>
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<td>· BLM</td>
<td>· Local communities and economies will be harmed</td>
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<tr>
<td>Worldview:</td>
<td>Goal framing:</td>
</tr>
<tr>
<td>Egalitarian Communitarian</td>
<td>Negative goal framing - If OSTS development is allowed, unsafe activities will harm humans and the environment.</td>
</tr>
</tbody>
</table>

Box 6.7. Unsafe for People and the Environment

Stop Climate Change Storyline

This is a small set of 21 texts, or 10% of the sample, that stand out for their tight focus on the risks of climate change. The risk of climate change is present in 21% of texts in the sample, and 35% of the anti-A1 texts, but in other storylines climate change is discussed as a secondary or cumulative effect. Although the majority of the Stop Climate Change texts are short and without much detail, they provide an interesting narrative that
appears to be an attempt to shift the problem definition from meeting energy needs to averting a climate disaster. Top twenty key content words are shown in Table 6.10.

**Storyline.** This storyline challenges the idea that OSTS should be considered as an energy source due to the high carbon output. Climate change is an imminent threat and the possibility of OSTS development needs to be dropped from consideration. Instead, the nation should turn its effort toward renewable energy resources and conservation.

- “With the climate crisis intensifying it is unfathomable that we are even discussing further oil shale development. With even modest increases in conservation we can easily make up what we would gain from this destructive energy source.” (2012-50275)

- “Our climate is at stake; we should leave this energy in the ground and develop alternate energies.” (2012-50080)

**Entities.** In spite of the brevity of comments, they reveal several entities that do not have a strong presence in other discourses. Global warming and climate change are entities that are reified in the Stop Climate Change storyline. They are risks that exist even without OSTS development, but the threat is heightened due to OSTS development.

- “Global climate change is REAL, and getting worse.” (2012-50289)

- “Once this source of fuel is tapped and hydrocarbons from this source are put into the air, we can say goodbye to the climate.” (2012-50023)

- “I have been doing a significant degree of research on the issue of global warming and I am convinced (despite what the current candidates for the Republican Nomination are claiming) that Global warming is a real and significant threat to the welfare of life on this earth.” (2012-50039)
Table 6.10

*Frequency of Key Content Words in Stop Climate Change Storyline*

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<th>Word</th>
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</table>
Science is recognized most widely in this storyline. Texts refer to outside sources of information more frequently than in any other discourses. Referenced materials come from a variety of “authorities,” including Wikipedia, National Geographic, U.S. Department of Agriculture, Intergovernmental Panel on Climate Change, and Proceedings of the National Academy of Sciences. Authors also use material from the PEIS that discuss the science, indicators, and predictions of climate change to argue that the topic has not been given sufficient consideration.

- “In the past several decades the climate science community has become much more concerned about the future adverse impact of global warming” (2012-50047)
- “The ongoing study by the IPCC is the most exhaustive study ever on climate change.” (2012-50170)
- “Available climate science data indicate that CO2 production needs to be slowed, then decreased and sooner rather than later.” (2012-50047)

Earth as our home planet is an important discursive entity. Whereas risks in other discourses are local, Stop Climate Change is uniquely focused on the global impacts of this regional decision.

- “It’s way passed time that fossil fuels be left where they need to stay and let the earth renew itself and come back from the brink of global warming and the resulting disasters and catastrophes that are beginning to take their toll on us all.” (2012-50371)
- “Earth, our planet, has experienced a previous global warming event which occurred 56 million years ago.” (2012-025)
• “We are very concerned about using so much of our public lands for an experiment to produce more oil/fossil fuels which contribute to global warming which is one of the greatest threats facing earth.” (2012-50247)

Just over half the comments in this storyline discuss the future. The impacts of OSTS will have long-lasting effects, and risks will accrue over time. This process is already happening, but OSTS development will intensify the risks. Authors consider decisions that will be wise for the future, not just the needs of the present. They express concern for the welfare of future generations. One author states his reluctance to have children, given the uncertainty of the world they will live in. OSTS is seen as a “type of dirty energy that is killing my future” (2012-50014).

• “Currently my wife and I do not feel comfortable having kids because the effects of climate change 50 years from now are likely to leave them without adequate food and water quality.” (2012-50014)

• “Trading our environmental stability for an increase in oil production is not good decision for our future.” (2012-50259)

• “As we contemplate our failure in years to come, we may look back on a 96% reduction by 2050 as a comparatively easy challenge.” (2012-001)

**Agents and motives.** America and Americans are a collective entity that is dependent on fossil fuels. The pursuit of more supply is an unreasonable path that will lead to self-destruction. Americans need to come to their senses and make better choices. The outsized role the United States. has in producing greenhouse gasses and its responsibility for reducing its carbon emissions is underscored by this storyline.
• “The US can, and must, get out of fossil fuels for the health of the planet and for future generations of Americans.” (2012-50289)

• “My hope is that we as a nation focus more on developing a long term solution to our oil dependence instead of destroying the very thing that gives us life, enjoyment and sustainability to solve for an issue that is short term.” (2012-50259)

• “The use of public lands to pursue fossil fuels is a disgrace to our country and to humanity and makes me ashamed to be an American.” (2012-50048)

• “For the world to reach a 50% reductions target by 2050, the U.S. must cut its emissions by 88%, and for the world to hit its 85% target, the U.S. must cut its greenhouse gas emissions by 96%. Effectively, by mid-century we must eliminate the use of fossil fuels in this country.” (2012-001)

• “Wyoming produces more carbon to be released into the atmosphere as carbon dioxide than any of the U.S. states and most nations.” (2012-50170)

The Stop Climate Change authors construct identities as defenders of the climate, earth, or the country. There is an “imperative that we face to reduce greenhouse gas emissions” (2012-001) and a moral obligation to transition to renewable energy resources. The authors portray themselves and others as willing to make personal sacrifices to “stop this insanity and obsession with a finite resource and turn your attention and efforts to renewable and sustainable resources” (2012-50371).

• “I will use my voice to ensure that my stand for a resilient and livable future is reflected by those who represent me in government.” (2012-50038)
• “There are many people out there that I work with in 350.org, iMatterMarch, Peaceful Uprising and the Citizen's Climate Lobby that are willing to make large risks and sacrifices to make this issue a top priority.” (2012-50014)

• “With even modest increases in conservation we can easily make up what we would gain from this destructive energy source.” (2012-50275)

The BLM is portrayed as needing to come to its senses. It has not given careful consideration to climate change, and has dodged the issue in the PEIS. It has not evaluated or quantified the climate impacts of a commercial industry. Commenters challenge this omission and question a decision that would allow such a harmful activity. Few reasons are given for the BLM’s actions, although those texts that do include corruption, convenience, and meeting a “fleeting need” (2012-50259).

• “It is clear that global climate change issues must be considered in the RD&D analysis.” (2012-50047)

• “Text indicates climate change is not considered. The impacts to climate change from development of tar sands are well known, with very large amounts of CO2 being emitted.” (2012-50143)

• “We, the public, know that you all take bribes from oil companies to allow this. SHAME on you for even considering using our public lands in this way.” (2012-50048)

• “What emerges from all of this is the conclusion that our government and its regulatory agencies such as the BLM have simply gone insane, criminally insane.” (2012-001)
Metaphors, rhetoric, and situated meanings. The authors in this discourse are concerned about time. They are thinking about the long-term future, the tradeoffs for short-term gain, and the urgency with which a transition needs to be made. There is an impatience with “the fact that we are debating the development of an entirely NEW fossil fuel” (2012-001).

• “How much greed, arrogance, and stupidity do we have to endure before we say, ‘Enough is enough’?” (2012-50371)

• “It will take time to turn this ship around but we must attack it as if we were at war.” (2012-025)

• “I call this a holding action that will buy some time for us to create a strong paradigm shift that leads to an ecologically sustainable, socially just and spiritually fulfilling human culture.” (2012-50014)

Many problems would be solved by a switch to alternative energy. In addition to climate change, the destruction of land and pollution are harms that would also be reduced if renewable energy sources were developed instead of fossil fuels. Authors urge the BLM to “leave this energy in the ground and develop alternate energies” (2012-50080).

• “Oil shale and tar sands carry onerous environmental costs to our air, water, landscape and climate that could be avoided by developing clean renewable energy resources.” (2012-50038)

• “We need to put our efforts toward green energy and not effect Climate Change more by helping dirty Tar Sands Oil, an environmental disaster.” (2012-50057)
• “It is wrong for the environment and wrong for the direction this country needs to take to get away from gas and oil.” (2012-50239)

• “We say nix the whole project-go renewable.” (2012-50247)

• “STOP DRILLING AND START INVESTING IN ALTERNATIVE, NON-POLLUTING ENERGY SOURCES.” (2012-50289)

Assumptions about relationships and figured worlds. There are few relationships described in this storyline. There is an obligation for the BLM to protect people and the environment that is implied by the authors’ requests for intervention. Comments ask the BLM to take more responsibility for preventing climate change by regulating dirty energy production or developing renewable energy resources. Authors see little direct relationship between the BLM and the energy companies, aside from one comment alleging bribery and another anomalous text that thanks the BLM for “taking a stand against the Oil Industry” (2012-50014). In general, commenters question whether the BLM is upholding their responsibilities to the public.

• “A significant part of the BLM’s responsibility to the American public is to determine the feasability, environmental cost and impacts of using these resources at this time.” (2012-50047)

• “But if history is anything to go by, the BLM’s mission to sustain health and diversity is a stewardship more in the breach than the observance.” (2012-001)

There is widespread recognition that climate change is caused by human use of fossil fuels in this storyline. Texts do not explicitly blame Americans for creating climate change, but they do place the burden of cutting emissions on the United States. The government, its agencies, and all Americans should be more alarmed at the proposal for
“the development of an entirely NEW fossil fuel” (2012-001) that will increase greenhouse gas emissions.

- “Global warming is a real and significant threat to the welfare of life on this earth.” (2012-50039)
- “It is imperative for the safety of all people that we solve our energy crisis by rapidly ratcheting down our consumption of fossil fuels and rapidly ratcheting up development and utilization of carbon-neutral energy sources such as wind and solar energy.” (2012-50048)
- “In the meantime, all animal life will become extinct.” (2012-025)
- “We are cooking our own goose and enough is enough.” (2012-50275)
- “Wyoming produces more carbon to be released into the atmosphere as carbon dioxide than any of the U.S. states and most nations.” (2012-50170)

America needs leadership in energy reform, and public lands should not be used for the development of more fossil fuels. OSTS will increase greenhouse gas emissions at a time when reductions are urgently needed. The solution to energy and climate problems is to develop renewables and alternative strategies such as conservation. Severe consequences will come if we fail to make changes and respond to the risk of climate change. Life hangs in the balance.

- “Oil produced from oil shale will end up where the other fossil fuels end up, as carbon dioxide in the atmosphere.” (2012-50170)
- “Putting our efforts in renewable energy resources should be the focus of our efforts.” (2012-50247)
• “Stop the development of tar sands and oil shale. Develop clean energy to stop global warming.” (2012-025)

**Framing.** The goal framing of the Stop Climate Change is firmly in the negative frame of suffering a loss if the choice the commenters advocate is not selected. In all but one text, that choice is to completely abandon OSTS as energy resources. There is no bright side to this discourse. The future is likely to be difficult, but stopping OSTS development would make it less so.

**Summary.** Developing OSTS will exacerbate climate change. Instead of pursuing fossil fuels, efforts should be made to reduce consumption and transition to renewable, clean energy. Long-term consequences and global impacts make pursuit of fossil resources an unethical choice. Science backs up the risks of climate change. References to outside sources make this the most intertextual of the discourses. The Stop Climate Change storyline is summarized in Box 6.8.
**Protect Parks Storyline**

This storyline has the smallest number of comments, with only 17 texts, or 8% of the total sample. These authors have a very specific point of view on protecting national parks, designated recreation areas, and monuments. Comments are short, often consisting of just a few sentences. The majority come from authors outside the OSTS area. Comments are of a more personal, experiential nature. This discourse suggests that perception of risk depends on personal engagement of authors. For those who do not live in the region, parks may be their only knowledge of the OSTS states. Key content words for this storyline are shown in Table 6.11.
<table>
<thead>
<tr>
<th>Word</th>
<th>Times Used</th>
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<td>12</td>
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<td>47.1</td>
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<td>7</td>
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<td>8</td>
<td>6</td>
<td>35.3</td>
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<td>6</td>
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<td>29.4</td>
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<tr>
<td>project</td>
<td>5</td>
<td>3</td>
<td>17.6</td>
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</table>
Storyline. OSTS development poses a risk to national parks, recreation areas, monuments, and other protected lands. These designated areas are valued for their benefits to humans, and they need to be preserved and protected from the impacts of OSTS development.

The ways in which OSTS development places parks at risk are not always clear. Some believe extraction would take place within protected areas. Others believe that the aesthetics would be compromised by industrial landscapes or poor air quality. Ecological consequences such as habitat destruction or dewatering rivers and streams could play a role. These authors do not rule out OSTS development altogether. Protection for public lands is sometimes included, but the main focus is on lands designated as parks, monuments, and recreation areas.

- “I am writing to ask the BLM to support Alternative 3 as the smartest option to ensure our public land and parks are protected while still offering an option to continue research and development on oil shale and tar sands as an energy resource.” (2012-50164)
- “Parks are more for NATURE PRESERVATION, not short-sighted resource digging.” (2012-50188)
- “Our West holds so much value that can not be priced and it is up to you to protect.” (2012-50216)

Entities. Parks, recreation areas, and monuments are construed as national treasures that are at risk from OSTS activities. They need to be defended against energy development and encroachment on nearby lands. According to the authors, parks and
other set-aside areas are the real economic engines of the region. They represent our national heritage, and are seen as belonging to the public.

- “Though I understand our desire to access more fossil fuels, I worry tremendously about the short-sightedness in not protecting our parks for future generations.” (2012-50164)

- “The existing economy centered around the National Parks and Monuments must be protected. Projects that destroy the experiences of visitors will have significant negative impacts.” (2012-50167)

- “These parks are our links to the natural beauty of our country, to be preserved for posterity.” (2012-50223)

The economy is an entity that is at risk by way of the threat to parks. Tourism and recreation support state and local economies. The income and jobs they provide will be reduced if the beauty of the landscape and the outdoor experience in these “world-famous recreation lands” (2012-50179) is compromised. Two of the authors also recall the economic hardships brought about by oil shale projects in the past.

- “In addition to providing those states with Billions of dollars of tourist and sales revenue, the proposed plan will negatively effect a quarter of a million jobs. In this unstable and fragile economy it would be utterly foolish to take on such a risk.” (2012-50245)

- “I understand the importance of a comprehensive energy policy but allowing gas development, a process that will almost certainly blight the surrounding landscape, poison groundwater and put stable revenue and jobs at risk is the wrong decision” (2012-50256)
• “The other options that allow more leases could create another boom-to-bust energy grab, which would not only harm the public lands where the mining and processing takes place, but also whiplash the economy like it did on Black Sunday in May 1982.” (2012-50179)

Agents and their motives. The BLM is constructed in this discourse as an agency of preservation. It is treated as though it has the same mission as the National Park Service, although that agency is never mentioned. Aside from the duty to manage and protect lands, there is no motive assigned to the BLM.

The ideas of energy companies and industry as a whole are attributed with uncomplimentary motives. These range from profit-seeking to outright greed. They are unconcerned with the impacts—environmental, economic, or aesthetic—that might be caused by OSTS development.

• “Allowing ‘Big Oil’ access to our lands sets an unbelievably dangerous precedent for the future.” (2012-50250).

• “I feel deeply troubled that we are considering these short-term profits over the long term environmental impact they may have on OUR parks.” (2012-50246)

• “Furthermore, oil and gas companies already make healthy profits.” (2012-50194)

The authors in this discourse have a stronger individual identity and personal interest than in other discourses. They reflect on experiences they have had in the region, and express their desire to preserve special places in the present and for future generations. Although they may have been in the distant past, the experiences authors
describe indicate that they were meaningful and marked important life events. Two of the authors state personal financial motives because their jobs depend on natural areas.

- “As an east-coast citizen who traveled through many western federal parks, lands, and forests after graduating from college, I believe developing these lands would fundamentally alter their character and ruin them for future generations.” (2012-50194)
- “Please preserve our national parks! I’ve been going to them since I was a little kid and I plan to take my unborn children to them as well.” (2012-50248)
- “Traveling to Rainbow Bridge by horseback in 1960 made a lasting impression that changed my life.” (2012-50216)
- “In summary, as a Utah resident, as someone whose livelihood depends on the preservation of this state's national parks and public lands, and as a father who wants his son to enjoy the same access and enjoyment from public lands that I had as a child, I urge the BLM to choose the research-only Alternative #3.” (2012-50179)

**Metaphors, rhetoric, and situated meanings.** Most of the rhetoric in the Protect Parks discourse is the type of personal, experiential narrative referenced above. This discourse relies upon the constructed meaning of parks, recreation areas, monuments, etc. Rather tautologically, these are places that people value these because they have been set aside as places of value. The boundaries are somewhat arbitrary, but by designation they become real. People want those places protected above and beyond others. It is revealing that wilderness areas are not specified in these protections. Wilderness is set aside to
minimize human impacts, while parks, monuments, and recreation areas are created to provide public access to and use of land.

Although the comments may list risks of OSTS development, only four could be considered requests for a broad ban of OSTS. The remainders suggest that the BLM limit the areas available to OSTS development such that only research could be conducted, and only in places where parks and protected areas would not be impacted. Authors are willing to have “smaller trial projects that prove the economic viability and the adequacy of environmental protections” (2012-50167). For those who feel that OSTS is objectionable, their comments are narrowly focused on preventing development in proximity to parks.

- “I think the BLM should choose the research-only Alternative #3, which allows only research development, and demonstrate leases on existing parcels. I believe these leases will give companies enough public lands to demonstrate the feasibility of their projects.” (2012-50179)
- “Alternative 3 is the only choice that will investigate true costs of this development.” (2012-50216)
- “I oppose these practices near our national parks in the West” (2012-50223)

Assumptions about relationships and figured worlds. There are several possible assumptions people could be making about OSTS and public lands. Some authors seem to be under the mistaken impression that OSTS extraction was proposed for places within the boundaries of national parks and protected areas. Others understand that while OSTS would not be developed in those areas, the activities could impact things like air, water, and wildlife in ways that would be harmful to visitor enjoyment and
ecosystems within parks. These comments point to an understanding of the relationship of the natural systems of conservation areas and their ecological contexts.

- “I worry that the untested and unknown technologies to extract oil shale and tar sands will harm the air quality, wildlife, roads, water quality and flow, and visitor experience at national parks and recreation lands in Utah where I live.” (2012-50179)

- “Such development puts several protected areas, their geological, and biological integrity at risk. Various forms of pollution- air, water, noise, and light to name a few- will inevitably ensue and risk compromising wildlife corridors and the public's ability to enjoy our beautiful parks.” (2012-50182)

It is possible that commenters believe that all of the federally managed lands in the region are designated as national park, monument, or some other type of protected land. On the other hand, it may be that they believe that any land of value is protected in some way, leading to the conclusion that any land under federal management must be special while unprotected lands have little value. This might explain how people could be concerned with protecting parks while being unconcerned about the use of other lands.

- “I wish to register opposition to the proposed Oil Shale and Tar Sands project that may negatively impact the national parks in the Rocky Mountain regions.” (2012-50223)

There is a relationship between people and land that is implied in this storyline. Authors seem to believe that the value of land is based on its potential for human enjoyment. National parks, monuments, and recreation areas are places people set aside for human use and enjoyment. The comments indicate that the reason the authors want
them protected is primarily for their recreational, aesthetic, and economic values to humans.

- “Please reconsider this invasion in such close proximity to a National Park Area that is so vital in terms of aesthetic beauty, environmental importance and fiscal stability for residents and visitors alike.” (2012-50251)
- “Utah’s National Parks account for 65,000 jobs and $5.8 billion in revenue. They also provide millions of visitors the chance to relax, spend time with families and friends away from a television, and get exercise, which we all desperately need.” (2012-50256)

**Worldview.** While other anti-A1 storylines adhere to egalitarian communitarianism, the worldview in the Protect Parks storyline is not clear. These comments do not suggest energy conservation or living lightly as an alternative to OSTS development. Attitudes toward nature indicate that the authors see *some* nature – that which is in and around parks and protected areas - as ephemeral. This suggests that nature outside these areas is not quite so fragile. The affinity for governmental protections and centralized management may be signs of hierarchical communitarianism. Comments are unified in the position that the government should be responsible for implementing protections and limits for the good of society, making this a communitarian storyline. The authors may cover a range of hierarchy-egalitarianism attitudes, or there may simply be insufficient information to discern a unified worldview.

**Framing.** The goal framing in the Protect Parks discourse is a positive frame aimed at avoiding the losses that OSTS would bring. Access, aesthetics, and integrity of the landscape could be compromised by developments in parks, or through ecological
consequences such as air and water pollution. Tourism, recreation, and the income they produce would drop. By making a choice to limit OSTS development, those losses are avoided.

**Summary.** Parks, monuments, and recreation areas are threatened by OSTS development. Aesthetic values and outdoor experiences will be diminished. Recreation and tourism economies will be harmed. The nation’s national treasures will be lost. Future generations will not have the chance to experience the natural beauty and wonder of these places. Therefore, the BLM must make a choice that prevents any harm to these special places. Box 6.9 summarizes the Protect Parks storyline.

<table>
<thead>
<tr>
<th>Storyline:</th>
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<tbody>
<tr>
<td>National parks, national monuments, recreation areas, and other special places are threatened by OSTS activities. Recreation and tourism, which provide an economic base and jobs in the region, will be harmed. The BLM must protect the parks from:</td>
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<table>
<thead>
<tr>
<th>Entities:</th>
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<tbody>
<tr>
<td>· Parks, monuments, and recreation areas</td>
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<tr>
<td>· The economy</td>
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<table>
<thead>
<tr>
<th>Metaphors, rhetoric, and situated meanings:</th>
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<tbody>
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<td>· Personal experiences</td>
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<tr>
<td>· Protect the set-aside lands from OTS impacts</td>
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<table>
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<th>Agents with motives:</th>
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<tbody>
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<tr>
<td>· Companies</td>
</tr>
<tr>
<td>· Commenters</td>
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<table>
<thead>
<tr>
<th>Assumptions about natural relationships and figured worlds:</th>
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</thead>
<tbody>
<tr>
<td>· Federal management equates to protected land or parks</td>
</tr>
<tr>
<td>· Land value is based on human use and enjoyment</td>
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<table>
<thead>
<tr>
<th>Worldview:</th>
</tr>
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<tbody>
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<td>Communitarian, indeterminate Grid</td>
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<table>
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<tr>
<th>Goal framing:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive goal framing - Avoid the loss of parks, scenic areas, and the economies they support.</td>
</tr>
</tbody>
</table>

*Box 6.9. Protect Parks*
Summary of 2012 OSTS PEIS

Many commenters expressed appreciation for the opportunity to participate in the decision-making process. However, many on both sides, pro and con, expressed the view that the process was biased in favor of the other position, either to prevent development of OSTS or to advocate for commercial interests. It is evident that those who commented believed that public participation was important or felt the need to amplify the messages that expressed their values and interests.

This analysis describes seven storylines that are oriented on their support or opposition for Alternative 1. This is the No Action Alternative that would leave the decision of the 2008 OSTS PEIS in place. Three storylines support A1, and encourage the BLM to adopt it as the final decision. These pro-A1 storylines are Environmentalists Have Hijacked the System, Obstacles are Unfair to Companies, and Regulations Hurt Local Economies. Four storylines are against A1 as the outcome. The anti-A1 storylines are Too Many Resources to Gamble, Unsafe for People and the Environment, Stop Climate Change, and Protect Parks.

These seven storylines represent a range of the discourses of risk in the public comments on the 2012 PEIS. All four of the Cultural Theory/cultural cognition worldviews are represented among them. The storylines define a variety of problems, risks, and solutions. The storylines tend to prioritize one set of risks over another and charge that the BLM has not given those risks their due consideration. Many commenters state that the BLM has not considered a wide enough set of choices in the alternatives considered. Some commenters would prefer no OSTS development at all, and some state
that they would prefer to see development of renewable energy sources. These were not
possibilities put forth in the PEIS, as it did not take up the issue of what kind of energy
should be developed on public land, or whether OSTS should be used.

The storylines in favor and opposed to A1 present disparate views of the world
and the risks, benefits, and need for OSTS development. In the pro-A1 world, there is a
growth mindset. Booms can happen but busts will not occur. The energy supplied by oil
shale is so abundant that there is no need to think about its finiteness. Other resources,
particularly water, are of no concern. Decisions about OSTS resources should be
approached by finding balance between development and conservation. The technology
for producing oil from OSTS resources is ready for use. Orderly expansion and
commercialization will allow for planning and long-term stability for communities and
companies. The governmental decision-making process works as it should, and the BLM
should restore the 2008 decision, which was made on the basis of “a lengthy,
professionally done process that included thousands of hours of input from experts,
scientists, local governments, and the people themselves” (2012-160).

The three pro-A1 discourses, Hijacked, Unfair to Companies, and Local
Economies, all express locally perceived and experienced risks. Although the comments
tie them to national interests of energy independence, energy supply, and overall national
security, as perceived risks they are not explained in any depth. National risks are not as
salient as the more local ones.

Pro-A1 storylines reveal the support for energy development is largely based on
the economic benefits to the region and local communities, not for meeting the nation’s
energy demands or corporate profits. The benefits to the nation are secondary to the local
and regional benefits. In the pro-A1 storylines, the greatest risk is that OSTS
development will not happen, meaning that the benefits of jobs and economic activity
would never be realized.

Other risks are portrayed as minimal or manageable. For example, water
consumption and energy inputs are not unreasonable and are improving with technology.
Environmental harm is not a concern because production can be done in an
environmentally sensitive way. Sacrificing small sections of land is worth the benefits.
Public use, access, and ownership of lands are unimportant to local residents and
communities. Concerns over environmental impacts are over-played. Environmentalists
are radical extremists, interested only in stopping development and pushing their agenda,
although what exactly the agenda is or what is to be gained is not well defined.

Anti-A1 discourses are less cohesive, but storylines generally assert that the costs
of OSTS development outweigh the benefits, which are few to none. There is too much at
stake to take such risks. The BLM should protect the public interest, and the public has
little need for OSTS development – only the energy companies do.

Storylines are differentiated by the risks they present as most significant because
most comments express concern about more than one risk. There are predictions that air
and water will be polluted. The OSTS industry will consume too much of the region’s
scarce water supplies. Land and habitat will be destroyed. OSTS will contribute to
climate change. Future generations will be disadvantaged. Recreation and tourism
economies and opportunities will be compromised.

As a solution, many anti-A1 comments propose that the best path would be to
reduce fossil fuel consumption and turn attention to renewable energy. Renewable energy
is uncomplicated, unlimited, and carries no environmental impacts. Technology for renewable energy, particularly wind and solar, is ready to implement. All that is required is the commitment to do so.

The anti-A1 group tends to be unwilling to accept any environmental harm. However, some see OSTS development as a possibility upon conditions of better technology, environmentally friendly practices, and economic feasibility. They hold out the possibility that such circumstances may occur in the future, but do not exist in the present. This conditional position occurs in all but the Stop Climate Change discourse.

The Protect Parks discourse is an exception to the Anti-A1 group in some ways. The majority of Protect Parks comments come from outside the PEIS area. They prioritize parks and scenic areas over other places. This suggests that the authors do not have strong objections to development on other lands, as long as favorite parks are not impacted by the activities. This is the most NIMBY-like attitude seen in any of the storylines. The valued land should be protected by putting the energy production somewhere else. Perhaps ironically, travel to parks and recreation areas increases demand for the fossil fuels development these comments oppose.

As in the 2008 PEIS case study, the comments in the 2012 sample appear to be influenced by the campaign letters and the rallying efforts of interest groups. Many comments echo the talking points and rhetoric supplied by the organizations, even if the authors did not use the form letters. Once again, the NGOs appear to have played significant roles in alerting people to the opportunity to provide comments, and in educating them about the issues.
The comment period for the 2012 OSTS PEIS closed on May 4, 2012. The BLM published the FPEIS in November 2012, and the Record of Decision was issued in March, 2013. The final decision was to adopt Alternative 2(b) for oil shale and Alternative 2 for tar sands, with some corrections and revisions. This action reduced the land open for future leasing to 676,967 acres for oil shale and 129,567 for tar sands. Initial oil shale leases would be available for RD&D purposes only. When lease applications are submitted, the BLM will conduct additional analysis of the direct, indirect, and cumulative effects based on the technology to be used and the location of the leases. This decision remains in effect.
The Energy Policy Act of 2005 (Public Law No. 109-58) contained measures to encourage unconventional energy development in the United States. One of the practices it backed was hydraulic fracturing. This technology was well-developed, unlike oil shale and tar sands extraction methods. Hydraulic fracturing is a process of injecting a fluid mixture, often containing sand or small particles, into a formation using extremely high pressure. The fluid creates a network of fractures that stimulates the flow of oil and gas, which can then be extracted through a wellbore. It is used to extract oil and gas from shale, sandstone, carbonate, and other unconventional reservoirs with low permeability, known as “tight” geologic formations (Groundwater Protection Council & ALL Consulting, 2009). Combined with horizontal drilling, hydraulic fracturing allows oil and gas extraction from formations that would be unproductive using conventional techniques.

In the years following the Energy Policy Act of 2005, during the time the Oil Shale and Tar Sands Programmatic Environmental Impact Statements were taking place, hydraulic fracturing of oil and gas wells was increasing the production of domestic energy. Oil and gas from formations such as the Bakken, Barnett, Marcellus, Permian, and Eagle Ford shale beds created a surge in natural gas and boosted the production of oil. All of the growth in U.S. production of natural gas and 92% of growth in domestic oil production between 2011 and 2013 was the product of shale oil and gas from these and other large productive plays (Energy Information Administration [EIA], 2014).
The growth in tight oil and gas in the period leading up to this case study is charted in Figures 7.1 and 7.2. The success of the technique is credited with the potential to make the United States a net energy exporter (EIA, 2013). In 2013, 45% of oil and 60% of natural gas produced in the United States came from tight formations (EIA, 2014).

One of the most promising plays for tight oil and gas development in 2013 was the Niobrara formation. It is estimated to contain as much as 2 billion barrels of oil (EIA, 2016) and 7 trillion cubic feet of natural gas (EIA, 2011b). The Niobrara underlies the Denver-Julesburg Basin in northeastern Colorado and extending north into Wyoming. Development of the Niobrara region was first concentrated in Weld County, a large but mostly rural county northeast of the Denver Metro area. Weld County covers a sizeable stretch of the Niobrara’s most productive field. Despite some resistance in Greeley, the Weld County seat, the county commissioners have reliably supported oil and gas drilling and the hydraulic fracturing that accompanies it. Between 2003 and 2013, oil production in Weld County increased almost 600% (Colorado Oil and Gas Conservation Commission [COGCC], 2017). In 2013, more than 80% of the oil produced in Colorado came from Weld County, making it a significant part of the county’s economy (COGCC, 2017).

The productivity of hydraulically fractured wells declines rapidly. Gas wells have been observed to fall by 80-95% in the first three years of production, and oil wells by more than 70% (Hughes, 2013, p. 308). This makes ongoing drilling of new wells necessary to keep the supply stable as production drops in older wells (Hughes, 2013).
Figure 7.1. Natural Gas Production from Tight Formations in the United States, January 2007 to January 2014. Data from EIA 2017a.
Figure 7.2. Oil Production from Tight Formations in the United States, January 2007 to January 2014. Data from EIA 2017a.
With Weld County as the epicenter, hydraulically fractured operations quickly proliferated and spread out in all directions.

In response to growing concern over oil and gas activities, several Colorado cities included ballot measures in the 2013 elections to restrict hydraulic fracturing, commonly known as “fracking,” in their communities. Three of these cities, Boulder, Lafayette, and Broomfield are within 50 miles of each other. They sit at the western edge of Weld County, as shown in Figure 7.3. The Colorado Ballot Measures (CBM) case study analyzes the public discourse that surrounded the ballot measures in these three cities. News reports, editorials, and letters to the editor that discuss the risks of hydraulic fracturing for oil and gas in state and local newspapers provide the texts for the analysis.

Figure 7.3. Map of the Colorado Niobrara Formation with Detail of Colorado Ballot Measures Case Study Area. Map from U.S. Energy Information Administration, 2016.
Hydraulic Fracturing

Hydraulic fracturing was developed in the late 1940s, and was in limited commercial use by 1950 (King, 2012). Later developments were responsible for bringing it into widespread use. In the 1980s, hydraulic fracturing was coupled with horizontal drilling, and the use of chemical additions to the fracturing fluids began in 1997 (Gandossi & Von Estorff, 2015). High volume and high-pressure technologies made hydraulic fracturing even more effective. Technological developments, combined with high demand and energy prices, led to a boom in drilling and fractured wells. By 2012, the Society of Petroleum Engineers estimated that more than 1 million wells had been subjected to hydraulic fracturing (King, 2012).

The Energy Policy Act of 2005 contains a provision that protects hydraulic fracturing operations from many federal environmental laws. Known as the Haliburton loophole, the special status was proposed by then-Vice President and former Chairman and CEO of Halliburton Richard Cheney. The Halliburton loophole excuses the oil and gas industry from disclosure of the chemicals used in hydraulic fracturing fluids. It grants the hydraulic fracturing industry exemptions or exclusions from sections of a long list of federal regulations, including the Clean Air Act, Clean Water Act, Safe Drinking Water Act, and National Environmental Policy Act.
Public Response to Hydraulic Fracturing

In everyday usage, hydraulic fracturing is commonly referred to as hydrofracking or fracking\textsuperscript{18}. As the use of hydraulic fracturing became more widespread, the practice entered the public consciousness. It became increasingly controversial as communities began to feel the effects of rapidly-expanding operations. Clashes with property owners arose, and communities grew concerned about the encroachment of oil and gas wells. Surface ownership and the rights to use the mineral resources on or under a parcel of land may belong to different owners. This is known as a split estate. The owner of the surface estate may not even be aware that the mineral rights belong to another party.

Mineral rights are property rights that include the extraction of oil and gas. Mineral rights supersede surface rights, giving mineral rights owners the ability to use as much of the surface as necessary to access minerals. This can include surveying, drilling, well completion operations, storage, production facilities, producing wells, hydraulic fracturing, and gas collection and processing facilities. Surface estate holders often have limited recourse when mineral rights developers wish to exercise their rights. Split estates create conflict, particularly as new technologies for extraction make previously unusable resources and rights viable.

The intensity of drilling, density of wells, and their proximity to inhabited areas drew resistance and public ire over noise, lights, fumes, and the industrialization of neighborhoods. Concern also arose over the water consumption, groundwater pollution,

\textsuperscript{18} The words \textit{frack, fracking, and fracked} are the terms in common usage in public discourse and throughout the case study texts. Therefore, they will be used to refer to the technique so as to align with the language and meaning as constructed in discourse.
earthquakes, greenhouse gasses, toxic fluids, and disposal of waste associated with hydraulic fracturing. These new layers of controversy were added to the usual health, safety, and environmental objections to energy developments.

By 2013, there were pushes for legislation to limit or ban hydraulic fracturing in New York, Pennsylvania, Texas, Washington DC, Ohio, New Mexico, Hawaii, and Colorado. Although it was a controversial account of fracking’s impacts on communities, the documentary film Gasland (2010) prompted an Academy Award nomination, a sequel, and an opposing documentary.

Case Study Background

There are four Colorado entities that play significant roles in this case: The City of Boulder, the City of Lafayette, the City and County of Broomfield, and Boulder County. Boulder City is the county seat of Boulder County. The cities of Boulder and Lafayette are both home rule municipalities within Boulder County. Home rule cities and towns are self-governing, based on their adopted home rule charters. According to the Colorado Local Government Handbook (Colorado Legislative Council, 2013), home rule gives cities and counties greater power and autonomy from state government than statutory municipalities in the state.

In general, a home rule city's ordinances pertaining to local matters supercede conflicting state laws. For example, the courts have determined that zoning is primarily a matter of local concern. . . . State statute also grants home rule municipalities additional powers. For example, the Local Government Land Use Control Enabling Act allows home rule cities and towns to regulate activities that impact a community or surrounding area, to provide planned and orderly use of land, and to protect the environment. (Colorado Legislative Council, 2013, p.20)
Despite their independence, ordinances of home rule municipalities do not take precedence in matters of statewide concern. This exclusion was cited in a lawsuit in a 1992 Colorado Supreme Court decision striking down the City of Greeley’s 1985 total ban on oil and gas development. The Court ruled that the state had a significant interest in promoting the efficient and fair development, production, and utilization of oil and gas resources (Voss v. Ludvall Bros., Inc. 1992).

The tensions between the rights of the state and the rights of home rule cities plays a significant role in the discourses in this case. For Boulder City and Lafayette, home rule status meant that Boulder County’s rules and regulations did not cover oil and gas operations within the city boundaries. This was further complicated for Boulder City, because it owns and manages areas of land outside the city limits.

Boulder had long been acquiring open space lands in the city and unincorporated county areas surrounding the city. The city’s Open Space and Mountain Parks division was established in 1967. By 2013, it had more than 45,000 acres of land in and around Boulder (City of Boulder, 2017). These lands are owned and managed to preserve and protect the natural environment, land resources, and the character of the city. It was not clear whether city or county regulations would apply to the unincorporated open space lands held by Boulder City. Although city officials believed it was unlikely that there would be any attempt to drill within city limits, there was concern that open space lands with split estates might be at risk of fracking development.

The City and County of Broomfield was created in 2001. Over time, the original municipality had grown across county lines through annexations. A Colorado State Constitution Amendment was passed in 1998 that carved Broomfield out of Boulder,
Adams, Jefferson, and Weld counties. Broomfield is a consolidated city and county government. As such, it holds the home rule authority of a city to regulate local and municipal matters plus the responsibility for providing the services required of counties and county officers.

Boulder County holds the authority to make land use decisions, build and maintain roads, and levy certain taxes and fees. Counties are able to require oil and gas developers to obtain permits. Accordingly, the Boulder County Commission put a moratorium on processing applications for oil and gas drilling in place in 2012. The moratorium was originally implemented as a six-month hold on accepting, processing, or approving applications for oil and gas development. The objective was to allow time to determine whether the existing county regulations adequately protected the public health, safety, and welfare, and to evaluate whether they sufficiently mitigated the impacts of oil and gas activities (Boulder County Resolution 2013-55). By May 2013, the moratorium had already been extended twice by the Board of County Commissioners because no new information had been forthcoming.

The list of potential risks the County Commissioners recognized was extensive. Among those listed in the original moratorium and reiterated in Boulder County Resolution 2013-55 were:

. . . deterioration of air and water quality, questionable waste disposal practices, noxious odor and dust generation, intensification of erosion and other land disturbance impacts, proliferation of industrial-style extraction developments in rural and agricultural areas, increased heavy truck traffic with consequent damage to public roads, aggravation of geologic hazards such as earthquakes, safety concerns related to development in floodplains and floodways, and accelerated consumption of natural resources such as water, open space, productive agricultural land, and plant and wildlife habitat . . .
Although Boulder County is able to make certain rules and regulations, there is no avenue for citizen initiatives in county elections. Voters in unincorporated areas of the county could not petition for a fracking ban in the same ways as city residents. County residents were limited to appeals to the Boulder County Commission, which made public meetings of the Commission and the three Commissioners the targets of much public activism.

Timeline of the 2013 CBM Case Study

Because this case study takes place over the span of eight months, it is useful to provide a timeline of significant events. The discourse surrounding these events will be discussed in the analysis that follows. Important contexts and background that are referenced in the content of the texts are also included.

State-level background. The rapid pace of drilling and fracking raised alarm throughout Colorado as oil and gas activities expanded outward from Weld County. Residents and lawmakers in the more densely populated and affluent neighboring counties grew uneasy about the prospect of the oil and gas development moving closer to their cities. Calls for action divided citizens and politicians. The threat of industry lawsuits loomed. Governor Hickenlooper, a Democrat and former petroleum engineer, expressed his intent to pursue legal action against any local bans on fracking.

In 2012, the City of Longmont, Colorado approved a citizen-driven ballot initiative to guard against fracking. The Amendment to the Longmont charter prohibited the process of fracking as well as the storage and disposal of fracking waste in Longmont. The Colorado Oil and Gas Association (COGA), and the Colorado Oil and Gas
Conservation Commission (COGCC) quickly filed suit against the city (Colorado Oil and Gas Association v. City of Longmont, 2014). This lawsuit was pending during the 2013 election cycle, and it is frequently referenced in the case study texts.

Colorado lawmakers at the state level who wished to protect against the risks of fracking attempted to take a more cautious approach than an outright ban. Of the 10 bills on oil and gas regulation introduced in the 2013 legislative session, only two were passed. The bills that passed allowed for more oil and gas inspectors at the COGCC and lowered the threshold for spill and leak reporting. The defeated legislation included increased daily fines for violations, barring industry employees from serving as COGCC commissioners, and refocusing the COGCC mandate from fostering oil and gas development to protection of health and safety. The industry lobbied strongly against controls. Despite Democratic control in the state legislature, Governor Hickenlooper, himself a Democrat, opposed many of the bills. Three Democrats sided with Republicans to defeat two of the bills. An industry lobbyist’s email inadvertently sent to all state senators before the vote predicted the votes, leaving little doubt about industry influence (Stokols, 2013).

Boulder City had other energy issues in play during the 2013 election. The city was proposing municipalization of its electric utility. Several questions appeared on the November ballot related to that issue, such as debt limits and franchise renewal approvals. The issue of a fracking moratorium was not as controversial as the other ballot questions, which garnered more attention in Boulder City. As a result, Boulder’s debate over the fracking initiative was less heated than the contests in Lafayette and Broomfield.
**Hickenlooper at FrackingSENSE.** At the beginning of May, Governor Hickenlooper appeared at the Colorado University FrackingSENSE lecture series at the University of Colorado, Boulder. FrackingSENSE is a public forum that aims to “increase the productivity and elevate the character of public dialog about unconventional oil and gas development in Colorado and the American West at large” (Center of the American West, 2017). By his own account, Hickenlooper was frequently criticized for being an industry advocate. He claimed that he was attempting to provide a moderate, balanced perspective in the debate over fracking. Questions from the audience were submitted in writing, collected by students, and selected by the host. Only six questions were read and discussed. Two people were ejected from the audience during the event.

**Boulder City Council.** In Boulder City, fracking was on the agenda of citizens and officials at the beginning of May 2013. Boulder County’s moratorium on processing applications for oil and gas drilling that began in February 2012 and had twice been extended was set to expire on June 10, 2013. The Boulder City Council held a meeting on May 7, 2013 to hear concerns regarding fracking. The Council instructed the City Attorney to investigate legal aspects of a ban and research whether a moratorium could apply to Boulder’s unincorporated open space lands.

**Mother’s Day rally.** On May 13, the Monday following Mother’s Day, activists held a small rally on the lawn of the Boulder County Courthouse. Mothers and children delivered hundreds of postcards to the Boulder County Commissioners, urging them to extend the fracking moratorium. Speakers at the rally included mothers fearful of the effects on children’s health and youth activists who expressed concerns about environmental impact and long-term consequences of fracking.
Boulder County meetings on moratorium extension. As the Boulder County moratorium expiration date approached, county staff began to collect materials and make recommendations for permitting, zoning, setbacks, fees, lighting rules, and noise controls that could be used to mitigate the impacts of oil and gas development without another extension of the moratorium. The Board of Commissioners held a hearing to take public testimony regarding proposed impact fees and Land Use Code amendments for oil and gas activities on May 16, 2013. At that meeting, worried citizens urged the Board of County Commissioners to extend the moratorium for an additional two years due to:

continued profound and unresolved concerns exist as to the impact of oil and gas development in the county even if it were subject to the county’s newly developed regulations, especially given the widespread uncertainty regarding the possible negative public health impacts of fracking operations in developed and populated areas. . . (Boulder County Resolution 2013-55 p. 4)

The commissioners scheduled a May 21, 2013 meeting to decide on the moratorium. There was no opportunity for public comment, but the public crowded into the Tuesday morning meeting. After deliberation, the Commissioners voted 2:1 against extending the moratorium. They opted instead for a plan for phased oil and gas development with inspections and monitoring by the county. A coalition of anti-fracking organizations issued a public statement condemning the decision immediately after the meeting.

Broomfield Town Hall. Hundreds of residents attended a Broomfield town hall meeting held on May 22, 2013. More than 50 people signed up to speak, and the majority requested that the City Council place a moratorium on fracking to allow for more time for the assessment of health and environmental impacts on the community. Broomfield was
the only one of the three cities that faced imminent fracking development. Sovereign Energy had applied to drill natural gas wells inside Broomfield’s boundaries. Plans for the wells were within local and state guidelines, but residents protesting because of the proximity to homes and a school.

**Representative Cory Gardner’s editorial.** Cory Gardner, U.S. Representative and member of the House Energy & Commerce Committee, wrote an editorial on fracked oil and gas that was published in the Denver Post on May 23, 2013. Gardner stated that domestic oil and gas production had contributed to low energy prices, and would stimulate economic growth and job creation. He argued that regulation of the industry should be left to states, which have specialized knowledge of their resources and “are closest to the communities where fracking is taking place” (*DP 05.23.2013b*). Although Gardner’s statements defend against “more heavy-handed regulations from a know-it-all Washington, D.C.,” his argument for state-level governance of oil and gas operations was also a response to the growing call for regulations at county and city levels.

**Activist organizing meeting.** On June 2, anti-fracking organizations and activists held a mobilization meeting to discuss ways to defend against fracking in Boulder. They urged people to attend upcoming meetings in Lafayette, Boulder City, and Boulder County. Strategies discussed included using social media, building websites, fundraising, hounding public officials, disrupting meetings, and physical blockades. They also discussed a recall effort for the commissioners who voted against the Boulder County moratorium extension. The participants were invited to attend a non-violent action training the following weekend.
Boulder, Lafayette, and Broomfield city meetings. All three cities held meetings on June 4, 2013. Lafayette City’s meeting to discuss hydraulic fracturing was a council work session that was not open to the public. Two days later, the city announced its approval of final language for a ballot measure petition on fracking.

Faced with uncertainty over the status of open space lands and the possibility of the County’s moratorium expiring, the Boulder City Council put consideration of a fracking moratorium on its agenda. Boulder City Council held a public hearing on June 4 to consider an emergency ordinance placing a one-year moratorium on drilling permits in the city or on city-owned open space properties. The ordinance was unanimously approved. Some of the council members stated that they were receptive to the idea of a ballot measure for a longer ban. The meeting also included unanimous approval of the first stage of an ordinance to prohibit the use, sale, or supply of city water for oil and gas extraction.

That same night the Broomfield City Council held a study session to discuss the feedback from its May 22 town hall meeting. Most council members were not in favor of a moratorium. The city delayed the processing of Sovereign’s applications in order to reexamine the city’s policies on oil and gas. Several options were discussed, including hiring independent consultants and entering into a memorandum of understanding (MOU) with the oil and gas companies, with the parties agreeing to heightened regulatory and safety standards in exchange for expedited processing of applications or other incentives.

Joint meeting of Boulder County Commissioners and County Planning Commission. A joint meeting between the Boulder Planning Commission and the Board
of County Commissioners drew a standing-room-only crowd on June 5. The meeting and public hearing were to consider the county’s proposal for a two-year phased-in plan for review of oil and gas land use applications. In a 4-3 vote, the Planning Commission decided against the phase-in plan. They unanimously recommended that the Board of County Commissioners extend the moratorium on drilling applications. No one spoke in favor of fracking or represented an industry position during public comments. Attorneys for the County explained that the Commissioners do not have the authority to place a measure banning oil and gas drilling on a county ballot, nor does the public have the right to petition for such a measure themselves.

**Boulder County Board of Commissioners delays decision.** The Board held another public meeting on June 6, 2013, but there were no public comments permitted. The agenda was to consider the Planning Commission’s recommendations. With the issue of an extension unresolved and one Commissioner abroad, there was a high likelihood of a deadlock between the two Commissioners present at the meeting. Facing an irate public and the imminent expiration of the moratorium set for June 10, the Commissioners decided to postpone the decision until June 18, when the full board could meet.

**Lafayette petition drive begins.** On June 6, 2013, the group East Boulder County United announced the beginning of a petition drive to place a measure on Lafayette City’s November ballot. The group had worked with city officials on the language for the petition and an amendment to the home rule charter, known as the Lafayette Community Rights Act. East Boulder County United claimed that the community has a fundamental right to clean air, clean water, and self-determination. The Lafayette Community Rights Act stated that the rights of the people and communities are
the highest governmental authority and that corporate interests are subordinate to the health, safety, and sustainability of the Lafayette community. This was significant, because in addition to prohibiting fracking, it proclaimed the community’s right to self-determination and placed limits upon the rights of individuals and corporations engaged in oil and gas extraction.

Lafayette’s proposed charter amendment was extensive and far-reaching. It prohibited numerous energy-related activities that included all new wells; storage and transportation of any fracking fluids or waste; infrastructure for fossil fuel extraction; nuclear energy production; and the use of city water for oil and gas extraction. It imposed liability on the oil and gas industry for extraction outside the city limits that caused harm within the city. The city would have the authority to interpret the definitions of “persons” in the Colorado and U.S. Constitutions and to invalidate permits and licenses issued by state and federal agencies that would violate the city charter. The amendment would limit corporations’ rights to challenge municipal provision or enforce state or federal law.

**Boulder County Commission extends moratorium.** The Boulder County Commission convened with all three members on June 18, 2013 to make a decision about extending the moratorium on oil and gas applications. The commissioners decided that new information on fracking risks justified a pause for further study. They agreed that the recently-adopted protections may not be adequate to protect public health and safety.

With a carefully worded statement that the intent of their decision was to protect the environment and the public’s health, safety and welfare, the Board of Commissioners extended the temporary moratorium another 18 months. The resolution cited Colorado State statutes that grant counties the authority to regulate land use and air pollution.
Studies from the U.S. Environmental Protection Agency, neighboring states, multiple Colorado state agencies, and the National Oceanic and Atmospheric Administration were among those included in the justification for the extension. The resolution was also careful to position the county to avoid a lawsuit by asserting that:

The county’s regulations pertaining to matters mentioned in the Colorado Oil and Gas Conservation Act are legal and valid as long as their express or implied conditions do not irreconcilably conflict with state law on the basis of operational conflicts that materially impede or destroy the state's interest. (Boulder Resolution 2013-55, p. 9)

**Anti-fracking movement gains momentum.** Activists met with some successes in their efforts to stop fracking in July and the early part of August. On July 9, East Boulder County United submitted their petition to the Lafayette City Clerk with 2,042 signatures, more than double the 948 needed. That same day the statewide group Frack Free Colorado held an event to help form connections among the grassroots groups that had formed in Boulder County.

The Boulder City Council expressed support for a ballot measure for a three-year fracking moratorium at its June 18 meeting. City Council members assumed passage was a foregone conclusion, and reasoned that the results of a vote would to send a strong message about Boulder’s opposition to fracking. The council directed the city staff to draft ballot language for a three-year moratorium and for a “hybrid” measure, which would be a three-year ban with an automatic two-year extension. The extension could only be lifted if evidence that fracking is not harmful to human or environmental health emerged. The City Council unanimously voted to advance the ballot measure at their August 5 meeting. Question 2H would appear on the Boulder City ballot as an extension of the moratorium on new oil and gas operations.
On July 26, the Lafayette City Clerk verified enough petition signatures for the Community Rights Act to be placed on the November 2013 ballot. The measure came to be known as Question 300. On July 29, the group Our Broomfield announced it had obtained enough signatures to place its initiative on the ballot. The Broomfield measure proposed a five-year ban on fracking and storage of fracking waste. Our Broomfield held a press conference and submitted the petition to the City and County Clerk’s office on August 2. The group had obtained 3,382 signatures, far more than the 2,082 needed. The success of Our Broomfield prompted formation of the pro-fracking groups It’s Our Broomfield, Too and the Broomfield Balanced Energy Coalition.

Lafayette city officials were skeptical that drilling would ever occur in their city. They were concerned about the legality of the proposed amendment to the home rule charter, but also aware of the growing frustration and strong desire for a fracking ban. In an effort to satisfy the public while minimizing the chance of a lawsuit, the City Council passed a three-year moratorium on new oil and gas operations in the city at its meeting on August 6, 2013.

**Representative Jared Polis impacted by fracking.** Jared Polis, a Boulder resident and Democrat representing Colorado’s 2nd Congressional District, was an advocate of greater balance for community rights in matters involving fracking. In late July, he went public with his complaints against an oil and gas operation that had begun without notice adjacent to a second home he owned in Weld County. Coverage and discussion of the matter went on for several weeks, with Polis filing a lawsuit to shut down the drilling, withdrawing it, and then reinstating it. He called for inspections, advocated for high fines, and requested operations be shut down over the violations the
inspectors found. Polis authored letters to the editors of local papers explaining the impact that fracking was having on him, his family, and his partner’s family members who lived in the home. He expressed outrage over his inability to stop the drilling and fracking.

Polis never took a public stand on the ballot measures in any of the cities or counties. He was a powerful public figure who used his own situation to illustrate that fracking could impact anyone at any time. The findings that the operator had violated setback and siting rules called into question the ethics of operators and effectiveness of permitting and inspection processes. His public statements also brought into public view the minimal consequences and fines for noncompliance with regulations.

Lafayette conflict. On August 9, a citizen filed a protest over the validity of the city-approved and citizen-led petition for a ballot measure. Jon Hydeman’s complaint was publicly announced in a news release issued by COGA. The challenge was based on the requirement in the state’s municipal election code that petitions for initiatives include a true and impartial summary of the issue at hand. Hydeman and COGA charged that the information in the petition had been poorly crafted and misleading. Hydeman said that he was starting a new job as a fracking operator assistant and would be personally harmed if the measure passed. Over the next several days it was reported that Hydeman had lived in the city for less than a year, had only registered to vote the day before the complaint was filed, and was set to begin work the following month for Halliburton.

At the August 22 hearing presided over by the City Clerk, Hydeman and his attorney asserted that the information given to voters could not have reasonably been read and absorbed because it was too long. Under questioning, Hydeman stated that he had
received neither compensation from COGA nor his employment with Halliburton in exchange for filing the complaint. A COGA representative confirmed that it was helping to pay for the attorneys representing Hydeman. On August 23, the City Clerk threw out Hydeman’s challenge.

**Broomfield conflict.** In Broomfield, the City Council was reluctant to place a moratorium on fracking, and the City and County Attorney expressed doubts that a ban would be upheld by the courts. The City Council continued to explore alternative ways to protect health and safety. At their August 6 meeting, they discussed a MOU with Sovereign Energy that would place tightened regulations on the operator but still allow them to drill the proposed wells. On August 14, after hours of public comment and several revisions, the Council approved language for a ballot question. Our Broomfield filed a complaint in Broomfield District Court against the approved language on the basis that the words “public safety and welfare” had been removed. Broomfield asked the court to dismiss the complaint. The matter went to mediation, and the parties announced an agreement on ballot language on September 3. The measure would appear on the ballot as Question 300.19

On August 27, the Broomfield City Council unanimously approved the MOU with Sovereign Energy that would allow them to drill 21 wells in return for their compliance with 35 heightened rules for operations. Public comments at the meeting against the MOU outnumbered supporting comments three to one. Our Broomfield had requested that the decision be delayed until after the November election and the outcome

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19 The ballot measures in Lafayette and Broomfield both appeared as Question 300.
of the ballot initiative was decided. The city claimed that the regulations were the toughest in the state, and that it was obligated to find balance with the rights of those who owned the mineral rights.

**Boulder County funds study.** On August 27, the Boulder County Commissioners unanimously approved a study to be conducted by the University of Colorado and Boulder County Public Health. The need to monitor the air pollution travelling from neighboring Weld County was cited as the reason for their decision. The commission fully funded the $81,291 budget for the 18-month study to measure the presence of volatile organic compounds found in the county's air and assess cost-effective monitoring techniques.

**Positioning and advocacy.** This stage of the case study falls after the ballot initiatives were finalized and before the final day of voting. Merrily Mazza, one of the organizers of East Boulder County United became a candidate for the Lafayette City Council in late August, once the petition challenge was resolved. Three other candidates ran for Lafayette City Council as opponents of fracking. One Broomfield City Council candidate expressed support for the moratorium.

**Pro-fracking pushback.** Following the decision rejecting Hydeman’s complaint in Lafayette, industry officials began to warn that the charter amendment’s vague language would have unforeseen consequences. A COGA representative claimed that the ballot initiative would prevent service of natural gas to homes.

In late August, the University of Colorado Leeds Business School issued an economic impact study that stated that the oil and gas industry accounted for more than
111,000 jobs, $6.5 billion in wages, and $30 billion in economic output for the state\textsuperscript{20}. This study was cited by fracking advocates as proof of the importance of oil and gas operations to the state’s economy.

\textbf{Floods.} September 2013 brought unprecedented flooding to Colorado. Boulder, Broomfield, Weld, and Adams counties were among those impacted. Homes were lost, and roads, bridges, and culverts were washed out. Gas and electrical services to homes and businesses were disrupted. For some people, outages lasted for more than a week. Wells and operating sites were inundated with water. Unsecured tanks floated away, oil and fluids mixed with floodwaters, and floating debris broke pipes and damaged facilities. Energy companies scrambled to shut down wells and contain spills, while COGCC and the EPA received reports of spills and searched for new and ongoing releases.

\textbf{Lafayette City Council formalizes opposition.} During their September 17 meeting, the Lafayette City Council instructed the city’s attorney to draft a resolution in opposition to the ballot measure on fracking. The resolution was passed by the council on October 1. It expressed concerns over the timing and need for the measure, the financial impacts on the city, and the legality of the amendment. Some council members were opposed to fracking, but felt that the three-year moratorium was a more effective way to

\textsuperscript{20} This report was later discovered to be funded through an agreement between CU’s Leeds School of Business and Common Sense Policy Roundtable (CSPR), a public relations firm working on behalf of the oil and gas industry (Dyer, 2015). The reports did not disclose that the research had been directed, controlled, and edited by CSPR and its clients to produce economic studies that were favorable to the fracking industry.
address the problem. The mayor and mayor pro tem also stated their opposition to Question 300.

**Reports on finances and candidates’ positions.** In the second week of October, newspapers reported on the elections fundraising. COGA donated significant amounts of money to opposition campaigns. The nearly $335,000 in COGA contributions accounted for 92-99.9% of the budgets reported by those groups (Aguilar & Quinn, 2013; Noon, 2013). In contrast, groups advocating for ballot measures had combined donations totaling just over $11,000.

**Election results and reactions.** Beginning on October 14, ballots were mailed out to voters. The deadline for voting was November 5, 2013. The anti-fracking ballot measures passed easily in the two cities in Boulder County. Boulder City voters were in favor of Ballot Question 2H by greater than 78%, converting the city’s existing moratorium from one year to five years, ending on June 3, 2018. It also set legal standards requiring a two-thirds majority vote of the City Council for lifting the moratorium after June 2016. In Lafayette, Question 300 passed with 60% of the vote, despite opposition from city officials.

The initial election night vote count in Broomfield showed the measure failing by 13 votes. On November 14, official figures indicated passage by a margin of 17 votes. An automatic recount was triggered by the narrow margin. The recount was originally expected to take place on November 20, but was delayed due to questions about voter eligibility.

On November 26, a group represented by B. J. Nikkel, a former state representative and advisor to pro-fracking campaigns, claimed that the city had withheld
critical information from the group Broomfield Balanced Energy Coalition and their
election watchers. She also asserted that there were systemic failures in the election
process. The Colorado Secretary of State’s office became involved. Although it had no
power to take legal action, it issued a report citing problems found in the election process
and stating the opinion that Broomfield citizens deserved an accurate accounting of the
conduct of the election.

The recount of votes took place on December 3, 2013, and was certified by
Broomfield’s canvass board on December 5. By this recount, the measure passed by 20
votes, although the status of an additional 18 ballots remained in question. That same
evening, the Broomfield Balanced Energy Coalition filed suit alleging that the
Broomfield Elections Division failed to provide full access to the group’s election
watchers and seeking an injunction to stop the measure. A hearing set for December 18
was delayed pending the state’s Supreme Court ruling on another related case. It was not
until February 27, 2014 that the case was decided in favor of the City and County of
Broomfield and the election results were upheld (Cave v. The City and County of
Broomfield, 2014).

On December 5, 2013, the Colorado Oil and Gas Association filed suits against
Lafayette for the ballot measure passed by voters. Lafayette became one of three
Colorado cities21 fighting COGA to defend their fracking bans. The measure was
eventually found to be in violation of state law on August 24, 2014. The Colorado

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21 Fort Collins, Lafayette, and Longmont were all sued by COGA.
Longmont’s ban was struck down on July 25, 2014, and Fort Collins’ on
August 7, 2014.
Supreme Court ruled on May 2, 2016 that local fracking laws preempted state law, and the local bans and moratoria were rendered invalid and unenforceable.

**Data**

Data for the CBM case study came from LexisNexis searches for newspaper articles between May 1, 2013 and December 31, 2013. After screening for relevant content as described in Chapter 4, Methods, 276 editorial, opinion, and news articles composed the final data set. Articles came from five sources: The Daily Camera in Boulder, the Denver Post, the Broomfield Enterprise, the Daily Times-Call in Longmont, and the Greeley Tribune. Number of articles and sources are shown in Table 7.1.

<table>
<thead>
<tr>
<th>Newspaper</th>
<th># Texts</th>
</tr>
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<tbody>
<tr>
<td>Denver Post</td>
<td>46</td>
</tr>
<tr>
<td>Daily Times-Call</td>
<td>10</td>
</tr>
<tr>
<td>Broomfield Enterprise</td>
<td>15</td>
</tr>
<tr>
<td>Greeley Tribune</td>
<td>6</td>
</tr>
<tr>
<td>Daily Camera</td>
<td>199</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>276</strong></td>
</tr>
</tbody>
</table>

The news articles have a mixture of quotes, reports, and information. Although direct quotes in the news articles strive to accurately represent the views of the speakers, they are short and often truncated statements. These texts are coded in segments that represent the statements of individuals. A news article may cover the views of many different people or organizations. As a consequence, news articles contain multiple, often conflicting discourses. The news articles are not grouped by storylines.
The opinion texts contain original content expressing the views of the public, politicians, and newspaper editorial staff. All types of opinions, letters to the editor, and editorials are referred to as opinion texts. These represent the views of the authors in their own words. They can be grouped by the storylines and social roles the authors project. In a few instances, individuals switch between social roles. Those texts are coded according to the role enacted in the text, determined through interpretation of content, social language, and context, such as becoming a political candidate.

The analysis in this case study focuses on the discourse, framing, rationality, and social amplification/attenuation among the decision-makers, who, in this case study, are the voters. As described in Chapter 4, the approach to discourses centers on Dryzek’s (2013) approach and incorporates Gee’s (2011, 2014) analytic tools. The goal framing (Levin et al., 1998) of discourses is discussed. The rationalities described by Garvin (2001) proved a more useful mode of analysis for the CBM case study than cultural worldviews.

**Analysis of Discourse in the 2013 Colorado Ballot Measures Case**

There are four primary storylines in this case study. To a great extent, the discourses that people engage in align with the social roles that they hold as member of one of three groups: the public, politicians, or industry representatives. For the public, people express views against or in favor of fracking. Politicians take positions based on their views about the legality of local regulations. Those views may be influenced by preexisting opinions about fracking, although some express both a dislike of fracking and
a reluctance to regulate. Industry advocates are proponents of fracking and opponents of regulations.

The public has a strong anti-fracking position that is focused on the risks of health, safety, and community rights. There is also a small group of politicians vocally opposed to fracking, some of whom are anti-fracking activists who became anti-fracking candidates in the elections. The discourse of these politicians closely aligns with the public anti-fracking perspective. There are some minor differences in discursive elements, but they perceive the same risks involved with fracking. The discourse of anti-fracking politicians is treated as a variant of the Health, Safety, and Community Rights storyline.

The positions other politicians take are more nuanced, based on favoring or opposing the ballot measures. Some individual politicians voice concerns about fracking in their jurisdictions. They are opposed to the ballot initiatives or local-level regulations on the basis that lawsuits are too great a risk for the cities and counties. This storyline includes politicians who initially resisted fracking moratoria but eventually approved them as a strategy to deter the public from ballot initiatives. The statements of the governor and two congressmen are also participants in the Lawsuits storyline.

The collective interests of industry are expressed mainly through COGA and another industry group, Energy in Depth. The industry discourse is staunchly, and sometimes aggressively, opposed to fracking regulations. The industry representatives and spokespersons constructing this discourse are mostly professionals. They use multiple tactics to defend against any threat to companies in the oil and gas business. The industry itself is the main focus of risk in the Industry storyline.
The storyline of the pro-fracking public is closely related to the Industry storyline. It portrays the question of regulation as a contest between the anti-fracking forces and the energy industry, and it has sided with the industry. This is unsurprising, given that the industry funds almost the entire budgets of the pro-fracking groups. Like the industry, this group sees the primary risk as a threat to the benefits fracking will bring. The Pro-Fracking Public storyline works by arguing against the claims of anti-fracking activists. Unlike the storylines in the PEIS cases, in which messages flow in only one direction, the storylines of the ballot initiatives are interactive and fluid. These discourses respond, adapt, refute, and attempt to preempt the narratives of other competing discourses. The ways in which storylines adjust and react to events and changing contexts are discussed in the storyline analyses. Key assumptions and taken-for-granted knowledge do not undergo change, nor do the ideal worlds represented by the discourses.

Descriptions of discourses follow the format used in the PEIS case studies, with discussion of rationalities instead of cultural worldviews. Each storyline is described through seven elements:

- Storyline
- Entities constructed through discourse
- Agents and their motives
- Metaphors, rhetoric, and situated meanings
- Assumptions about natural relationships and figured worlds
- Rationality
- Framing
Newspaper texts are referenced by publication and publication date. Publications are represented *DC* for Boulder’s Daily Camera, *DP* for the Denver Post, *DTC* for the Daily Times-Call, *BE* for the Broomfield Enterprise, and *GT* for the Greeley Tribune. If more than one article appeared on a given day, that number is followed by a lower-case letter. Letters for publications on the same date are randomly assigned. Statements from different individuals in the same article appear as separate bullet points.

**Situated Meanings across Discourses**

There are two terms with situated meanings that are used in multiple storylines. The first is *oil and gas*. For all discourses, *oil and gas* refers to the oil and gas industry and its production activities. It is often a descriptive phrase for exploration, development, drilling, production, and standards. Sometimes it alone represents the industry. Depending on the discourse, *oil and gas* may have positive or negative connotations.

- “They were already delaying meetings with oil and gas applicants in order to re-examine the city's policies.” (DC 06.04.2013b)
- “Lopez said she still has many concerns about adequacy of the new oil and gas land-use regulations the county adopted in December.” (DTC 06.06.2013c)
- “Oil and gas activity has exploded in Colorado over the last 10 years.” (DC 12.28.2013b)
- “Oil and gas development is an industrial activity that raises legitimate questions and concerns.” (DC 09.07.2013c)
- “It's time for him to represent those who elected him, not big oil and gas.” (DC 08.23.2013c)
When referring to the fuels produced by fracking, people focus on natural gas. With the exception of the Industry storyline, oil and gas is seldom used to represent the actual fossil fuels that are extracted through the process of fracking. Industry’s use of the phrase is discussed in further detail in the storyline description.

The second situated meaning is the word frack and its verb forms. Frack is used as a double entendre for the word fuck in all but the Industry storyline. When used by fracking advocates, they do so to acknowledge, and perhaps to downplay, the meaning implied by fracking opponents.

Sometimes the use is subtle, and at others, quite blatant. The original name of one of the anti-fracking groups, Don’t Frack Broomfield, carried this connotation. The situated meaning is employed by children and adults, in meetings and in print. Lest there be any doubt, two of the congressmen point out that frack evokes “a four-letter word” (DP 08.01.2013 and GT 08.09.2013a).

- “‘We have a wonderful opportunity here to stand up against these hazards,’ said Swain, urging the county commissioners to ‘give Boulder County a fracking break, please.’” (DTC 05.17.2013a)
- “I was totally psyched, until I heard that one of the kids went home and told their parents who work for the gas industry about the presentation and the song me and my brother performed called ‘What the Frack.’” (DC 05.25.2013b)
- “In front of the hotel, a group of grandparents asked the governor not to ‘frack our grandchildren's future.’” (DP 09.10.2013a)
- “My family has officially been ‘fracked.’” (DP 08.01.2013)
Health, Safety, and Community Rights Storyline

The Health, Safety, and Community Rights (HSCR) storyline centers on risks to health and safety. It states that people have basic rights to clean air and water, and to protect their health and safety. Health and safety risks are being forced upon Colorado communities because the state does not recognize their rights to protect themselves by making rules regarding oil, gas, and fracking. The communities’ rights to autonomy and self-determination is at risk as part of the fracking controversy.

This storyline has a political variant, where the discourse of politicians parallels the public’s narrative with a few differences in assumptions and rhetoric. Political actors apply a political rationality rather than the social rationality of the main anti-fracking storyline. A short discussion of the political variation follows the analysis of the public’s discourse.

A few individuals involved in this storyline switch between roles as citizen activists and politicians. Merrily Mazza, Tom Dowling, and Cliff Smedley crossed into politics, all running for office as fracking opponents. Congressman Jared Polis went public with his own experience with fracking in July. Because he was extremely vocal about his own conflicts with the oil and gas industry, he provided a vivid example of a possible worst-case scenario for homeowners. Polis was an influential figure, but his only decision-making authority in Boulder City or County was as a voter.

Polis’ letters, comments, and experiences are a significant contribution to this storyline. He never made public statements in favor of the ballot initiatives, but was adamant about the need for local control of matters pertaining to public health and safety,
and championed the rights and protections of homeowners. He wrote, “Join me in taking action to ensure that the natural gas boom doesn't harm Colorado families or our economy. Before it's too late” (DP 08.01.2013). He is quoted in news articles as a fracking activist, although his power as a public figure and wealth garner him more attention than most private citizens.

- “But now it is personal, like it has already been for so many of my constituents.” (DC 07.25.2013)

- “‘I feel like the universe has selected me to be a poster boy for reining in out-of-control fracking,’ said Polis. ‘If I have more of a soap box now... I will continue to fight for Colorado families.’” (DC 07.26.2013b)

The HSCR storyline is the most prominent and well-represented discourse in the texts. The dual and transitioning roles of several individuals bridge the public/political categories. Opinion pieces and text segments have been coded as public or politician’s statements based on whether they occur after a person’s declaration of candidacy for office. Jared Polis’ statements have been coded as public when he discusses his personal experiences, and political when the topic is policy or law. Public statements in the HSCR storyline occur in 80 opinion articles and 77 news articles. Four opinion and 47 news articles contribute to the political variant.

**Storyline.** In the HSCR storyline, fracking threatens health, safety, and the environment. It is an industrial activity that does not belong in cities or near homes and families. Communities have a fundamental right to clean air, clean water, and should be allowed to protect themselves by making rules and regulations. Politicians and the
industry have subverted the will of the people, favoring corporate rights and industry interests over democratic principles, individual self-determination, and community rights.

- “We are faced with a political problem rather than an energy problem!” (DC 05.03.2013a)

- “Home Rule cities, like Lafayette, have the right to determine for themselves whether they will allow this dangerous industrial activity into their neighborhoods, next to their schools and in their open spaces.” (DC 10.25.2013b)

- “If Question 300 passes in November, the citizens will secure their right, as a Home Rule city, to clean air, to clean water and to be free from the toxic, carcinogenic chemicals fracking introduces to the environment. They will secure their right to the peaceful enjoyment of their homes free from the 24/7 stadium lighting and truck traffic that fracking imposes when allowed next to neighborhoods.” (DC 10.25.2013b)

The rhetoric in this storyline evolves over time. It begins with the direct effects of fracking—the threats to health, safety, environment, and property. It then expands to include the local and state institutions that deny the communities their fundamental rights to clean air, water, and self-government. The industry is said to be greedy and corrupt, and it has convinced politicians to do its bidding. When the local and state lawmakers overrule the will of the people, they threaten democratic principles and processes.

Throughout late May and early June, citizens calling for local fracking regulations make little progress. With Boulder County’s twice-extended moratorium set to expire on June 10, the Boulder County Commission votes down another extension. In Lafayette
City, the City Council rejects calls for a fracking ban, and Broomfield considers negotiations with Sovereign Energy. The lack of response from elected officials in the face of public clamor for regulation amplifies the perceived threat to democracy.

Boulder County, Boulder City, and Lafayette eventually impose moratoria on new oil and gas operations, but the public does not trust that rules will be lasting or effective protections. The political turmoil and hesitation to act shows that such measures are vulnerable to reversals and political forces. Broomfield’s MOU with Sovereign Energy demonstrates the city’s willingness to capitulate to the industry.

Activists work to place initiatives on ballots, warning of health and safety risks while simultaneously advocating for fracking regulations and community rights. At the beginning of the petition drive, the stated intent is to “reach out to voters to convey their concerns about the potential health and environmental risks of fracking” (BE 09.05.2013a). The anti-fracking message gains traction with the arguments that local people have a reasonable interest in protecting their neighborhoods from industrialization and that a community should have the right to determine its own rules.

In Lafayette, East Boulder County United must respond to the charges brought that their petition was not legal. Statements by anti-fracking leaders attenuate the claims of wrongdoing as typical of the industry because “they do not want this issue decided by any community” (DC 08.09.2013b). Shortly after that challenge is resolved, activists have to rebut claims by COGA that if passed, the Lafayette initiative would outlaw delivery of natural gas to homes. They again responded by attenuating the industry’s statements, calling them “desperation tactics” (DC 08.27.2013a) and “playing on speculative fear” (DC 08.27.2013a).
Polis’ experience with fracking undermines the rhetoric of competing discourses that recommend people buy up mineral rights if they do not want fracking. By Polis’ account, he took the appropriate steps in his property purchase to secure ownership of mineral rights. Despite his efforts to ensure that fracking would not affect his home or family, they have been rendered ineffective by the decision of his neighbors.

- “This can happen to anybody. It can happen to you. It can happen to your neighbor. It can happen to your congressman.” (DC 07.25.2013)
- “But apparently even owning your own minerals rights isn't enough; they came for our neighbors.” (DC 07.28.2013b)

His narrative shows that government regulators are ineffective at preventing violations, and that they will not intervene once drilling has begun. Polis also claims that COGCC is unable or unwilling to impose fines that will serve as deterrents. He says that while he has the means to pursue the issue, citizens should not have to “hire surveyors and lawyers at their own expense to defend their neighborhood from illegal fracking” (DC 07.30.2013).

**Entities.** In this storyline, fracking is a dangerous, risky activity that is unknown, understudied, polluting, and uncontrollable. It takes place underground where it is hidden and cannot be monitored. The chemicals in fracking fluid are kept secret from the public and health care providers. Fracking leads to irreversible harm. It invisibly and insidiously contaminates air, water, and land with toxic substances. Fracking carries characteristics

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22 COGCC did not shut down the operations on Polis’ neighbor’s property, despite noncompliance with height and placement restrictions.
of dread and unknown risk, and the secrecy around fracking fluids only increases perceptions of risk.

- “Wouldn’t you want to protect your kids from being exposed to these dangerous chemicals?” (DC 05.25.2013b)
- “As you know, fracking toxins are secret, because -- curiously -- the companies are permitted to inject them under our properties and leak them into our air while refusing to say what they are.” (DC 05.21.2013b)
- “Since the oil and gas industry considers their chemical mix ‘proprietary,’ not even treating doctors are privy to their ingredients.” (DC 05.17.2013b)

Fracking causes climate change and furthers dependence on fossil fuels. According to COGA, “with 95 percent of all wells in Colorado hydraulically fractured” (DP 12.04.2013b), any oil and gas production in the state involves fracking. Therefore, there is no differentiation between fracked and conventional production. Once fracking development begins, it spreads quickly to nearby areas. Weld County serves as a worst-case scenario. Stopping fracking is an urgent matter, with homes, lives, and cities at stake.

- “Fracking will destroy everything we love about Boulder. Do you want to go down in history as the people who ruined it? I am begging you to reverse this catastrophic decision before it’s too late.” (DTC 06.05.2013b)
- “It’s too late for Erie and Weld County, but not for Boulder.” (DC 05.17.2013b)
- “Look at your neighbors. Weld County has already accounted for suffering due to fracking.” (DC 05.31.2013c)
Residents of the nearby town of Greeley attest to the impacts of fracking. They urge others to act to protect their cities from similar fates. They write, give statements to reporters, and speak at public meetings in support of activists’ efforts.

- “As Greeley residents, we are faced with huge fracking sites within 350 feet of our homes. There are 16 wells approved one block from my home near schools, a recreation center and open areas. Two more fracking projects were approved in the city. One is 30 plus wells east of the University of Northern Colorado campus and another 60 plus wells in a residential area.” (DP 06.08.2013)

- “‘I have a BTEX burner, two condensate tanks, two separator tanks, a produced water tank and five wells 234 feet from my home,’ the 37 year old mother of three said. ‘It just shouldn't be there,’ Beach said. ‘I am not an expert, but I've become an expert on living next to a well.’” (DP 06.16.2013a)

- “By pushing an oil-and-gas economy, Weld County may generate short-term revenues, but only at the cost of their long-term prosperity and declining property values.” (DC 07.28.2013b)

- “There are currently 51,400 active fracking wells in Colorado. Twenty thousand of these wells are located in Weld County -- the most fracked county in the country.” (DC 11.13.2013c)

The process of fracking is hidden underground, but industrialization is the primary observable and experiential manifestation of fracking. Fracking comes with noise, lights, odors, vibrations, traffic, towers, trucks, and machinery. Unlike other industrial activities, there are few limits on where fracking is permitted. It encroaches on
homes, neighborhoods, schools, and open space. Fracking operations can be sited in areas normally off-limits to truck traffic, heavy machinery, and hazardous materials.

Industrialization imposes health and safety risks and offends the sensibilities of residents.

- “Nowadays, rigs frequently set up in and around residential neighborhoods, prompting an angry backlash from homeowners bothered by the lights, noise and smell of the operations.” (DC 10.16.2013b)
- “‘I never imagined I’d have to worry about mineral rights and the potential for drilling right next to my home,’ said Ross Johnson, who grew up in Greeley and lives in the neighborhood with his wife and two preschool daughters. ‘I mean, we are in the city.’” (DP 05.05.2013)
- “An industrial zone does not belong in a residential area.” (DP 05.05.2013)
- “This shouldn’t be any different than if somebody was trying to build a factory right next door to us.” (DC 07.25.2013)

Industrialization is an involuntary aesthetic, safety, and financial risk for a community. The HSCR storyline insists fracking will ruin the character of cities and the quality of life for citizens. It will lead to “deteriorating roads from heavy truck traffic, health-affecting smog, toxic emissions, a noise-level equaling that of a busy interstate and a landscape destroyed by wells, pipelines and holding pools” (DC 09.03.2013). Colorado towns will be blighted by industrialization and pollution equivalent to that in cities such as Houston, Los Angeles, or “famously smoggy Pasadena, Calif.” (DC 11.03.2013d)

- “Visualize a densely populated city with schools, parks and residential areas. Now -- with fracking -- add in truck traffic, a multitude of active wells, flares, sound pollution and air pollution.” (DC 05.10.2013)
• “I no longer even want to take our son up there to our country home, which has become an industrial zone. Who knows what kinds of chemicals are in all those drums we can see from the window of our home or the smoke in the air.” (DC 07.28.2013b)

Risks to health and safety are the concerns that first prompted people to organize citizen action groups. Pollution of air, water, and the environment resulting from fracking will jeopardize human health and safety. Fracking is assumed to cause cancer, asthma, headaches, heart disease, emphysema, and neurological problems, thus health is constructed as the absence of disease. Safety is the absence of threats, which include chemicals, industrialization, noise, lights, falling towers, and truck traffic.

• “Our Broomfield was formed because of concerns about the health and safety risks of fracking, which it has stated are not fully known.” (BE 11.06.2013b)

• “Nonetheless, the emissions are known to be toxic because of the acute and chronic inflammatory and degenerative illnesses associated with them.” (DTC 05.21.2013a)

• “350 Boulder believes there are numerous unresolved concerns about fracking impacting public health and safety, public land, water and air, that demand that responsible communities push a pause button while public health studies are conducted.” (DC 05.08.2013)

• “It’s an issue of health, issue of environment, issue of unknown risk.” (DC 08.18.2013a)

In this storyline, human health and safety are closely tied and often synonymous with concern for air, water, and the environment. Fracking is presumed to have risks that
are simply ignored by scientists, the industry, and politicians. Given the threat of serious health impacts and the secrecy surrounding fracking fluids, there are projections about the worst possible outcomes.

- “They’re not going to drill those wells. They’re not going to poison me and my children.” (DP 05.05.2013)
- “Don’t leave me hanging with some dead flowers and a sick kid with asthma, there’s more to be done.” (DC 05.12.2013a)
- “Regardless of your view of the science on methane and climate change, nobody debates that ground based ozone kills people.” (DC 05.26.2013c)
- “Those living close to fracking sites are at higher risk for safety hazards and for long-term health problems derived from being so close to these toxic chemicals.” (DC 06.03.2013c)

Air and water are vectors for pollutants that cause cancer, asthma, and a number of undocumented fracking-related ailments. The chemicals in fracking fluid pose an unknown risk that is of particular concern. Protections for the environment are included among the objectives of fracking bans, but the frequent coupling of health and environment indicates that this storyline sees human health as the underlying need for environmental protections.

- “They are putting our environment and health at risk by allowing a secretive industry to use mining techniques in our county that have not been proven safe.” (DC 05.25.2013a)
• “If not stopped, industry will lay to waste our environmental laws that prevent the contamination of air, water and land while threatening human health.” (DC 11.02.2013b)

• “At 86 percent of fracking sites, the human carcinogen benzene was found at hazardous levels. Good for the environment? No.” (DC 11.19.2013c)

• “Our individual and collective health is being compromised by these fracking operations. Along with the irreversibly contaminated water brought about by fracking, our air and aquifers are being ravaged by methane, which is released due to drilling.” (DC 06.03.2013c)

Although environmental protections are closely tied to health risks, climate change is recognized as a fracking-related environmental risk. Methane leaks are discussed more often than fossil fuel combustion as a contributor. The problem of methane leaks is also used to refute the fracking advocates’ assertions that fracked natural gas produced is an environmentally friendly fuel that will improve carbon emissions.

• “Many climate scientists believe the methane emissions associated with fracking are worse for climate change than coal. Good for the environment? No!” (DC 11.19.2013c)

• “But methane (natural gas) is itself a powerful greenhouse gas, and when it leaks from pipes and wellheads it actually adds to climate change.” (DC 05.12.2013b)

• “Since methane is far worse for the climate than coal when it is burned, this leaky infrastructure actually stands to make natural gas worse for our climate.” (DC 11.20.2013b)
• “This latter makes natural gas, in all likelihood, about as climate-friendly as coal.” (DC 09.08.2013a)

Pollution of air, water, and land comes from several sources. Normal operations release some of these pollutants, such as odors, truck and flare emissions, and the use and disposal of fracking fluids. Wells leak fracking fluid, and fracking operations release methane, volatile organics, and toxins. In the HSCR storyline, leaks, spills, and accidents are thought to be frequent and inevitable.

• “Of much greater concern, of course, are the studies suggesting that fracking causes air and water pollution that lead to health problems.” (DC 05.25.2013a)

• “The issue is that there is substantial leakage of methane, and worse, volatile organics at the surface in the oil and gas fields.” (DC 05.26.2013c)

• “Colorado’s craft beer industry is among those concerned about how water pollution from widespread fracking will affect its brand.” (DC 09.03.2013)

• “Colorado has more than 43,000 producing gas wells and one of the worst records of ‘fraccidents’ in the nation, ruining our environment and our health.” (DC 12.12.2013)

The floods in September amplify the risks of unpreventable and uncontrollable accidents. Tanks floated away, pipes broke, and operations were inundated by the floodwaters, washing oil and toxins across farmland and into waterways. Fracking operations were framed as a danger to human health through contamination of food, soil, and livestock.
• “This is washing across agricultural land and into the waterways. Now we have to discuss what type of exposure the human population is going to have to suffer through.” (DC 09.15.2013b)
• “The concentration of oil and gas wells in flood-prone areas speaks to one more risk of what they see as a dangerous industry.” (DC 09.15.2013a)
• “Floodwaters can topple facilities and spread oil, gas and cancer causing fracking chemicals across vast landscapes, making contamination and cleanup efforts exponentially worse and more complicated.” (DC 09.15.2013d)

The HSCR storyline expresses concern about homes and property values. Discussion of impacts on property values continues throughout the election cycle. Governor Hickenlooper attempted to assuage those fears in the FrackingSENSE forum, but his statement only confirmed the risk as real. Polis’ troubles with fracking brought property rights and the sanctity of home ownership into sharp focus. He is very vocal in his opinion that “the laws in Colorado are outrageously out of touch in terms of protecting property” (DC 07.25.2013).

• “I never imagined I’d have to worry about mineral rights and the potential for drilling right next to my home.” (DP 05.05.2013)
• “When asked about declining property values, he said ‘Yes there is some decline in the beginning, but that is found to taper off over time.’ Don't most people buy a home hoping for appreciation? Was this meant to be comforting?” (DC 05.11.2013a)
• “How much value would your property lose if fracking occurs nearby? Probably a lot. How much will you be compensated for your loss? Probably nothing.” (DC 10.31.2013b)

The HSCR storyline acknowledges that there are surface and mineral rights and problems with split estates but does not focus on those alone. This discourse constructs two types of rights that are not prominent in other storylines—community rights and corporate rights. Corporate rights are also referred to as corporate interests, and they are in direct conflict with community rights. Corporate rights include the rights to extract minerals and a host of other activities, such as polluting air, encroaching on homes, and destroying the quality of life for entire communities.

• “She said she has been alarmed at how corporations have become more powerful in recent years in the U.S., and she decided that now that an issue of corporate rights has come to her backyard, she has to do her part to combat those expanding powers.” (DC 06.11.2013a)

• “People have no rights, and oil and gas has all the rights in Weld County.” (DC 07.25.2013)

• “The voters are saying that they don’t buy the idea that corporate interests are superior to public health, property values, quality of life and democratic self-determination.” (DC 11.05.2013a)

This storyline asserts that there is a higher priority right vested in the people to protect their families and the places they live, which comes to be defined as community rights. As politicians debate the state’s authority and the legitimacy of local fracking rules, the public involved in this storyline insists that the will of the people and home rule
authority create a right for communities to ban fracking. Lafayette’s citizens’ initiative comes to be known as the Community Bill of Rights and Obligations. Activists change the name of their group from Don’t Frack Broomfield to Our Broomfield, indicating a shift in perspective. The former asks others to respect their city, while the new name claims ownership and control of the city.

- “He often pointed to mineral rights and that we must be vigilant in our purchase, but what about other rights, like the health of those exposed to the fracking toxins?” (DC 05.11.2013a)
- “This is a movement that is going to place community rights and self-defense against corporate interests.” (DC 07.26.2013a)
- “It establishes our right as residents to ban fracking, protect our health, safety, water, air, land and property values from corporate control.” (DC 10.15.2013)
- “‘We hold that the rights of people and communities are the highest governmental authority, and that corporate interests are subordinate to the health, safety, and sustainability of the Lafayette community,’ the measure reads.” (DTC 06.06.2013a)

Agents and their motives. The CBM case study begins with the appearance of Governor of Colorado, John Hickenlooper, at a fracking forum at University of Colorado, Boulder. Hickenlooper claimed he was attempting to be what Quakers call a “‘fair witness,’ someone who comes in and they don’t have an ax to grind” to help mediate the issue of fracking in Colorado” (DC 05.02.2013). Although he professes impartiality, he is not seen as credible. His background as a petroleum engineer is used to portray him as an agent of industry instead of a knowledgeable expert. His efforts to prevent local
governments from regulating fracking foster hostility and mistrust. He acknowledges attacks for “being in the pocket of oil and gas, or somehow subservient to their philosophy or their wish” (DC 05.02.2013), a description that closely aligns with the HSCR perspective.

Hickenlooper represents the state, both figuratively and in his role as governor. He defends the state’s interest over oil and gas matters, and in suing Longmont, he made it clear that his threats of legal action are not empty. He is seen as responsible for the COGCC, which is the state’s enforcer, regulator, and a promoter of the oil and gas industry. Because the commission has members with close ties to industry, it, too, is considered rife with conflicts of interest.

Hickenlooper stands as the face of a state government beholden to the oil and gas industry. He is “an unwavering mouthpiece for fossil fuels who is even willing to sue his own constituents” (DC 05.03.2013a). Instead of representing the people of Colorado, he prioritizes industry interests and rights over the rights of individuals and communities.

- “I urge Gov. John Hickenlooper to sign these even though his administration seems more concerned with protecting the oil and gas industry profits than about the health of my children and safety of our communities. My hope is that Hickenlooper has a change of heart and stops lobbying on behalf of the oil and gas industry and passes common sense regulations that protect the health and welfare of future generations.” (DC 05.06.2013a)

- “He also stated that the data is just not there and that the science on the impact of fracking is far from settled when it comes to determining the safety of oil
and gas development; yet the governor sides with the industry’s stance that it is perfectly safe.” (DC 05.12.2013a)

The governor is not the only politician criticized in the HSCR storyline. Local politicians against the citizen initiatives are portrayed as cowardly, slow to act, and untrustworthy. They fear lawsuits from industry and the state. They do not respect the will of the people, and have betrayed the public trust.

- “Shame on the commissioners for not protecting their citizens. Their vote endangers the public’s health and property and further puts our Democracy at risk.” (DC 05.26.2013a)

- “The statement said the commissioners have ‘failed in their duty to protect public health, our way of life, Boulder County open spaces, farms, residences and the natural environment.’” (DTC 05.21.2013a)

- “Please remember that a moratorium can be thrown out at any time by any Lafayette City Council. We have the right to prohibit fracking.” (DC 10.15.2013)

- “The city showed that if you threaten to sue, they’ll fold.” (DP 06.16.2013a)

The oil and gas industry is seen as careless, greedy, and corrupt. It seeks “corporate profit at the expense of the population and environment” (DC 06.11.2013b).

The HSCR storyline recognizes that the industry operates in a global market. Its motivation to drill and frack at a rapid pace “has nothing to do with U.S. energy security and everything to do with the oil and gas industry’s bottom line” (DC 09.05.2013b). It resorts to unethical and immoral actions to avoid regulations and ensure access to resources.
• “From the rainforests of the Amazon, to the African savannas, the oil and gas
has been all too willing to bribe corrupt governments and despots in order to
extract natural resources at fire sale rates and leave communities with legacies
of pollution and social, economic instability.” (DC 09.08.2013a)

• “In recent years the oil and gas industry has been busy donating millions to
right-wing think tanks, conservative politicians and even corrupt scientists to
create a sense of uncertainty over the science of climate change, hyperbolic
fear over anything representing a solution, and even personally attacking
scientists and agencies such as the EPA.” (DC 09.08.2013a)

• “Lafayette’s assertion of its community rights is clearly a threat to an industry
used to getting its way without having to worry about the consequences.” (DC
11.02.2013b)

Industry is careless and indifferent to the health, safety, and welfare of local
people and towns. There is no incentive to protect air, water, or environment when the
only concern is profit. Oil and gas companies are outsiders only interested in “sucking
out [Colorado’s] wealth to benefit companies in Houston, Japan or elsewhere” (DC
05.10.2013).

• “Energy extraction industries have a dismal record of raping the land then
moving elsewhere to make more large profits before regulation catches up
with them.” (DC 11.23.2013d)

• “They will plunder our state, pocket billions in profits and then leave us with
the devastation.” (DC 06.07.2013b)
• “The adults can’t just have a party on the planet and leave the mess for us kids to clean up. It’s not fair!” (DC 05.25.2013b)

In Colorado, the industry takes cover behind COGA. Despite the name, COGA is made up of outsiders and international corporations. The HSCR storyline condemns COGA for its use of aggressive tactics to force development on communities where it is not welcome. Industry and COGA have collaborated with Hickenlooper to force fracking on communities and citizens against their will. None are to be trusted.

• “So who is the Colorado Oil and Gas Association? They are a group of companies who have an interest in Colorado's oil and gas. Many if not most of the companies are not based in Colorado, some are not even based in the United States!” (DC 12.10.2013)

• “The Colorado Oil and Gas Association's full board has 39 members. These 39 individuals are attempting to determine how life for Lafayette's 25,733 citizens looks for decades to come.” (DC 08.28.2013a)

• “As you might expect, this threat to corporate profits has not gone unnoticed, and the Colorado Oil and Gas Association is pulling out all the stops to prevent its passage.” (DC 09.01.2013)

COGA and the industry have no respect for the will of the people or democratic processes. COGA’s support for the protest against Lafayette’s petition is evidence of the industry’s attempts to undermine the will of the people. COGA also spearheaded the lawsuit against Longmont and is expected to provide funding for future lawsuits against Colorado cities. COGA is a risk for local communities because it wields sufficient power and money to subvert the democratic process.
• “‘This is very typical of the oil and gas industry -- they do not want this issue decided by any community,’ he said. ‘This is their way of trying to remove this issue from a democratic vote of the people in Lafayette.’” (DC 08.09.2013b)

• “So I would not be at all surprised to hear, as rumored, that private companies are considering providing funds to the state to support these lawsuits. If this happens, then the law will become just another corporate political tool, without even the pretense of government ‘of the people, by the people, and for the people.’” (DC 06.09.2013)

• “COGA, armed with a massive amount of monetary resources, wants to be ruler and dictator over cities in northern Colorado and to undo the will of the voters in these communities.” (DC 12.06.2013)

The industry is corrupt and can manipulate the government and regulatory systems. Energy companies can do whatever they want because they “all have their fingers in it” (DP 05.05.2013). The oil and gas industry has been given regulatory loopholes at the state and national level. It receives special treatment from the state and “continues to be given carte blanche by the governor” (DC 05.20.2013).

• “Groups fighting these impacts realized that they were never going to get very far working within the current system, because, for the most part, the laws and regulations were written by the industries.” (DC 09.01.2013)

• “Oil and gas is exempt from the Clean Air, Clean Water and Safe Drinking Water Acts, the Toxics Release Inventory, the Resource Conservation and Recovery Act and the National Environmental Policy Act.” (DC 09.02.2013)
COGA and the industry are believed to be supporting the public opposition to the fracking initiatives. When the campaign funding figures are released in October, those suspicions are confirmed. According to the HSCR storyline, the passage of the initiatives in spite the industry’s money serves as evidence of the strength of citizen opposition and unwillingness to tolerate fracking risks.

- “Who do you think is funding those ads? Why, it’s those who are making piles of money off the rest of us by riding roughshod over anyone who gets in their way.” (DC 10.31.2013b)
- “Troup said his modest anti-fracking group was outspent 25-to-1 because pro-fracking groups were funded by the Colorado Oil and Gas Association, and that residents opposed to fracking would regroup in the coming months to assess their options.” (BE 11.06.2013a)
- “‘Today Colorado residents have shown that they can decide for themselves whether or not they want fracking in their communities,’ he said ‘(The industry’s) millions will not change that.’” (DC 11.05.2013a)
- “He noted that the industry far outspent the anti-fracking movement in Colorado’s election last month and it netted oil and gas interests not a single victory.” (DC 12.04.2013a)

The COGCC is characterized as an illegitimate regulatory agency. It promotes oil and gas extraction rather than protecting the state from its harms. There is an inherent conflict of interest in the makeup of the commission, with industry employees at the helm. The commission “has become too cozy with the oil and gas operators it is supposed to be monitoring” (DP 06.27.2013b).
• “I [was] astonished to find that Colorado’s fracking is regulated by the Colorado Oil and Gas Commission, oil and gas industry employees charged with promoting Colorado’s oil and gas extraction, with little concern for Colorado’s health, safety and environment.” (DC 05.06.2013b)

• “Appoint citizens, not drillers, to the Colorado Oil and Gas Conservation Commission.” (DC 08.18.2013b)

• “The state of Colorado Oil and Gas Commission has the job of both promoting and regulating oil and gas extraction. This is a plain conflict of interest.” (DC 10.15.2013)

The COGCC is in collusion with the industry with the full support of the governor. The COGCC is characterized as ineffective and unworthy of the public trust. It is incapable of monitoring oil and gas operations and does not impose penalties harsh enough to ensure compliance with laws. This is amplified by Polis’ complaints to COGCC and the eventual findings that Sundance Energy’s wells are in violation of location and height restrictions. Despite Polis’ appeals, penalties were soft and COGA allowed operations to continue.

• “I am concerned that I had to hire lawyers and file a complaint with the COGCC to uncover these violations.” (DC 07.30.2013)

• “Penalties from COGCC need to be large enough to serve as deterrents, not just a cost of doing business. Colorado also needs to take enforcement seriously. We now have fewer than 20 enforcement employees monitoring more than 40,000 wells. This is simply not enough.” (DP 08.01.2013)
The people opposing fracking describe themselves as ordinary citizens. They have formed grassroots organizations to protect their families, homes, and way of life from the onslaught of fracking. They express frustration and anger at their inability to persuade their representatives to prevent fracking. They are fearful for the health and safety of their children. They push back against the portrayal of their motives as selfish or hypocritical.

- “We are on the frontline of drilling and we have to continue to defend the health, safety and beauty of our towns because we are underdogs.” (DC 05.20.2013)
- “My grandchildren deserve a safe, healthy future in Colorado.” (DP 09.10.2013a)
- “I mean, come on, there is a reason people ‘bash’ the oil industry here in Colorado, and its not selfishness, unless you think concern for your and your kids health is selfish!” (DC 10.01.2013)
- “What’s the motive for the anti-frackers? Oh, just the health of their families with clean air and water, and protecting their property values. How selfish of them!” (DC 11.01.2013a)

The protection of children is a strong motivation for the fight against fracking. For the participants in the HSCR storyline, their health and safety is of utmost concern. The worry expressed about the safety of children and families is not limited to their own relatives or to the present. This storyline projects a concern over fracking risks into the future. Children and young adults are active participants in this discourse, defending the rights of their generation.
• “If a mistake happens, it could mean buying drinking and cooking water for not only the rest of our lives, but also for our children, grandchildren and generations to come.” (DC 05.31.2013c)

• “When it comes to people’s health, and it’s to the point where this is at stake, it’s time to stand up for our children and future generations.” (DC 06.11.2013)

• “I was just overwhelmed by the potential of harm done to our Earth, to people, to our children,” she said. ‘It seemed people were so helpless.’” (DC 07.09.2013)

• “I have the right to freedom of speech and I am standing up for the future of my generation which includes their kids. I will stand up for what is right and work to leave a better world for the generations to come.” (DC 05.25.2013b)

Metaphors, rhetoric, and situated meanings. The HSCR storyline is adamant that fracking imperils the health and safety of those exposed to it. Health and safety risks were the original reasons people organized against fracking. Activists warn that fracking is a danger, and people are encouraged to educate themselves and others about the impacts of fracking. If people can be educated about the risks, they will resist fracking in their cities and will support fracking bans.

• “So I decided I wanted to educate my peers on fracking by giving a multi-media presentation called ‘The Inconvenient Proof.’” (DC 05.25.2013b)

• “Every time there is a public meeting, more people show up than the last time. And it just seems like people are starting to be educated on the issue, and more and more people are showing they are passionate about protecting the community from the impacts.” (DC 06.22.2013b)
• “More facts about the severity of fracking impacts will come out and political tricks to convince us that fracking is safe won’t be relevant to a more educated public this time next year.” (DC 07.01.2013)

• “Willmeng said he expects opposition to energy extraction near cities and towns in Colorado to increase as people learn about the hazards of a heavily industrialized activity occurring in their backyards.” (DC 07.26.2013a)

Ultimately, the right of communities to determine their own fate, to protect the health and safety of their residents, and the will of the people to govern become the main rhetoric of the HSCR storyline. Community rights are constructed as fundamental human rights, similar to civil rights. The HSCR storyline calls for the fair and just prioritization of citizen’s rights over corporate rights. These are specifically rights to “clean air, clean water and self-determination” (DC 06.11.2013) and to “defend our health, the overall well being of our community” (DTC 05.21.2013a). Coloradans are encouraged to “stand up for our right to a secure, sustainable and healthy energy future” (DC 09.05.2013b).

• “We citizens of Boulder County have, like Americans everywhere, a right to clean air and clean water. To deny us these for the oil-gas pariahs would be an outrage. We trust that the commissioners will not do it.” (DC 05.21.2013b)

• “We, as Coloradans, have a right to protect our air, water, land, health, safety, jobs and property values from the dangers of fracking.” (DC 09.03.2013)

• “The idea of a community bill of rights that protects citizens from environmental and other impacts has a natural extension to other issues where corporate profits impinge on citizens’ quality of life.” (DC 09.01.2013)
• “‘We look at this as a civil rights movement,’ Willmeng said. ‘There has never been a civil rights movement that hasn’t come up against the people and the corporations profiting off that system.’” (DC 07.26.2013a)

• “In the spirit of Martin Luther King, he would emphasize the rethinking of our hierarchy of values: human rights for the safety and well-being of people’s living space over the right of corporations to despoil the environment for private profit and public good be damned.” (DC 09.13.2013)

Citizens opposed to fracking argue that the will of the people should prevail in a democratic system that is governed by majority rule. With the assumption that governments should protect people’s health, safety, and welfare, citizens argue that the government should put a stop to fracking. Because governments will not heed the will of the people, the voters must take action. Dissatisfied with the government’s response, citizens have decided to take the matter into their own hands. By putting the matter to a vote, the will of the people will prevail.

• “We have to make our governments responsive to us.” (DC 05.13.2013a)

• “The Boulder County commissioners are charged with protecting the health, safety and welfare of Boulder County citizens, and a new, multi-year moratorium on fracking is the only adequate way to do this.” (DC 06.22.2013)

• “Lafayette is a Home Rule city. Home Rule cities have the right to local self-government including the powers to regulate for the protection of public health, safety and welfare.” (DC 10.25.2013)

The governor and the oil and gas industry seek to overrule the will of the people. The HSCR sees this as an affront to democracy. To support fracking within communities
“is to exploit the residents of Colorado” (DC 05.20.2013). People express outrage at the industry, COGCC, COGA, and the governor for their attempts to force fracking on unwilling people. Their actions put democracy itself at risk.

- “Through its power and influence, the oil and gas industry is not only risking the public health and quality of Colorado life, it is attempting to eliminate the voice of the public altogether.” (DC 12.15.2013a)

- “For the governor and his state agency to attempt to overturn the vote of the people is unconscionable.” (DTC 07.11.2013c)

- “Can someone please explain to me how an industry (big oil and gas) can sue a city, municipality or county after the voters have voted to keep them out? The people of five cities have voted to keep fracking out for a designated time period. Why is that not the end of it?” (DC 12.09.2013)

- “Indeed, elections matter and so does democracy.” (DC 12.15.2013a)

To defend the principles of democracy and community rights, the HSCR storyline contends that even though lawsuits are possible, they are worth the risk. Health and safety must be protected at all costs. Local officials are urged to be brave and stand up to the governor, COGA, and COGCC. Citizens are encouraged to ignore the opposition’s arguments that lawsuits will be inevitable and expensive and vote to approve the ballot measures. Local governments are urged to “not let the fear of an expensive legal process stop them from carrying out the will of the voters” (DC 12.04.2013a).

- “We are willing to pay for legal fees now, if we have to, and not cancer treatment for residents later.” (DC 05.10.2013)
• “If we residents of Boulder County must pay higher taxes because the county is sued by the representatives of oil and gas, we will do so gladly rather than pay the much higher medical and other costs inflicted by fracking.” (DC 05.21.2013b)

• “I want you to be brave, and I want you to be bold -- not just for Boulder, but for other cities that are looking for precedents.” (DTC 06.02.2013c)

• “I hope other Lafayette residents will do the same -- and that they won’t let the threat of a lawsuit discourage them from voting consistently with their belief that all people have a right to a healthy environment.” (DC 11.03.2013a)

This storyline portrays the industry and the governor as bullies. In contrast, those fighting fracking are depicted as underdogs, rebels, and truth-speakers. This is a contest for control, with “the big guys telling the little guys what is going to happen -- big guys from the city and oil companies” (DP 05.05.2013). The bullies have power, money, and sometimes the law on their side. They use fear to manipulate people, and will aggressively pursue their interests if necessary.

• “Why does a multi-million dollar industry need to bully 10- and 13-year-old boys? Is their something they are hiding about the true impacts of fracking?” (DC 05.25.2013b)

• “Gov. Hickenlooper is a bully, and the oil and gas industry is an even bigger bully with billions of dollars.” (DC 05.26.2013a)

• “Longmont is at the forefront of the movement to stand up to the fear mongering of the oil and gas representatives.” (DC 05.10.2013)
“It’s clear that their goal is to harass ‘renegade’ communities into submitting.”

(DC 08.27.2013a)

The answer to the forceful tactics and power inequity is to stand up. Not only are the citizens being bullied, the local officials are, too. Politicians and voters are encouraged to unify and fight back.

• “When confronted by a bully, there are choices about how to respond: stand up for what you believe, run away, join the bully or let him do what he wants.” (DC 05.10.2013)

• “Commissioner Jones: Please keep standing up to these bullies, and please keep speaking out against the frack attack coming into Boulder County.” (DC 05.26.2013a)

• “‘If you’ve been threatened, we can threaten back,’ Taylor told Commissioners Elise Jones and Cindy Domenico. ‘We’ve got your back.’”

(DP 06.16.2013a)

In the HSCR storyline, people are irked at the assumption that the anti-fracking public is uneducated and misinformed. They call out the condescension coming from fracking advocates, and push back against the depictions of activists as irrational, emotional, and uninformed. The disrespect expressed in competing discourses for citizens’ concerns and intelligence angers people and feeds their mistrust. In the HSCR storyline, citizens are intelligent, educated, healthy and well-informed.

• “Instead they say we the people don’t know any better. They say we are too stupid to decide for ourselves or to know what is best for our communities, our homes and our families. They send glossy mailers and saturate us with ads
“to make us afraid, very afraid, of what we want in our own lives.” (DC 10.28.2013)

• “In his Nov. 10 column, Bob Greenlee again shows contempt for the electoral process -- and the electorate -- by labeling those who voted to delay fracking ‘zealots.’ . . . Greenlee can disagree with the majority of voters who passed the measures to delay fracking, but he should respect their efforts to protect their neighborhoods and not resort to name-calling.” (DC 11.30.2013)

• “I could have chosen almost any town the world, but chose Boulder because it is sunny and healthy, well-educated, and offers extraordinary social, educational and recreational opportunities.” (DC 05.06.2013b)

• “I’m one of those ‘uninformed selfish people’ who listen to Colorado Public Radio and read the newspapers and read articles from scientists about oil/gas drilling, fracking, etc.” (DC 10.01.2013)

Participants in this discourse resent having their concerns derided and mocked, particularly by politicians. Even the inclusion of their families in protests is belittled. Hickenlooper’s statement to the Senate Committee on Energy and Natural Resources that he drank fracking fluid with Halliburton executives to prove it safe is characterized as a “disingenuous and deliberately confusing” gimmick” (DC 07.01.0213). His casual dismissal of accounts of fracking harm is taken as an affront.

• “‘Anecdotal’ and ‘further study’ are infuriating terms for someone with neurological damage that could have been avoided.” (DC 05.11.2013a)
• “Instead of taking their concerns seriously, industry supporters have called these citizens extremists and hypocrites for heating their homes and driving cars to work” (DC 06.07.2013b)

• “It’s shameful that these activists would use children as props in a political campaign against the oil and gas industry,’ he wrote in a prepared statement. ‘This is a desperate and extreme tactic, which they’ve borrowed from out-of-state lobbying groups, because the facts simply don’t support their alarmist claims.’” (DC 05.13.2013a)

The industry’s efforts to engage the public are seen as an attempt to control the public dialog over fracking, oil, and gas. They do nothing to attenuate the risks in the HSCR storyline. It is seen as spin rather than education, undertaken in collusion with the industry-aligned politicians.

• “For example, the Colorado Oil and Gas Association is saying that they will be running a campaign to reduce the ‘polarization’ around the fracking issue.” (DC 05.31.2013b)

• “Recently, the Colorado Oil and Gas Association announced it would conduct a ‘listening tour’ around the state this summer.” (DP 06.27.2013b)

• “We hear the industry doublespeak about how fracking doesn’t put methane in our water (just the failure of the well casings), the false debate over ‘biogenic’ versus ‘thermogenic’ methane (when faulty casings can allow either to leak into ground water), and why carcinogens that spill and leak and evaporate into the air are ‘proprietary formulas’ that we aren’t allowed to know about. We
look to the regulators, who adopt pro-industry speaking points and pass them along as state policy.” (DC 11.13.2013b)

Although the storyline presumes that fracking is a grave threat to health and safety, there is little consensus about evidence supporting health and safety risks. Perspectives range from warnings about the lack of data with calls for scientific research to claims of studies that provide unequivocal proof of the illness and disease caused by fracking. Although there are inconsistent views about the state of science on fracking, comments about health and safety assume that studies have found or are likely to find that it has adverse health effects.

- “A two- or three-year extension could give the time that’s necessary to study the impacts that fracking has on air and water quality.” (DTC 05.17.2013a)
- “Fracking causes air and water pollution, has been shown to increase cancer risks, and reeks havoc on nearby homes and families. In addition, methane escaping from fracking operations and the burning of natural gas is a significant contributor to climate change.” (DC 05.26.2013a)
- “We need more time to complete some very important scientific studies on the impacts of fracking on the health of the people who live near the wells.” (DC 06.01.2013)
- “Could it be that there is so much evidence and so many reports by reputable scientists that there is definite cause to be concerned about the toxic threat to people and animals, as well as the likelihood of decreased property values?” (DC 11.01.2013a)
• “It is very easy to find many peer reviewed scientific reports that seriously question, if not outright state, that fracking is hazardous to health and the environment. And these studies were not funded by green organizations. The only positive data big oil and gas can point to is reports funded by their own organizations.” (DC 12.06.2013)

For some people, the possibility of risks translates into the certainty of harm. Others refer to the uncertainty about fracking’s effects, and call for a precautionary approach. Individuals and organizations demand a pause on fracking development until the impacts on health, safety, air, and water can be determined.

• “That temporary ban is favored by advocates calling for more time to study the full effects of fracking on humans and the environment. Mendell said that even the EPA has said there is not enough data to understand the extent of damages that activity causes.” (DC 06.15.2013)

• “‘From the citizens’ perspective, there’s reason to take pause. We know there are toxic chemicals contained in hydraulic fracturing fluids,’ Kadrich said. ‘Before our community says go ahead, we want a timeout to see what the real health impacts are today and into the future.’” (DP 10.13.2013i)

• “If fracking proponents are correct, then a fracking time-out doesn’t threaten anyone’s well-being. And the oil will still be there for future extraction. But, if the anti-fracking proponents are correct, then a failure of anti-fracking measures will have dire consequences. Health and quality of life cannot be regained. Disaster cannot be undone.” (DC 11.01.2013a)
Assumptions about natural relationships and figured worlds. The HSCR discourse rests on an assumption that governments and representatives should protect people from risks. There is a perception that federal, state, county, and city governments have all failed in that capacity. The rights and interests of industry are being given priority over the health, safety, and welfare of citizens and their families. The dereliction of the duty to protect is at the heart of the move to place fracking regulation on the ballot.

- “We Boulder County residents elected our county commissioners to protect our health and safety, particularly from wealthy, bottom-line-driven, self-regulating oil and gas corporations and their state allies including our governor.” (DC 05.06.2013a)
- “We need the EPA to act within its existing authority to tighten the amount of leakage through the use of technology, enhanced monitoring, and inspections.” (DC 05.26.2013c)
- “The Boulder County commissioners are charged with protecting the health, safety and welfare of Boulder County citizens, and a new, multi-year moratorium on fracking is the only adequate way to do this.” (DC 06.01.2013)
- “Greenlee must be aware that communities in this nation have a long history of regulating commerce to shield their citizens from perceived or real threats.” (DC 11.30.2013)
- “Because health and safety standards for fracking are virtually nonexistent at the federal or state level, Lafayette citizens placed Question 300 on this year’s election ballot proposing a ban on oil and gas drilling in Lafayette.” (DC 11.02.2013b)
Citizens appeal to local governments to step in where state and federal policies fail to protect them or allow them to protect themselves. They urge the Boulder County Commission and city councils to be brave and stand up for these rights. They praise and defend the politicians who support fracking regulation. At public meetings, people chant “Reinstate the moratorium” (DTC 06.06.2013a) and “Find courage! Ban Fracking!” (DTC 06.06.2013d).

- “Several of the more than 40 people speaking at Wednesday night’s public hearing pointedly praised Jones for her previous support of a multiple-year moratorium extension and attacked Domenico and Gardner for not taking similar stands.” (DTC 06.06.2013c)

- “This is a problem that needed to be addressed assertively, by Boulder County asserting its inherent responsibility to protect the health, safety and welfare of its citizens, regardless of whether the state is doing it or not.” (DC 06.22.2013b)

In the HSCR storyline it is taken for granted that the will of the people should rule. Confident that there is a majority of citizens who do not want fracking in their towns, people express the need to overrule the wrong and unrepresentative choices made by their leaders. In the case of fracking, the right to determine whether oil and gas activities take place in towns is a decision that “rightfully belongs to the city’s residents” (DC 08.22.2013).

- “There could only be this kind of action created by a galvanizing of voters because the legislature is not set up to protect citizens and the environment when it comes to oil and gas operations in Colorado.” (DC 07.01.2013b)
• “The Lafayette City Council believes that citizens do not have the right to protect their health, safety, air, water and property from the destruction of fracking.” (DC 10.25.2013b)

This storyline works on the taken-for-granted knowledge that “when federal and state governments fail us, we must turn to social movements that involve local citizens to organize and to pressure their local governments into action” (DC 09.13.2013). Standing up to injustice is part of the American way.

• “People have responded with the tools available to them: public protest and the ballot box.” (DP 06.27.2013b)

• “Another Boulder resident, David Powell, said that ‘we’re at a point’ where ‘there’s nothing else we can do. It’s called civil disobedience’ -- although he didn’t specify what form that disobedience would take.” (DTC 06.06.2013a)

• “The existing laws must be challenged through local ordinances and when necessary protests by grassroots organizations and public outcry to make sociopathic corporations be shamed and driven out of our communities.” (DC 09.13.2013)

With so much at stake, citizens must use whatever means necessary to defend themselves and uphold democratic principles. Where the law is wrong, it must be changed by the people and the courts. This is a time where “authority (or lack of authority) needs to be questioned and confronted” (DC 06.16.2013c).

• “‘The citizen initiative often highlights hot button issues that the voters don’t think are being resolved,’ Nuñez said. ‘It’s an important tool by which to raise issues when their elected officials won’t take action.’” (DC 08.18.2013a)
• “If ever there was a time when the state Supreme Court needed to change law, this is it.” (DC 12.04.2013a)

• “And, of course, if state law does not respect the democratic will of Colorado citizens, the law and the politicians that support it must be changed to bring our government back to its intended purpose.” (DC 12.15.2013a)

The HSCR storyline portrays politicians in favor of fracking and some academics as untrustworthy. They are partisan, and side with the industry against the people. Some politicians may claim to be unbiased, but their affiliations, actions, and statements lend support to the view that they cannot be trusted. Politicians appear oblivious to those contradictory messages and conflicts of interests.

• “He was dismissive and told me that everything is perfectly safe. So of course when the governor asserts that oil and gas production is the bees’ knees and we’re perfectly safe; it makes me wonder whose side is he on? My family or the oil and gas industry?” (DC 05.12.2013a)

• “I couldn’t help but notice that a lot of Gov. Hickenlooper’s talking points were consistent with oil and gas industry’s talking points such as: methane creates water, chemicals found in fracking fluid are the same chemicals that we would find in our household cleaners, etc. That unfortunately doesn’t make the governor the most credible source.” (DC 05.12.2013a)

• “They have double-crossed the voters in any case. We will not vote for any of them again, and we will support any efforts, if they arise, for their recall.” (DC 05.24.2013)
“The City Council wants its citizens to believe a moratorium is good enough; no ban needed. In reality, a moratorium can have exceptions granted, is only a temporary solution and can be lifted at any time.” (DC 10.25.2013b)

The public does not trust the current system of rulemaking and risk governance surrounding fracking. There is “a fundamental lack of faith in the state’s ability or willingness to effectively regulate oil and gas” (DP 10.13.2013i). The government’s inaction is “a betrayal of the citizens” (DP 06.16.2013a). People have little reason to believe that people will be kept safe by the government and regulators. This lack of trust has motivated the citizen’s movement to ban fracking.

“Changes to the system to increase transparency, accountability, local control and safety can go a long way in addressing those concerns.” (DP 06.27.2013b)

“Until Coloradans have confidence that the oil and gas industry is behaving responsibly in our state, and under strict environmental safeguards, we will see this dynamic continue.” (DP 06.27.2013b)

“If the head-shaking and sighs coming were any indication, there were few in the audience buying what Ms. Schuller labeled a ‘reframing’ effort.” (DC 09.08.2013a)

COGA and its CEO, Tisha Schuller, also lack the public’s trust in the HSCR storyline. Writers demonstrate this by pointing out COGA’s self-contradicting positions, exercise of control through money, and blatant attempts at self-serving framing. While those efforts might work for some, discerning audiences “bring a healthy skepticism to industry spin” (DC 09.08.2013a). This storyline disputes COGA’s claim that it is “representing state interests’ in suits against communities” (DC 12.10.2013). On election
night, activists make statements that the results prove that “Coloradans can see beyond the lies and misinformation of the oil and gas industry” (DC 11.05.2013a).

- “If I was not so deeply impacted, I would have found the public relations rhetoric of Colorado Oil & Gas president Tisha Schuller almost laughable.” (DP 06.08.2013)
- “For Ms. Schuller to suggest to a group of our Colorado leaders and visionaries that much of the problem lay with them was a clear demonstration of just how much work remains in establishing genuine, substantive dialogue.” (DC 09.08.2013a)
- “Tisha Schuller, CEO and president of Colorado Oil and Gas Association, is at it again after blatantly lying to citizens of Colorado effected by the floods saying there was no leakage of oil and gas.” (DC 12.10.2013)
- “Satire aside, the issue was not lack of supply. It was a technical failure. This does not increase one’s faith in the technically precise processes employed to frack safely and effectively.” (DC 12.13.2013)

Underlying the urgent need to take preventative action against fracking is the assumption that it will overrun any area where it takes hold. The industry’s need to drill is insatiable. It knows no limits and has no respect for the inviolability of homes, schools, or parks. Politicians need to work quickly to curb this “voracious industry” (DC 05.25.2013a) because if fracking makes inroads, it will be ruinous. The spread of fracking in Colorado is "an epidemic that is sweeping through our state” (DTC 06.06.2013a).
• “If downtown Greeley is going to be drilled and fracked, ultimately, downtown Denver could be drilled and fracked.” (DP 05.05.2013)

• “The commissioners’ press release on their vote declares that the county would try to limit the scope and pace of gas development. We wish them luck in trying to restrain the oil and gas industry. It is not an industry that yields to restraint, especially once they start their operations.” (DC 05.25.2013a)

• “In Weld County the number of fracked wells has increased from three in 2008 to 888 in 2012 and continues to increase.” (DC 06.11.2013b)

**Rationalities.** The HSCR storyline applies a social rationality, which focuses on knowledge about health and safety of fracking. Other risks exist, but the basis for knowledge and supporting evidence are not discussed as they are for health and safety risks. There is little argument over the taken-for-granted knowledge that fracking will bring industrialization, or that home values will be negatively impacted.

True to the social rationality, the HSCR storyline depicts politicians as too slow, cautious, and ineffective at responding to the imminent crisis of fracking. Eventually, the public loses faith in the policy makers’ willingness or ability to protect them from fracking’s dangers. Science has likewise been slow to catch up to society’s need for definitive information about fracking risks.

The varying perspectives on scientific conclusions about fracking impacts are not problematic for the HSCR storyline. Some people say there is no scientific research on fracking, while others claim that there is abundant and conclusive evidence published in peer-reviewed scientific journals. There is a shared expectation in this storyline that fracking can be definitively proven to be either harmful or safe. If it cannot be proven
safe, fracking should be prohibited. This is consistent with the desire for certainty in the social rationality.

For people participating in the discourse of HSCR, the absence of evidence does not indicate the absence of harm. The HSCR storyline assumes that fracking has been or will be found to be unsafe. Common sense dictates that fracking regulations be put in place.

Personal stories count as valid evidence of fracking’s health impacts. People engaged in the HSCR discourse say that these accounts of illness and injury are not given due credit. Industry dismisses them, and they are not heeded by scientists or policy makers. The evidence is sufficient for the public to conclude that fracking is harmful to human health.

- “Oil and gas industry considers personal stories “anecdotal” and ignore them even though they consistently cluster around fracking operations.” (DC 05.17.2013b)
- “The kids I have worked with in Erie who live near wells have severe nosebleeds, migraine headaches, asthma and other symptoms they never had until fracking wells showed up practically in their backyards.” (DC 05.25.2013b)
- “The discussion included a letter from an Erie woman who’s surrounded by fracked wells and has since suffered health effects, including spinal lesions.” (DC 05.17.2013b)
- “If fracking is safe, then what about nosebleeds, headaches and neurological issues?” (DC 05.11.2013a)
In opinion articles, fracking opponents make reference to primary scientific sources. They make educated arguments and critique the statements of others using facts and figures. They attempt to interpret scientific information for newspaper readers who may not have access or know about the studies.

- “So Gov. Hickenlooper’s statement is true only, according to scientists, if the leakage is below 3.2 percent of the gas produced. Yet there are documented instances of leakage at 4 percent to 9 percent.” (DC 05.12.2013b)

- “Colorado School of Public Health has determined that there is 66 percent higher cancer rate when living in a half-mile radius of a fracking well.” (DC 05.06.2013a)

- “Then I read a study by the National Oceanic and Atmospheric Administration and University of Colorado recently published in the Environmental Science and Technology journal.” (DC 11.03.2013d)

The intertextual references in this storyline indicate that people also obtain information from news outlets and other popular media. MSN, Colorado Public Radio, newspapers, documentaries, activism websites, and YouTube are cited by people contributing to this discourse. The combination of these formal, social, and popular sources of information is a characteristic of social rationality. There is greater effort in the HSCR discourse to provide sources and legitimation for evidence than in other storylines.

- “There is substantial evidence to support the ban. Go to the above website and fractivist.blogspot.com to read studies.” (DC 09.10.2013b)
• “This is according to an article The New York Times printed in 2011 titled ‘Documents: Natural Gas’s Toxic Waste.’ In this article you can find over 1,100 pages of government documents on the issue.” (DC 05.31.2013c)

• “This information is from a report by Food & Water Watch, ‘U.S. Energy Insecurity’ (Nov. 14, 2012), that has 186 referenced notes.” (DC 11.20.2013b)

Despite the acceptance of informal evidence, people express the desire for more scientific studies of health, environmental, and economic impacts. There appears to be a desire for proof of harm backed up by widely accepted data. However, science funded by industry is not considered valid.

• “We need more time to complete some very important scientific studies on the impacts of fracking on the health of the people who live near the wells.” (DC 06.01.2013)

• “A moratorium is essential until more is known about health, community and environmental impacts.” (DTC 05.17.2013a)

• “The only positive data big oil and gas can point to is reports funded by their own organizations.” (DC 12.06.2013)

People are willing to apply information from other locations to their evaluations of fracking in Colorado. They also make inferences and extrapolate across energy resources, hazard types, and species as evidence of risks. There are references to the wisdom of fracking bans in a diversity of places, from France to New York to Longmont. References such as these suggest that availability and representativeness heuristics play a role in this social rationality.
• “Similarly, nuclear power seemed ‘proven’ until the Windscale accident in the United Kingdom (long before Three Mile Island or Chernobyl).” (DC 06.25.2013b)

• “Ozone levels in San Antonio began rising in 2007, with the steepest increase seen around 2011, just as the Eagle Ford boom exploded.” (DC 11.03.2013d)

• “Gas flaring can acidify soil and send fine particulate matter into the air. Long-term exposure to this material has been linked to human heart and lung diseases and disruption to the endocrine system.” (DC 09.02.2013)

• “In North Dakota’s Bakken shale, there have been reports of limping, swollen, infectious and dying cows in environments with elevated levels of benzene, methane, chloroform, butane, propane, toluene and xylene, associated with fracking, which can bring cancer, birth defects and organ damage.” (DC 09.02.2013)

**Framing.** There are two goals in this storyline. The first is to convince local politicians to implement local controls on fracking through an administrative process. The second is the goal to have the public approve the citizen initiatives to ban or institute moratoria on fracking.

The arguments to support both of these choices assume that without action, fracking in the cities and counties is certain to occur. The framing used is positive, describing the desired choice leading to a better future. It frames the decision to limit fracking as the avoidance of inevitable losses and harms. The framing accounts for the risk of lawsuits by arguing that the costs in dollars and human suffering would be much greater than the time and expense of defending a lawsuit brought by COGA and the state.
Summary. The health and safety of citizens and their families are at risk in the HSCR storyline. Community character, homes, and property are also jeopardized by fracking. Fracking comes to be seen as a challenge to communities’ rights to self-determination through democratic processes. The uncertainty of fracking’s health and environmental effects, the insidiousness of pollutants that can be carried by air and water, and the invisibility of many aspects of fracking establishes it as an unknown risk.

Fracking is considered to be uncontrollable, both in terms of its dangers and the lack of control people have in the location of fracking activities. People don’t trust the industry, which they see as large, greedy, and powerful companies that don’t care about making homes unlivable or destroying the quality of life of residents. Uncontrollability, inequity, and threats to health and safety are characteristics of dread. These characteristics contribute to the perception of very high risk in the HSCR storyline.

Citizens look to their governments to stand up for them against the power and money of industry. Except for a few politicians, the government supports the industry’s interests. Because politicians are unwilling to protect their constituents, citizens have no other choice than to take matters into their own hands by attending public meetings and starting petitions for ballot initiatives. They demand a democratic vote on the protections that politicians are unwilling or afraid to implement.

The public’s perceived risks come to include their governments. City and county lawmakers are slow to create or extend fracking moratoria, and in Broomfield they begin working with the industry to allow fracking. In particular, Hickenlooper’s state government becomes a threat to the people of the cities and counties by denying them the right to make their own decisions and threatening to retaliate against them for doing so.
There is a lack of trust in state and local governments to let the will of the people govern—a key principle of democracy and the American way.

The environmental dimensions of this storyline become less prominent over time, while the rights of the communities grow in importance. Health and safety risks remain important but unresolved throughout. There is an enduring belief that fracking causes harm and will eventually be proven unsafe.

Jared Polis’ public struggle with fracking influences this storyline in several ways. It demonstrates that anyone could have fracking forced upon them. Fracking is no longer a simple conflict over surface rights and mineral rights, and it quickly evolves into a community issue. Polis’ experience also shows that the state regulators are not effective at enforcement, and that oil and gas companies cannot be stopped. Regulators, regulations, and COGCC cannot be trusted to provide protections. Polis provides a vivid example that amplifies the uncertainty, lack of control, involuntariness, and powerlessness—all components of dreaded and unknown risks.

Other locations where fracking is occurring provide ample fuel for the availability heuristic. Examples of fracking’s harms come from Greeley, Weld County, Pennsylvania, North Dakota, and New York. Supporting evidence also comes from a range of sources, including personal accounts, documentaries, and scientific studies. That fracking is unsafe is certain, it is only a matter of documenting the evidence.

One of the goals in this storyline is to educate people about the risks to health, safety, and community decision-making. Yet there is great resistance to the education efforts coming from others. Information supporting fracking is seen as pro-industry propaganda. People dismiss efforts to convince them of the state’s authority because it is viewed as
contrary to Colorado home rule authority and the principles of democracy. The elements of the HSCR storyline are summarized in Box 7.1.

| Storyline: | The health and safety of residents is at risk if fracking is allowed to take place. Communities have a fundamental right to clean air, clean water, and should be allowed to protect themselves by making rules and regulations. |
| Entities: | | Metaphors, rhetoric, and situated meanings: |
| · Fracking | · Health and safety education | · Community rights |
| · Industrialization | · The will of the people | |
| · Health and Safety | · Worth the lawsuits | |
| · Environmental pollutants | · Stand up to bullies | · Irked at condescension |
| · Property and homes | · Rights | · Science |
| · Rights | Agents with motives: | Assumptions about natural relationships and figured worlds: |
| | · Hickenlooper | · Government should protect the people |
| | · City and county governments | · People have the right to take matters into their own hands |
| | · Industry and COGA | | |
| | · COGCC | · Mistrust |
| | · People/citizens and their families | · Industry is insatiable |
| Rationality: | Goal framing: | |
| Social | Positive goal framing - Ban fracking to avoid losses. |

Box 7.1. Health, Safety, and Community Rights Storyline

**Political Variant of HSCR Storyline**

A small group of politicians and candidates supported efforts to control fracking in counties and cities. The boundaries of their social roles are not hard—they are citizens, residents, and homeowners as well as policy makers. Congressman Jared Polis and candidates for Lafayette City Council, Cliff Smedley and Merrily Mazza, were outspoken activists against fracking as citizens and politicians. Mike Foote, a state representative for
the district including Lafayette, criticized the state’s fracking policy and wrote an opinion piece published in the Denver Post. Other political supporters of local regulations kept a lower profile. They gave statements in public and to the press, but did not write opinion articles. Politicians’ support for fracking regulations was closely aligned with the HSCR storyline. Their discourse is more reserved in its criticism of industry and state government and has little to say about the governor.

In the political version of the HSCR storyline, there is not enough known about the potential risks to allow fracking. The only reasonable action is to wait until more studies can be completed. Politicians agree that without state-level rules that protect homes and communities, local governments must act and home rule authority should give them license to regulate oil and gas operations.

City and county officials express frustration with the state-level deadlock on stronger fracking rules. The Colorado legislature’s inaction requires local politicians to choose between risks. They either face the likelihood of lawsuits or the consequences of their own inaction, which potentially includes an influx of oil and gas operations, industrialization of cities, and angry voters. Governments are assumed to be responsible for protecting communities and representing the will of their electorate. Support for fracking regulation is seen as a duty of their government positions.

**Metaphors, rhetoric, and situated meanings.** The rhetoric of the HSCR political variant places greater emphasis on the jobs and economy than the main public storyline does. The HSCR politicians discuss the benefits of tourism, recreation, and the aesthetics of the region. These are drivers of economic activity and employment that will be at risk if oil and gas operations move in. Property values will be reduced by proximity
to oil and gas operations, which will harm residents and the local economies. The politicians reject arguments about the benefits of fracking and attenuate the claims of economic stimulus and job creation. They caution that residents should not “hitch ourselves to the inevitable energy boom and bust cycle to the detriment of other important economic sectors” (*DP* 08.01.2013).

- “The oil and gas industry promotes fracking as a sure-fire job creator. However, in 2010, oil and gas accounted for only about 2.3 percent of Colorado’s GDP and less than 1 percent of the state’s jobs. A survey of gas companies conducted by the Marcellus Shale Education & Training Center showed that 70 to 80 percent of workers were from out of state.” (*DC* 09.03.2013)

- “Our local economy is very much tied to a high quality of life the appeal of outdoor settings, clean air, beautiful vistas.” (*DP* 10.13.2013i)

- “By pushing an oil-and-gas economy, Weld County may generate short-term revenues, but only at the cost of their long-term prosperity and declining property values.” (*DC* 07.28.2013b)

- “Colorado tourism accounts for over $16.6 billion in travel spending and supported 144,600 jobs in 2011.” (*DC* 09.03.2013)

As elected representatives, this group argues that they—and other democratically elected office holders—are obligated to represent the will of their constituents. Because a vocal sector of the public expresses strong opposition to fracking, the policy makers should follow. The “public groundswell” (*DP* 06.16.2013a) against fracking should be heeded.
• “However, it is our job as local elected officials to represent our constituents. And so hearing from them through the public process is also very important in shaping our policy and ensuring that we’re taking the right steps.” (DC 06.22.2013b)

• “As an elected official, my job is to listen to the people of Colorado all year long, and I hear widespread frustration about the current oil and gas system.” (DP 06.27.2013b)

• “‘(The ballot measure) is a firm message to the oil and gas industry that people are not going to just stand back and wait for change from a regulatory standpoint,’ the new mayor said.” (DC 12.03.2013b)

• “‘As an elected official, I’m supposed to do what my constituents are telling me to do,’ he said. ‘I’m always going to put my city over the state, being the mayor.’” (DC 12.04.2013a)

**Assumptions about natural relationships and figured worlds.** There are some assumptions in the political HSCR storyline that differ slightly from the public’s version of the HSCR. Because of their roles in government, city and county officials interpret the government’s obligation to protect the public as a personal duty to protect the health, safety, and welfare of the communities they serve. The risks of fracking are understood to be significant and real. Therefore, policy makers need to prevent fracked oil and gas development from taking hold. Boulder City owns open space lands that could be vulnerable to fracking. Like residents, Boulder officials plan to be “pretty tenacious about holding onto our rights to our property” (DC 05.08.2013).
• “We, as Coloradans, have a right to protect our air, water, land, health, safety, jobs and property values from the dangers of fracking.” (DC 09.03.2013)

• “‘They’re drilling on Boulder County open space. You cannot get more sacred than Boulder County open space,’ he said. ‘If they’re willing to drill there, what makes you think they won’t drill here?’” (DC 10.02.2013)

• “I believe that municipalities need to advocate for the right to protect their natural resources and community from unwanted industrial practices, inappropriate development, toxic exposure and the misuse of agricultural lands.” (DC 10.13.2013w)

The special treatment the state affords the oil and gas industry forces cities to accept activities and land uses that they would otherwise be able to prohibit or regulate. Fracking operations compromise the health, safety, and quality of life for entire cities and neighborhoods. Policy makers must have the power to protect their communities against oil and gas development.

• “The right to property doesn’t mean you have the right to harm.” (DC 10.02.2013)

• “We wouldn’t allow an industrial dairy farm to set up in the middle of a residential area -- why would the city allow a battery of 20 condensation tanks to locate in a neighborhood?” (DC 12.04.2013a)

• “Local governments have authority to regulate oil and gas land use activities because oil and gas operations are matters of local concern that directly involve the use of land and are an important issue for residents and neighborhoods.” (DC 12.05.2013)
The relationship between state and local government is strained by the issue of fracking. HSCR politicians express frustration with the state’s inability to provide satisfactory rules and enforcement. They recognize that the state claims the authority to regulate oil and gas operations, but question whether it is right. The state does not and cannot protect the varied interests of communities with different wants and needs. Weld County may welcome oil and gas development, but Boulder and Broomfield Counties “don’t want to be part of what may be popular in the 3rd and the 4th Congressional Districts” (DC 08.29.2013c). The absence of a state-wide solution to fracking causes concern about air pollution from neighboring Weld County “because our air knows no political boundaries and blows between jurisdictions” (DC 06.22.2013b). Nevertheless, since the state will not fulfill its duty to provide effective governance, it should allow local governments to exercise their home rule authority.

- “Risks associated with toxic gasses, potential explosion and fire, oil and gas spills, dust, and truck traffic are not adequately addressed in the current regulations COGCC has in place.” (DC 10.13.2013u)
- “In Boulder, residents simply don’t trust state regulators to prioritize health and the environment, Councilwoman Suzanne Jones said.” (DP 10.13.2013i)
- “‘(COGCC) has not acted in a way that is to protect the safety and the health of the citizens of Colorado with regard with oil and gas production,’ d’Oronzio said. ‘They’re not acting on our behalf.’” (DP 10.13.2013i)

City and county officials must act if the state will not provide sufficient protections. Boulder City officials are in favor of a fracking moratorium on the ballot to send a message to the state government about voters’ opposition to fracking. As in the
public HSCR storyline, the political variant evolves into a larger issue of local control and self-determination. For politicians, that right falls under home rule authority. The ballot measure comes to be seen “more about home rule and the right to determine industrial uses in our community” (DC 12.04.2013a).

- “Councilman Macon Cowles said the city should put the moratorium on the ballot to show state regulators that it is not just the nine members of the City Council who are concerned about fracking, but the entire community.” (DC 05.08.2013)
- “‘The state hasn’t been as proactive as people want to protect against environmental impacts,’ Lafayette's new mayor, Christine Berg, said this week. ‘To me, (the ballot measure) is more about home rule and the right to determine industrial uses in our community.’” (DC 12.04.2013a)
- “We are fighting a principle argument on the issue of whether a home rule city the right to control heavy industrial use by its zoning regulations.” (DC 10.13.2013f)
- “Berg said it may be time for the state to revisit the role of municipal home rule power when it comes to industrial activity within city or town limits.” (DC 12.03.2013b)

**Rationality.** One of the noteworthy differences between the political and public versions of HSCR risks is in their rationalities. In the political account, there is no question that more research on fracking impacts needs to be done. The available evidence suggests that health, safety, environmental, and economic risks are causes for concern.
• “There is a strong scientific and public health justification for extending the moratorium.” (DC 06.22.2013b)

With several studies underway, it is a “no-brainer” (DTC 06.02.2013c) that fracking should be put on hold until they are concluded. Gathering evidence is important enough that in August Boulder County dedicates funds for a new air quality study. Politicians in this storyline do not acknowledge assertions that fracking is safe. At the same time, they do not recognize the personal accounts of health impacts as valid evidence of harms.

The political HSCR storyline examines the political, social, and economic implications of the fracking decisions. Local economies, jobs, and property values must be protected alongside public health and infrastructure. The contest over state and home rule authority is an important one to settle. Fracking initiatives are ways that politicians and voters can “fight laws that pre-empt local decision making, elevate corporate rights above human rights, and force communities to accept harmful activities despite residents' opposition” (DC 10.13.2013k).

• “Fracking lowers property values, threatens local businesses, destroys our health, and pollutes our air and water. These costs are passed on to local citizens with polluted drinking water, deteriorating roads from heavy truck traffic, health-affecting smog, toxic emissions, a noise-level equaling that of a busy interstate and a landscape destroyed by wells, pipelines and holding pools.” (DC 09.03.2013)
• “Local governments must protect the public; in the face of a powerful industry, we need strong public officials and strong public support.” (DC 10.13.2013k)

**Framing.** In these texts, the city and county officials explain their own positions more often than they attempt to influence others. They assume that their jurisdictions will be targeted for oil and gas development. The choice to do nothing would lead to losses. The choice to regulate fracking is a way to avoid the losses that will come with inaction. This is a positive frame that projects a better outcome if fracking is regulated at the local level.

**Summary.** The politicians participating in the HSCR storyline recognize the risks to public health, safety, and community sovereignty as the public. They believe that there is a fundamental right to clean air, clean water, self-determination, and freedom from chemical trespass. They concentrate more heavily on economic impacts and jobs than the public does. They also criticize the city and county governments less harshly, although they express frustration with the state’s inability to pass effective regulation. The responsibility of the government to protect citizens is taken as a personal duty. Elected officials must be responsive to the will of their constituents. Where the public HSCR discourse applies a social rationality, the HSCR politicians use political rationality to justify their positions. Discursive elements of the political variant of the HSCR storyline are shown in Box 7.2.
Storyline:
Politicians are duty-bound to protect the health and safety of communities and represent citizens. Communities have a fundamental right to clean air, clean water, and should be allowed to protect themselves by making rules and regulations.

Entities:
- Same as HSCR

Metaphors, rhetoric, and situated meanings:
- Community rights
- Economy and jobs
- Duty to support constituents

Agents with motives:
- Same as HSCR but less critical of local governments
- Same as HSCR but less critical of Hickenlooper

Assumptions about natural relationships and figured worlds:
- Duty to protect the community
- Frustrated with the state

Rationality:
Political

Goal framing:
Positive goal framing - Ban fracking and avoid losses.

Box 7.2. Political Variant of the Health, Safety, and Community Rights Storyline

Industry Storyline

This is the storyline of the companies involved in oil, gas, and fracking and the associations that represent them. The lead organizations for industry are the Colorado Oil and Gas Association, known as COGA, and Energy in Depth. Each has a few spokespersons and attorneys who account for the bulk of the industry discourse represented in the texts. As President and Chief Executive officer of COGA, Tisha Schuller is a frequent spokesperson for the organization. COGA’s stated purpose is to foster and promote the beneficial, efficient, responsible, and environmentally sound development, production, and use of Colorado’s oil and natural gas resources (COGA, 2017). Energy in Depth is described as “a research, education and public outreach campaign of the Independent Petroleum Association of America” (DC 06.11.2013a).
Some participants in this storyline are not industry representatives in the strictest sense but have close connections and represent industry interests. Among these are the former Colorado State Representative B.J. Nikkel, who serves as an advisor to anti-initiative groups. She is employed by a consulting group, whose services are paid for by industry donations. Jon Hydeman files his complaint against Lafayette’s petition drive as a resident, although he is soon to be employed in the industry. His complaint was announced and publicized by COGA, and the organization helped to pay for the attorneys representing him.

The Industry storyline is represented in four opinion articles and 62 news stories. While the Industry storyline only addresses the public directly in those four instances, advocates of this storyline make frequent use of prepared statements and public announcements. These garner heavy coverage from the news outlets, which quote directly from spokespersons and press releases.

**Storyline.** In the Industry storyline, bans and tighter regulations on fracking are risks to the industry itself and to the authority of the law. Industry representatives pursue—or help others pursue—legal action against attempts to ban fracking. This storyline defends the rights to property, to access of minerals, and to operate according to state rules and regulation. The oil and gas industry creates jobs and economic benefits. If it cannot operate freely, communities, the state, and the country will lose. Like Governor Hickenlooper, the oil and gas industry does not hide the fact that it is willing to take legal actions to protect its interests and rights. Local governments will be faced with the costs of court battles against powerful and wealthy corporations.
To the extent that the cities, counties, and the public have rule-making authority, they are risks for the industry. It is thus important to oppose the move for local control and back the state’s authority. Because voter disapproval poses a threat, this discourse courts sympathy and reasonableness in public opinion. When faced with gains on the part of the activists, the Industry storyline proponents take a more aggressive approach as they turn to law to block the ballot measures and stop the momentum of the anti-fracking movement.

There are two main lines of interwoven argument in the Industry storyline. The first is the assertion that fracking is a safe technology for producing oil and gas. The second is that fracking cannot and should not be regulated at the local level. The discourse is strategic in response to changing contexts.

The Industry storyline is more complicated than the others in the CBM case study. It involves expert communicators and consultants who issue press releases and give prepared public statements. It must respond to strong public opposition, changing contexts, unfavorable events, and election losses. It is utilitarian in its rhetoric, unconcerned with consistency or ideals. As a result, it is a reactive and fast-changing discourse, although self-contradicting at times.

Much effort is spent attenuating competing messages. It downplays Jared Polis’ complaints, the successes of the anti-fracking movement, and the successful petition drives for ballot measures. In September, this storyline works hard to attenuate the impacts of the floods. It also amplifies the messages that the existing regulations are working and that the industry and COGA have matters well in hand. In November,
COGA disputes the legality of the vote counts and election procedures, and in December, it turned attention to challenging the legitimacy of the newly-passed measures.

**Entities.** The Industry storyline treats fracking as an entity that is critically important, while at the same time greatly simplifying what it entails. Fracking is described as the process of “injecting a mixture of sand, water and chemicals into underground shale formations to free up and extract oil and gas” (*DTC* 06.05.2013a). Beyond that description, little information is offered about the process or components of fracking, such as fracking fluid contents or waste disposal. The practice is referred to as both fracking and hydraulic fracturing. In the Industry discourse, *frack* is never used as a situated meaning for *fuck*, and *fracked* is not used at all.

This storyline asserts that fracking is safe and it has been unequivocally proven so. Claims to safety are based on studies and a 60-year history of fracking without evidence of harm. Most of the emphasis on fracking’s safety comes in June, before the petitions for initiatives were submitted, and again in December, after the ballot measures were approved.

- “Scientists, state regulators, and senior federal officials have repeatedly stated that hydraulic fracturing is safe. . .” (*DC* 06.02.2013a)
- “It’s a fundamentally safe technology, that's been used safely for decades.” (*DC* 06.11.2013a)
- “‘Fracking has been around since 1947,’ Nikkel said. ‘There have been a lot of tests done over time to prove it is safe.’” (*DC* 10.16.2013b)
In the Industry storyline, fracking is an entity at risk rather than a source of risk. Fracking is depicted as profitable for companies and beneficial to the state and local communities. It is said to provide jobs, tax revenues, and infrastructure. Fracking is credited with lowering energy costs and providing work for tens of thousands of people.

- “The Oklahoma-based oil industry analyst Spears & Associates estimates the North American fracking market at more than $30 billion in 2012.” (DC 08.23.2013c)

- “We’ve only had to sidetrack a couple of wells. From Day One, it has been economically attractive.” (DP 12.15.2013b)

- “Every Coloradan not only uses oil and gas, but also benefits from the severance and myriad other taxes which fund state agencies, schools, water projects, the low energy income program, fire departments, and roads all across the state.” (DP 06.07.2013c)

- “Making up over 7 percent of Colorado's economy, there are over 40,000 direct employees and 100,000 Colorado families making their way because of jobs created by oil and gas.” (DP 06.07.2013c)

Fracking is progress, and without it, “there is no innovation, there is no technology development” (GT 11.07.2013b). Oil and gas extraction in Colorado is dependent on fracking. Because such a high percentage of wells in Colorado are fracked, fracking and oil and gas extraction are synonymous.
• “With 95 percent of all wells in Colorado hydraulically fractured, any ban on fracking is a ban on oil and gas development” (DC 12.4.2013b)

• “In America, that’s really saying no to oil and gas development, and 90 percent of the wells today in the U.S. and Colorado are hydraulically fractured.” (GT 10.16.2013a)

The Industry storyline uses the situated meaning of oil and gas as symbolic of the industry and associated activities, as described earlier in this analysis. In this discourse, oil and gas are also constructed as the fossil fuels that the industry produces. Oil and gas are treated as fundamental to the daily lives of Coloradans. The Industry discourse reminds people that oil and gas are much more than merely fuel. They bring prosperity and comfort. The accessibility of new oil and gas resources is “a game-changer in the field of energy. The benefits for Colorado, our country, and the world would be staggering” (DC 09.08.2013b). Natural gas is portrayed as a clean energy source made possible by fracking. All these benefits would be lost if fracking was banned, making regulation a threat to modern ways of life.

• “Every single one of us lives a life so stunningly interdependent with oil and gas that we fail to notice. Water, food, shelter, communications, and transportation are either a direct oil and gas product, or brought to us, literally, by oil and gas. It is staggering.” (DP 06.07.2013c)

• “Oil and gas is the cornerstone of our way of life, from transportation of all goods and services to home heating, to every electronic and plastic product.” (DC 07.09.2013)
• “This industry is leading an economic renaissance in America,” (DC 08.23.2013c)

In the Industry storyline, the existing regulations on oil, gas, and fracking operations are sufficient protections for health, safety, property, and the environment. The first of these kinds of statements are prompted by and appear designed to attenuate the well location and rig height violations near Jared Polis’ property. They are also used when the floods in September caused spills, leaks, and damage to oil and gas operations. In constructing the existing regulations as sufficient, this discourse challenges the idea that any new rules would be detrimental. Growth in the industry would be jeopardized with “regulatory confusion and uncertainty” (DC 08.23.2013c).

• “There is no reason to place a moratorium on a commercial activity that scientists, engineers, state regulators and federal officials have said over and over again is fundamentally safe and tightly regulated under existing environmental laws.” (DC 06.22.2013b)

• “We’re required to have emergency response plans, and we train for these situations, and to this moment, those plans are being put to good and effective use.” (GT 09.19.2013b)

Mineral rights and the problem of split estates are part of this discourse. Surface rights are not mentioned, and in only one statement are they referred to as “surface ownership” (DC 06.116.2013). Mineral rights are constructed as holding priority over other types of rights. The Industry storyline’s perspective is opposite that of the anti-fracking discourses of the public and politicians. Industry discourse claims that “bans
amount to an unconstitutional “taking” of private property without compensation” (GT 11.07.2013b).

- “‘There are property rights on both sides,’ said Douglas Flanders, policy director for the Colorado Oil and Gas Association, a trade group.” (DP 06.16.2013a)

The Industry storyline asserts early on that the industry’s rights to access mineral rights must be respected. Later, especially after the election, it begins to emphasize “there are people with private property rights at stake in this” (DP 10.17.2013a). Colorado families are at risk if they are not allowed to benefit from the mineral rights they own.

- “She said the COGA funded groups are defending people’s mineral rights and economic interests in the oil and gas industry.” (DP 10.17.2013a)

- “The sad reality is that the biggest loser in fracking bans are our neighbors who own the rights to oil and gas resources. These mineral rights are often life changing for people, the difference between having to take a second mortgage to pay for their child's college or not.” (DC 12.19.2013b)

- “Without compromise, Hock said, ‘we are left in a situation where we cannot access minerals owned by members of the community and from which they derive income.’” (DP 10.13.2013i)

The law is an important entity for the Industry storyline. It is constructed and framed in ways that unequivocally put the law on the side of industry. Discussion of the law is used to strengthen the Industry position and to attenuate competing messages. The law is used to support state authority in fracking regulation. It is also the basis for Industry responses to Polis’ complaints, Lafayette’s petition, Broomfield’s slim electoral
margin, and the passage of initiatives by calling on Colorado state laws. Public discourse about law downplays the impact of anti-fracking successes.

- “Sundance Energy is gratified that this unfounded lawsuit was dropped by Rep. Jared Polis because the claims were completely without merit.” (DC 07.26.2013b)

- “Nikkel said BBEC is considering further legal action that addresses the recount and certification of election results, including judicial review of the entire vote-counting process.” (DC 11.26.2013)

- “The association contends these moves approved by voters in November are illegal because case law and regulations give only the state the right to regulate drilling.” (DP 12.04.2013b)

- “Meanwhile, on the same day the suit was filed against Broomfield for the way the election was conducted, the Colorado Oil and Gas Association brought suits against Lafayette and Fort Collins for fracking bans passed by voters in those communities. 12.03.2013a)

Before the November vote, the Industry discourse uses uncertainty to its advantage by avoiding firm positions and declining comment on ongoing legal matters. Because COGA does not reveal its intentions, any action contrary to industry interests carries the threat of lawsuits. COGA’s challenge to Longmont’s fracking ban stands as an example that lawsuits are a real risk.

- “Flanders said COGA hasn’t yet done a legal analysis of Lafayette’s potential ballot measure and doesn’t know if it might file suit against the city should it pass.” (DC 07.09.2013)
• “Brown said the Longmont case has set a precedent, and more lawsuits are certainly possible in the election’s wake.” (GT 11.07.2013b)

• “Nikkel said she doesn’t know if the oil and gas industry will sue the cities that passed anti-fracking measures Tuesday.” (DC 11.05.2013a)

In this storyline, state law is constructed as legitimate while local rules are dismissed as invalid. At the same time the Industry discourse charges that the actions of opponents are outside the law, it attests to the legality of the industry’s actions. Disregard for the law is problematic, and COGA assumes the responsibility to enforce it through lawsuits. After filing lawsuits against the ballot measures, Schuller announces that it is “regrettable and unfortunate that COGA had to take this action” (DP 12.04.2013b).

• “Despite this technical violation, which has been remedied and is unrelated to Rep. Polis’s claims, our operation remains legal and in compliance with all commission rules.”” (DC 07.13.2013a)

• “The association said energy extraction using hydraulic fracturing, or fracking, is protected under state law and can't be prohibited at the local level.” (DC 12.03.2013b)

• “Extremists have used fear and misinformation to lure cities into passing bans which they know are illegal.” (DC 12.04.2013a)

The rhetoric in the Industry discourse interprets law to its advantage. It claims that the Lafayette Community Rights Act would make delivery of natural gas to homes illegal, and service might need to be cut off. Industry actors make liberal use of litigation to advance their interests. They are also quick to attenuate and delegitimize any legal
actions against them, as when Polis is criticized for taking his grievances to court as a publicity stunt.

- “Companies that don’t want to find themselves on the wrong side of the law will simply avoid doing business in Lafayette.” (DC 08.27.2013a)
- “We regret that the Congressman continues to use legal maneuvering to score political points rather than working with Sundance Energy to address any concerns he might have.” (DC 08.13.2013b)
- “In fact, it looks an awful lot like the congressman started suing people and pitching stories to the media before he even filed a complaint with the state of Colorado.” (DC 07.26.2013b)

**Agents and their motives.** Most of the statements in the Industry storyline come from representatives of the industry associations COGA and Energy in Depth. To a lesser degree, the Industry storyline is represented in statements from individual companies. The two most involved are Sundance Energy, which was responsible for the drilling near Polis’ Weld County property, and Sovereign Energy, which was in negotiations for permits in Broomfield. Individual companies also make statements in regard to flooding. Industry support for pro-fracking groups was strong. COGA assisted Hydeman with legal representation and publicity in his complaint against the Lafayette petition. The extent to which the oil and gas industry was involved in the formation of groups supporting fracking is not entirely clear. Industry origins for grassroots organization is only confirmed in one article.

- “Officials from Noble Energy and Anadarko Petroleum, the largest oil and gas exploration and production companies in Colorado, started the Citizens For
Responsible Energy Development group in August to fight the ballot measures along the Front Range.” (GT 11.07.2013b)

Industry groups publicly pledge support for groups opposing the ballot initiatives. In practice, the offer of support functions as a quid-pro-quo for amplification of the Industry storyline. The financial reports for the election are published in mid-October, making clear which groups were funded and by how much.

- “Flanders wouldn’t specifically say whether his organization would directly campaign against the Lafayette measure, but he said the Colorado Oil & Gas Association ‘will offer any support we can’ to those opposing it.” (DC 07.26.2013a)
- “Yes, we are financially supporting the local groups who oppose the bans on behalf of the 100,000 Colorado families who have an enormous stake in the outcome of these ballot initiatives” (DP 10.13.2013i)
- “Boulder Citizens for Rational Energy Decisions received $110,277, and Lafayette Campaign for Energy Choice got $66,974. Both groups received $100 from political consultant Sean Walsh’s firm. In Broomfield, COGA funded two groups, spending $156,238 with Broomfield Balanced Energy Coalition and $15,000 with It’s Our Broomfield Too!
- “The oil and gas association spent about $900,000 opposing the four ballot initiatives, and anti fracking groups raised about $26,000, according to county election finance reports.” (DP 12.04.2013b)

City and county governments are acknowledged as agents at the beginning of the case study and again at the end. In June, when the decision about extending the fracking
moratorium rests with Boulder County, the county government is credited with reasonableness and negotiating in good faith. After the 18-month extension in mid-June, the Industry discourse begins to portray it as unreasonable and susceptible to public pressure.

- “‘Oil and gas operators spent more than a year having good-faith discussions with the Boulder County staff and commissioners to address their concerns,’ she said. ‘Only a month ago, the Boulder County commissioners were against extending their moratorium. The facts haven’t changed over the past month, so we’re left to wonder what caused this flip-flop.’” (DC 06.22.2013b)

- “Flanders said 26 Front Range municipalities have considered measures to limit oil and gas activities, and all but a handful of Boulder County jurisdictions have decided to resolve the issues with ‘dialogue, moderation and compromise.’” (DC 08.23.2013a)

In Lafayette, the city government is portrayed as biased in favor of East Boulder County United. The Lafayette City Council had approved the language for the group’s petition for the Lafayette Community Rights Act. Hydeman’s COGOA-backed challenge to the petition language implied that the city government there was not only colluding with activists, it was incapable of doing its job.

- “Poorly crafted and insufficient ballot measures do a disservice to the communities they impact.” (DP 08.10.2013)

- “Schuller, in the release, said the requirement is there to ensure that voters have ‘clear and concise information about a proposed initiative.’ ‘Not meeting this standard, the proponents of banning hydraulic fracturing deprive Lafayette
citizens of the information necessary to make an informed decision,’ she said.” (DC 08.09.2013b)

Aside from those early mentions, it is not until after the elections that local governments play a significant role in the Industry storyline. Broomfield’s government draws the ire of COGA throughout November and December. It is characterized as guilty of “major vote counting irregularities” (DC 11.26.2013) and withholding critical information from election observers. Election officials are painted as corrupt and seeking to tip the election results in favor of the ballot measure by inappropriately disqualifying some ballots, while counting others that should not have been.

COGCC is a division of the state’s Department of Natural Resources and is constructed as the representative of the public interest in oil and gas development. COGCC does a good job of inspecting, regulating, and decision-making in relation to fracking and oil and gas operations.

- “The Colorado Oil and Gas Association and the Colorado Oil and Gas Conservation Commission -- the state agency that regulates oil and gas development -- have been able to resolve most of those concerns raised by local governments and their constituents, she said.” (DTC 06.05.2013a)
- “As a result of significant budget increases, the Colorado Oil and Gas Conservation Commission (COGCC) will be adding 20 new staff members, including additional inspectors.” (DP 06.07.2013c)
- “The bans on oil and gas activity were illegal because municipalities don’t have the authority to regulate the industry, which is under the auspices of the Colorado Oil and Gas Conservation Commission.” (DC 12.05.2013)
• “And decisions on where and how wells are drilled can be made, state officials insist, only by the Colorado Oil and Gas Conservation Commission.” (DP 06.16.2013a)

The Industry storyline favors and promotes COGCC’s regulatory authority. This is unsurprising, given that COGCC’s stated mission is to foster fossil fuel development, and representatives from the oil and gas industry sit on the COGCC board. COGCC works closely with the oil and gas industry, and was party to the lawsuits against Longmont. In the Industry storyline, COGCC is effectively a partner to industry. In Industry discourse, COGCC is recognized as the legitimate rule maker and enforcer.

Opponents of fracking are characterized as extreme, unreasonable environmentalists who want to stop all oil and gas development. They are dishonest, and their claims are disingenuous and should be dismissed. Anti-fracking organizations are not truly grassroots. They are said to be influenced by outsiders not concerned with the interests of Coloradans. Their activism is “a disservice to the public to be giving misinformation and to use fear-mongering in the campaign” (DC 10.16.2013b). The movement to ban fracking is loaded with “high drama, angry rhetoric, and little practical reality” (DP 06.07.2013c).

Mothers at a protest were criticized for involving their families in a “desperate and extreme tactic, which they’ve borrowed from out-of-state lobbying groups, because the facts simply don't support their alarmist claims” (DC 05.13.2013a). Anti-fracking activists exaggerate and use scare tactics to persuade and mislead city and county residents. This storyline mocks its own portrayal by opponents to underscore how outrageous opponents’ claims are.
• “Efforts like those in Lafayette are based on misinformation and are backed by ‘fringe East Coast environmental groups’ dead set against domestic energy production.” (DC 06.11.2013a)

• “It’s shameful that these activists would use children as props in a political campaign against the oil and gas industry.” (DC 05.13.2013a)

• “He said the ballot measure includes ‘outlandish ideas,’ such as holding energy companies that do not operate in Lafayette responsible for damages done to people or ecosystems in the city.” (DC 08.27.2013a)

• “Big oil is such a great villain! We can even picture the cigar smoking executive from the Muppets for full effect.” (DC 06.07.2013c)

The Industry storyline’s portrayal of fracking opponents as dishonest and extreme appear designed to destroy public trust. Anti-fracking groups are said to have ulterior motives and undisclosed financial support. They are corrupt, and are not merely trying to protect their homes and cities. Their ultimate goal is to ban fracking all across the county.

• “Activists challenge the industry to work honestly and transparently and we ask the same of them.” (DC 08.09.2013c)

• “Nikkel accused state and national organizations supporting Colorado’s anti fracking measures of not disclosing campaign contributions.” (BE 11.06.2013a)

• “Inherently these groups are trying to ban hydraulic fracturing across the nation, not just Colorado.” (DP 11.06.2013c)

The public is constructed as a group separate from the fracking opponents. Members of the public are considered to be uneducated or perhaps intentionally
misinformed, but still capable of being sensible. Elsewhere in Colorado, “everyone’s found a way to navigate this territory” (DTC 06.05.2013a), proving that it is possible if people are reasonable. The Industry storyline must inform the public because “the proponents of banning hydraulic fracturing deprive Lafayette citizens of the information necessary to make an informed decision” (DC 08.09.2013b).

- “Though the industry was late to the conversation with the formation of CRED, Brown said education has helped bridge the gap of education vs. myth.” (GT 11.07.2013b)
- “‘We’ve got to continue to educate going forward,’ Holloway said. ‘Even though the cities that did the bans most likely aren’t going to have any drilling within their cities, for the industry, it just tells us we have to do a better job of informing the overall public.’” (GT 11.07.2013b)
- “The truth on the ground is that Greeley is highly supportive of this.” (DP 05.05.2013)

The assumption of an uneducated but reasonable public is strongest from late July, at the close of the petition drives, until early November. After the election, the Industry storyline stresses the need to step up education efforts and outreach to the public to help them understand fracking in a different light.

- “Brown said if there is momentum from Tuesday’s votes, it's in the industry’s best interest to continue to get their story out.” (GT 11.07.2013b)
- “The industry needs to get out its message and counter the ‘hype and misinformation’ put out there by anti-fracking activists that drilling presents unacceptable environmental and human health risks.” (GT 10.16.2013a)
• “Concerns over fracking still abound, and the industry will continue to have to work to educate residents on their practices and how they operate.” (GT 11.07.2013b)

The Industry storyline invokes the public’s identity as Coloradans. The public is described to itself as reasonable and supportive, yet capable of independent thought on important matters such as oil and gas development.

• “Fortunately, in my experience, Coloradans are hearty and self reliant, and do not blame a villain caricature for the energy, products, and shelter we all require.” (DP 06.07.2013c)

• “Banning a product we all use every minute of our lives is damaging to the Colorado brand of compromise and reasonableness.” (DC 08.23.2013a)

• “Coloradans overwhelmingly support ongoing oil and gas development. We will continue mobilizing and educating our neighbors on the safety and importance of our industry. We will continue to stand with the communities that support over 100,000 Colorado families who rely on the oil and gas industry for their livelihood.” (GT 11.07.2013b)

• “It’s all about informing the public, giving them the information, the facts they need, to make educated decisions about the fact that they don’t have to accept this false choice, that they can have clean air and water, and responsible oil and gas development. That’s really the Colorado way.” (GT 11.07.2013b)

Representative Polis’ encounter with drilling and fracking garnered attention from all sides of the fracking debate. In response, the Industry discourse attempted to attenuate
his warning that fracking can happen to anyone. Polis is portrayed as an elitist and a complainer. He is cast as an anti-fracking opportunist, interested in scoring political points, but not realistic about energy.

- “Sundance Energy is gratified that this unfounded lawsuit was dropped by Rep. Jared Polis because the claims were completely without merit.” (DC 07.26.2013b)

- “This lawsuit was active just long enough for the congressman to grab some headlines and generate some publicity for his anti-industry political views.” (DC 07.26.2013b)

- “‘This latest action by the congressman seems particularly frivolous given the short duration of work remaining at this site.’ McCrady said in an email.” (DC 08.13.2013b)

In December, Polis asks COGA to stop suing his constituents and respect their authority to regulate oil and gas activities in their communities. He states that he is willing to work with the industry to find a solution. In response to his letter, COGA seizes on a few phrases to make it appear that he was in support of the industry. Schuller claims that “his latest decision to weigh on our recent legal action highlights his anxieties” (GT 12.07.2013b) and challenges Polis to a series of public debates.

- “‘As a federal lawmaker representing communities with oil and gas development, his views are important,’ Flanders wrote in an email to the Camera. ‘It is very encouraging that we agree about wanting the oil and gas industry to thrive in Colorado.’” (DC 12.05.2013)
• “I think we would be doing his constituents and the public at large a great service if we participated in a series of public forums about Colorado's energy future.” (GT 12.07.2013b)

**Metaphors, rhetoric, and situated meaning.** The Industry storyline labels city and county residents who want to ban fracking as hypocrites and elitists. Not only do they want to outlaw the production of fuels they use and depend on for daily life, they are “not in my backyard” snobs who only care about their own interests. They want to stop progress made possible by cheap, abundant energy. Assuming that anti-fracking activists are environmentally-minded, they are told they are hypocrites because they ignore the benefits of clean natural gas.

• “Where would the proponents of this ban propose that their energy be produced?” (DC 07.09.2013a)

• “Doug Flanders, director of policy with the Colorado Oil and Gas Association, said proposing a ban on a product that everyone in Colorado relies on is ‘shortsighted.’” (DC 07.09.2013a)

• “Natural gas also is playing a bigger role throughout the world, given that it is cleaner burning than coal.” (GT 10.16.2013a)

Although most of the proposed fracking regulations are temporary measures, the rhetoric of the Industry storyline works to reframe them as bans. This argument refutes the discourse of fracking opponents, which advocates for a hold on fracking until the effects are known.
“Industry officials state that a ban on hydraulic fracturing is essentially a ban on drilling, as most wells are hydraulically fractured in a practice that began 60 years ago.” (GT 12.07.2013b)

“We need to do a better job in helping folks understand the connection between moratoriums and bans. Moratoriums are bans, plain and simple.” (GT 11.07.2013b)

“We really believe the more the Colorado citizens understand that moratoriums are, in effect, bans, the more they will reject that extreme approach.” (GT 11.07.2013b)

Along with the renaming of ballot measures as fracking bans, this discourse uses versions of the phrase “a ban is not a plan” (DC 08.23.2013a). Where the competing discourses claim that the decision facing voters is one of health, safety, community rights, and lawsuits, the Industry discourse frames the decision as one of a long-term energy plan. This move attempts to shift focus to the question of energy supply and security instead of health, safety, and rights.

“These bans are not an energy plan.” (DP 10.13.2013i)

Throughout the CBM case study, the Industry storyline paints the ballot initiative process as illegitimate. There is an ever-present assertion that only the state, not cities and counties, can regulate oil and gas operations. This storyline claims that Lafayette’s petition was not legal because it was both too long and not informative enough.

“Hydeman said he filed the protest over the fact that the petition that was circulated did not a feature a summary of the issue for voters to read, which he and his lawyers noted is a violation of state law.” (DC 08.23.2013b)
“Hydeman’s attorney, Craig Stewart, argued Thursday that there is no
reasonable way a voter could have read and absorbed what he said took him
nearly nine minutes to read aloud at a rapid pace.” (DC 08.22.2013)

After initiatives were passed in the election, Industry statements say that the votes
“are not representative of how the rest of the state feels about energy extraction” (DC 11.05.2013a). Industry actors claim Broomfield’s election is invalid because election
watchers were not given necessary information and access. They accuse the election
commission of giving information to fracking opponents earlier than to fracking
advocates. The election process is also said to have suffered “major vote counting
irregularities” (DC 11.26.2013) and “systemic failures in the review and certification of
eballots cast in the fracking ballot measure election” (DC 11.26.2013).

“Coloradans overwhelmingly support ongoing oil and gas development. We
will continue mobilizing and educating our neighbors on the safety and
importance of our industry. We will continue to stand with the communities
that support over 100,000 Colorado families who rely on the oil and gas
industry for their livelihood.” (GT 11.07.2013b)

“Nikkel said Broomfield did not give watchers on all sides of the issue access
to ‘critical information’ about the ballots but was not specific, other than to say there was ‘no access to witness and verify ballots and affirmations
received after the election date.’” (BE 11.27.2013)

The Industry storyline complains about the polarization of issues in local
communities. In early June, Schuller announces that as part of the industry’s efforts to
“cool down some of the more heated local discussions of oil and gas issues” (DC 06.0.2013), she will be conducting a “listening tour” of the state. This rhetoric of polarization is used most often during the early part of the case study, before the initiatives are approved for the ballots. Listening and harmony are words used to describe COGA’s objectives as it seeks to calm the public and avoid public initiatives.

- “Too often, there’s been ‘a polarization of the conversation’ about oil and gas development in Colorado, Schuller told members of the Times-Call editorial board.” (DP 06.06.2013e)

- “Getting to the right conversations about sensible oil and gas development requires engagement and dialogue, not sound bites.” (DP 06.07.2013c)

- “People would be better served if they worked with the industry to find solutions to problems” (GT 10.16.2013a)

- “She said that ‘the main thing we have to do initially, is listen’ to local concerns and then try to deal with them, sometimes using examples of how other Colorado communities have resolved similar issues -- areas where she said people are ‘living in harmony’ with oil and gas operations.” (DP 06.06.2013e)

Part of the Industry storyline’s approach to reducing conflict is by gaining public confidence. By telling people how they will earn their trust, there is an attempt to define what will serve as proof that the industry is trustworthy.

- “We understand we need to earn your trust, but the best way to earn it is by putting high standards in place and let us get the innovative minds in this
country to work. I guarantee we can solve all these problems.” (GT 10.16.2013a)

- “I think that it’s really all about how we need to be transparent in our operations in Colorado as well as ensuring (that our practices are safe),’ Brown said.” (GT 11.07.2013b)

As part of the Industry storyline solution to polarization, people are told they just need to be reasonable and cooperate. People are urged to “agree we are all in this together” (DP 06.07.2013c) and to engage responsibly and pragmatically. The industry has entered into an “era of solving problems” (GT 10.16.2013a).

- “Let’s set aside angry rhetoric and polarizing policies. That’s easy and unproductive.” (DP 06.07.2013c)
- “We’re all after the same thing, responsible energy development.” (DC 11.09.2013b)
- Without compromise, Hock said, ‘we are left in a situation where we cannot access minerals owned by members of the community and from which they derive income.’” (DP 10.13.2013i)
- “When it comes to the continued concerns about banning and placing moratoriums on the industry, people would be better served if they worked with the industry to find solutions to problems.” (GT 10.16.2013a)

**Assumptions about relationships and figured worlds.** The figured worlds in this storyline are subtle and masked by the public relations mission of the Industry storyline. The rhetoric of the Industry discourse changes quickly in response to events and challenges. There seem to be only a few key points of taken-for-granted knowledge
that are the foundation of the Industry discourse. Even these could be subject to revision if circumstances were to change. For example, if Colorado state law banned fracking, or if COGCC enforcement became less favorable to the industry, the Industry storyline’s account of those relationships would undoubtedly change.

A key issue in the Industry account of fracking regulation is the dispute between state laws versus local regulations. The Industry storyline comes down firmly on the side of the state. City and county control of fracking is a significant risk. Industry proponents consistently claim that “home rule power doesn't give them the authority to halt an activity overseen by the state” (DC 12.28.2013b), a position that receives backing from the governor, state and federal representatives, and the courts. A COGA-issued news release stated that bans are “illegal since state regulations specify and the state Supreme Court has ruled that oil and gas development, which must employ hydraulic fracturing or fracking, supersedes local laws and cannot be banned” (DC 12.04.2013a).

This storyline also takes the position that state law prevails over local laws in the Lafayette petition appeal. It questions the city’s compliance with state law on the language and content required for a ballot initiative. Industry-backed Broomfield Balanced Energy Coalition seizes upon the differences between Broomfield and Colorado voter eligibility requirements as part of its complaint to the Colorado Secretary of State and the lawsuit to block certification of election results.

Rhetoric about COGCC as the legitimate agency tends to be used when the industry is put in a bad light. The Industry storyline turns to COGCC as a buffer when concerns arise that there are safety violations or that operations might place public health and safety in jeopardy. By claiming that it operates “in full compliance with all COGCC
rules” (DC 08.26.2013), the industry avoids taking responsibility for problems. With Polis, the oil and gas operator turns to COGCC to clear itself of charges of noncompliance. During the floods, the Industry storyline assures the public that in cooperation with COGCC, preventive measures had been taken, damage is under control, and that spills will be cleaned up. The Industry storyline asserts that only COGCC understands the business and can effectively regulate oil and gas operations.

- “We are fully committed to ensuring our operations are in full compliance with the regulations set and enforced by the commission.” (DC 07.13.2013a)
- “Every minor incident has been reported to the COGCC, and we’re committed that if there’s anything that comes up of any significance, we’ll report it, we’ll respond to it and inform the public.” (DC 09.9.2013)
- “We received approval from the Colorado Oil and Gas Conservation Commission before we positioned the well at its current site” (DC 07.13.2013a)
- “The Colorado Oil and Gas Conservation Commission, an independent state agency, conducted an inspection of our operations yesterday and did not find any violations related to the congressman’s allegations.” (DC 07.26.2013b)

Perhaps the most fundamental assumption in the Industry storyline is that fracking, oil, and gas are good. The Industry storyline praises the benefits of fracking, oil, and gas. Company profits are discussed only in terms of the draw for investors. That investment will boost the local and state economies.
• “Still, interviews with company executives and financial analysts and a review of corporate filings paint a picture of a resource so promising and profitable that it will continue to lure big investments.” (DP 12.15.2013b)

Oil and gas development is said to be beneficial for local residents, Colorado, the nation, and the world. Oil and gas bring prosperity and cheap energy. Fracking has made the United States a world leader in energy production once again. Fracking boosts domestic energy production. It provides natural gas, which is a clean fuel source, as opposed to coal. It represents progress and the future. If fracking is banned, everyone will lose. One issue that is only indirectly addressed is foreign energy. While American energy production is good, this storyline does not depict energy imports as bad.

• “‘This industry is leading an economic renaissance in America,’ said Erik Milito of the American Petroleum Institute trade group. ‘There is no sound legal or environmental reason to jeopardize that growth with regulatory confusion and uncertainty.’” (DC 08.23.2013c)

• “Since 2010, the drilling push has led to record setting oil production in Colorado, reaching an estimated 48 billion barrels in 2012.” (DP 12.15.2013b)

**Goal Framing.** There are two primary approaches to the persuasive language in the Industry discourse, both are based on the fear that undesirable things will happen. One line of reasoning states that fracking bans will cause everyone to lose out on the benefits of oil and gas. As the fracking opponents make progress, the Industry storyline moves to an argument that amplifies the likelihood that cities will be sued for bans. The propensity to resort to legal action is borne out by the attempts to derail citizen initiatives with complaints and lawsuits in Lafayette and Broomfield.
The first is a softer approach, attempting to convince politicians and the public to be reasonable. It stresses the greater good and the foregone gains if fracking is banned. The lawsuit argument is more heavy-handed. It predicts a loss for cities and counties that ban or limit fracking. Although Industry actors would be directly responsible for a lawsuit, the approach is one in which COGA and oil and gas operators are left with no other choice. Both frames predict a negative outcome with the undesired choice, the implementation of local regulations on fracking.

**Rationality.** The Industry storyline aspires to a policy-making rationality, although it bears more similarity to social rationality. It appeals to the public and lawmakers to be reasonable and pragmatic, to compromise and be fair about mineral rights, or to avoid lawsuits have characteristics of a political rationality. However, according to Garvin (2001), political rationalities center on ideas and underlying values and weigh conflicting evidence based on the political, social, and economic implications. The Industry storyline is aware of the political and economic implications of fracking bans, but beyond assertions of constitutionally protected property rights, there are no stated underlying values.

The Industry storyline approaches evidence, knowledge, and uncertainty in a socially rational way. It asks people to accept information on the basis of trust in sources. It expresses absolute certainty about safety. It appeals to the common-sense ethic. It relies on the need to trust one side or the other, and sometimes uses fear to drive people against the anti-fracking activists.

The storyline asserts that “fracking has been around for more than 60 years and has never been proven to be harmful” (DC 11.05.2013a). Given its longevity, there would
certainly be evidence if it was not safe. The lack of evidence of harm is presented as proof that there is no harm.

- “The industry further argues that there is no conclusive evidence that fracking, which involves injecting a water-sand-chemical mixture into the ground to crack rock and loosen hard-to-get deposits of gas, is harmful to health.” (DC 10.16.2013b)

Industry claims that facts and studies support the benefits and safety of fracking. Aside from the Leeds School of Business report on economic benefits\(^{23}\), specific studies are not cited. Statements about studies and research imply but never overtly claim that they are scientific or neutral. Energy in Depth is said to be engaged in “research, education and public outreach” (DC 06.22.2013b), which supposedly distances it from Industry interests and establishes scientific credibility.

- “Simon Lomax, Denver-based research director for Energy In Depth, countered that researchers and scientists have shown ‘over and over again that hydraulic fracturing is a fundamentally safe technology.’” (DC 06.02.2013a)

- “And according to a study done this year by the University of Colorado’s Leeds School of Business, the industry provides work for thousands of people in Colorado.” (DC 10.16.2013b)

In this discourse, repetition is used to validate Industry assertions. Number and types of people attesting to fracking’s safety also established the trustworthiness of

\(^{23}\) This report was later found to be funded and controlled by industry interests.
information, although no evidence is presented. Types of studies and targets of research are not discussed, nor are they placed in context.

- “Scientists, state regulators, and senior federal officials have repeatedly stated that hydraulic fracturing is safe.” (DC 06.02.2013b)
- “It’s been incredibly frustrating to watch these outside interest groups mislead my neighbors over oil and gas development and fracking, when study after study after study over the last decade have proven the practice is well-regulated and safe.” (DC 08.09.2013c)
- “Lomax also notes that several Cabinet members in the Obama administration, including former Interior Secretary and Colorado native Ken Salazar and former Energy Secretary Steven Chu, have attested to the safety of fracking.” (DC 12.04.2013a)
- “They claim hydraulic fracturing is inherently dangerous and must be banned, but scientists, engineers, academics, state regulators, federal officials and senior members of the Obama administration say it’s a fundamentally safe technology, that’s been used safely for decades.” (DC 06.11.2013a)

The Industry storyline presents its facts and knowledge about fracking as undisputable. There is no conflicting evidence that is valid, only absolutely certain about the safety and benefits of fracking. Opponents are accused of denying or misrepresenting the facts.

- “East Boulder County United’s tactics and talking points come directly from these out-of-state activists, who are really waging a non-stop campaign against the facts.” (DC 06.11.2013a)
• “‘The activists can try to change their strategy and try to change their tactics as much as they like, but it won’t change the facts,’ he said. ‘The facts are very clear.’” (DC 06.02.2013a)

• “Doug Flanders, director of policy and external affairs for the Colorado Oil & Gas Association, said opposition to fracking is not as widespread as anti-oil and gas groups contend.” (DC 07.26.2013a)

• “Even when critics of oil and gas in the Obama administration are saying how safe fracking is, you can see how far out on the fringes this agenda is and how badly it is failing.” (DC 12.04.2013a)

**Summary.** In the Industry storyline, fracking is safe. Oil and gas development provides great benefits. There is no cause for concern over the environment or health and safety. Current regulations are sufficient and COGCC provides reasonable oversight. If everyone will consider the big picture and be reasonable, citizens can live in harmony with fracking.

In the early part of the case study, the Industry storyline takes a soft approach, calling for reasonable and calm discussion. It emphasizes how other communities have learned to live in harmony with the industry, and even benefit from the industry’s presence. The type of public approval the industry cultivated is known as the social license to operate\(^\text{24}\). The public is encouraged to be responsible and pragmatic about the

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\(^\text{24}\) Social license to operate refers to the ongoing approval and broad acceptance of a mining project by local communities and stakeholders (Prno & Slocombe, 2012). It is not a formal license, but companies are constrained by social expectations and what a society finds acceptable.
production of products everyone uses. The Industry storyline claims the risks are minimal while it extols the benefits of oil and gas produced by fracking.

After losing ground to the anti-fracking movement, the storyline later turns to the argument that state law supersedes local regulations. It makes the claim that local governments have no authority to regulate the industry. The entire seven months of the CBM case study is overshadowed by threats of lawsuits, but it does not begin to use lawsuits as rhetoric until July. Although the Industry storyline takes a more assertive approach as the election cycle progresses, it doesn’t stop seeking public approval until after the election loss.

Anti-fracking activists are portrayed extreme environmentalists who deceive the public into believing fracking is a risk. They use heavy-handed scare tactics to scare people about the industry. They break the law, as when they circulated a petition in Lafayette that did not meet state standards. As outsiders, activists do not have the interests of Coloradans at heart. Their true motive is to ban oil and gas production altogether. The Industry storyline paints anyone who does not want fracking in their neighborhoods as a hypocrite. Jared Polis is called an opportunist who is only trying to grab attention for his personal grievances with the industry.

The Industry storyline responds only to the health, safety, and environmental concerns of the public. It dismisses the concerns of residents who do not want fracking on or near their property without their consent. It ignores the issues they have with decreased property values, noise, lights, or traffic. Air pollution is only discussed when Schuller praises the legislature for approving $2.5 million in state funds to study air quality and
methane leaks. Water consumption receives one mention in early June and never appears again.

By defining the debate as an argument over whether or not fracking is safe, Industry is able to sidestep the other issues that are more complicated. The risk in the Industry storyline is that local fracking bans will be approved and allowed to stand, but it makes the conversation about issues other than the industry’s ability to operate when, where, and how it wants. This storyline adapts quickly to changes and responds aggressively to challenges and progress from anti-fracking activists. Box 7.3 shows the elements of the Industry storyline.
Pro-Fracking Public Storyline

The Pro-Fracking Public (PFP) storyline closely tracks the Industry storyline. Pro-fracking groups were supported by industry with donations of money and expertise. In many ways, the PFP storyline is the public’s affirmation of the Industry construct of the fracking debate. There are differences, but the PFP discourse parallels and amplifies the main message that local regulations on fracking are bad. This analysis highlights the differences between the public and industry pro-fracking perspectives.
There are 33 opinion pieces in support of fracking, and 34 news articles cover public support for fracking. Among the opinion pieces are three texts authored by the Denver Post’s editorial page editor, Vincent Carroll. These are scathing denouncements of fracking opponents and local regulations. The Denver Post twice endorsed a no vote on the fracking initiatives, and it published an uncredited editorial praising a statewide poll that indicated a majority of voters statewide supported responsible fracking.

In a crossover of social roles, ex-politicians who do not have explicit ties to the oil and gas industry argue, as members of the public, in favor of fracking. These people have decision-making authority only as voters. Some of the members of the public who participate in this discourse work or have worked in the oil and gas industry.

There are several groups that defended fracking and opposed the extension or creation of moratoria and bans. The groups received the vast majority of their “surprisingly large” (DC 10.16.2013b) budgets from COGA. Boulder Citizens for Rational Energy Decisions received $110,277, and Lafayette Campaign for Energy Choice reported $66,874 from COGA between mid-September and October 10, 2013. Both groups received $100 from a political consulting firm, accounting for the remainder of their budgets. In Broomfield, COGA funded two groups, donating $156,238 to Broomfield Balanced Energy Coalition (BBEC) and $15,000 to It’s Our Broomfield Too! The only other money BBEC received were two $50 donations, one from a former political candidate and the other from a Broomfield business. Non-COGA donors gave $1,182 to It’s Our Broomfield Too!

**Storyline.** The PFP storyline challenges the attempts in local governments and citizen initiatives to limit fracking. By placing moratoria and bans on fracking, cities and
counties are “handcuffing energy production” (DP 12.08.2013). Activists are making people afraid of fracking with false stories about health and environmental risks. People need to be made aware that those claims are misleading. The anti-fracking forces do not simply want to protect their homes and neighborhoods, their true objective is to ban fracking altogether. This is neither good for the cities or the state. Cities and counties do not have the legal power to regulate fracking, and attempting to do so will inevitably lead to lawsuits.

- “Anti-fracking zealots in three front-range cities managed to extend bans on energy development that will likely end up having them pay a price for their illogical intransigence.” (DC 11.10.2013)
- “We want the voters to be informed, not misinformed” (DC 08.18.2013a)

Banning fracking will harm the economy, jobs, and American energy independence. The industry is being treated unfairly, and fracking opponents are raising a false alarm. Fracking restrictions will impinge on private property rights. Scientific studies and the long history of fracking would have certainly turned up proof of significant harmful effects if they existed. Given the absence of evidence of risks to human health, fracking is presumed to be safe. Ultimately, banning fracking would be a loss for all Coloradans.

- “A moratorium or unrealistic restrictions on energy production threatens our quality of life in Colorado.” (DC 11.16.2013)
- “So the ‘statement’ it will make by passing Ballot Question 2H is that the city is technophobic, self-absorbed, irrational, and self-destructive.” (DC 10.23.2013b)
• “When we ban fracking, an essential process in developing oil and gas, we not only ban oil and gas development but we also prevent people from responsibly exercising their private property rights.” (DC 12.19.2013b)

• “A simplistic solution, like placing unreasonable bans on fracking, is certainly not the answer.” (DC 12.22.2013b)

Entities. In the Pro-Fracking Public storyline, fracking is responsible for the revival of American energy production and holds the potential for making America energy independent. Without fracking, the commercial production of oil and gas in Colorado would not be possible. Fracking is “a technology that creates jobs and stops Americans from buying overseas what we can produce at home” (BE 08.28.2013b). To oppose fracking is to oppose technology and progress. The claims of anti-fracking activists and the possibility of moratoria and bans threaten the benefits that fracking provides.

• “We’ve all witnessed the boom in natural gas and oil production associated with fracking technology and advanced drilling techniques.” (DC 09.08.2013b)

• “It is technologies like this that will allow Coloradans to continue to produce domestic energy for many years, ultimately helping lead the United States towards energy independence.” (DC 11.09.2013b)

• “Without fracking, the astounding growth in western America’s oil and gas production over the past few years would not have happened and the specter of ‘peak oil’ would still be a sound argument for renewables.” (DC 08.25.2013b)
Although fracking may appear scary to some people, it is a mature technology that is “well understood by industry, academia, and government” (DC 10.23.2013b). There is emphasis on the safety of fracking, and the length of time that fracking has been in use. The benefits of fracking should outweigh any uncertainty people may have about health and safety.

- “Learn the facts on fracking first and you’ll discover this tried and true drilling technique is actually good for our environment, economy and been safely done since 1947.” (DC 11.16.2013)

- “The group says there is no conclusive evidence that fracking is harmful to health, and says fracking has benefitted Broomfield's economy and residents.” (BE 08.14.2013)

Unlike the Industry storyline, there is some willingness to admit to problems with fracking in the PFP discourse. The types of problems are sometimes nonspecific, but health risks are not among those acknowledged. When problems are discussed, they are seen as rare and easily fixed. The risks tied to fracking are always attenuated. Conceding that fracking is not entirely trouble-free may be a way of building public trust in the PFP narrative that the Industry storyline does not have.

- “To be sure, well construction defects and surface spills have occurred in drilling, and sometimes have impacted groundwater. But the idea that widespread fracking is poisoning drinking water supplies is so far at least an unsubstantiated charge by opponents, and it should be reassuring to the public that another study has confirmed this.” (DP 07.22.2013)
• “Fracking is a controversial technology and rightly so. The industry needs to clean up its act both in practice and more artfully explain why it desperately needs to exist in a world that requires the resources it produces.” (DC 05.26.2013b)

• “Consequently, we simply cannot ban fracking; instead we must fix it. And we know how right now; it is only a matter of money.” (DC 11.07.2013c)

• “Banning fracking altogether is throwing out the baby with the bathwater in the extreme. Eliminate the problems with fracking and fracking becomes the answer.” (DC 11.23.2013b)

The situated meaning of oil and gas in the PFP discourse is shared among all the storylines. On its own, natural gas is an entity constructed in this storyline as a commodity and a fuel. It is cheap and plentiful, and with fracking technology, it is easy to obtain. This storyline seizes on the fracking opposition’s desire to lower carbon emissions and move away from coal-fired power plants. Advocates of fracking claim natural gas is a clean resource that makes sense as an environmentally-friendly alternative. Some also advocate for natural gas as an important transition fuel while renewable resources are being developed. Given the advantages of natural gas, banning fracking would be “environmentally questionable at best” (DC 10.23.2013).

• “Despite all the predictable environmental handwringing, negative health related claims, and other assorted hyperbole, cleaner burning natural gas is, and will remain, the planet’s most important transition fuel for decades to come. That’s because there’s lots of it, it’s relatively inexpensive, and it’s versatile and transportable.” (DC 05.26.2013b)
• “As many scientists have said, natural gas is a smart transitioning fuel for the electricity sector until we can get a greater amount of alternative energy sources on the grid. This idea becomes more attractive when we realize we have at least 100 years of natural gas still available.” (DC 12.28.2013c)
• “America’s CO2 emissions have fallen 13 percent in the past five years, primarily because fracking allowed many coal-fired electricity plants to convert to gas.” (DC 08.25.2013b)
• “When used with state-of-the-art combustion turbines, this could be the cleanest fossil-fueled power in the world -- by a large margin.” (DC 09.08.2013b)

Everyday natural gas uses are understood to make electricity generation and home heating possible. The PFP uses the gas and power outages in December as a lesson on the importance of those services. Most storylines construct fossil fuels as essential parts of life, but this storyline places greater emphasis on the practical uses of natural gas as an energy resource.

• “Whenever you turn on your heat or use your hot water heater, you are using natural gas that came from fracking.” (DP 06.08.2013)
• “If Boulder’s gas and oil supplies were to be cut off tomorrow, Boulder as we know it would cease to exist.” (DC 10.23.2013b)
• “I’m sure the people of Boulder County who lost their natural gas service this past weekend were pleased when Xcel restored their service and the gas began to flow, fueling their furnaces and warming their homes. Perhaps they now realize the benefits of fracking.” (DC 12.11.2013)
• “A few weeks ago over 7,000 Boulder County households were suddenly forced to consider how dependent we have all become on all that nasty, deplorable, environmentally unfriendly fracked natural gas.” (DC 12.22.2013b)

The PFP storyline takes up the issue of rights in a way that is different from the Industry storyline. For the PFP, the fracking debate is “fundamentally about private property rights” (DC 12.19.2013b). Where the Industry discourse constructs mineral rights as financial assets, the PFP sees property rights as part of the American way. The right to property is a cultural value and legal principle enshrined in the U.S. Constitution. Banning fracking is a risk to the ownership of property, and it also threatens citizens’ constitutional rights and the integrity of America.

Discussion of property rights occurs most often during the early stage of the CBM case study, before the decision to move forward with the initiatives. It intensifies again following the election. In the beginning, bans are a risk to property rights. After the passage of the initiatives, the regulations become a violation of those rights.

• “What we don’t need is governments taking the land rights away from private parties, be they developers or individuals.” (DP 05.04.2013a)

• “A major component of the American experiment is private property rights. Immigrants came to America for the opportunity that was missing in Europe in the 1700s, 1800s and even in the 1900s -- the right to own property. In America, one could own land, and that ownership included the minerals under it.” (DP 05.04.2013a)
• “What this charter amendment does is takes fracking and writes a document around it that attempts to separate Lafayette from the United States Constitution and the Colorado Constitution.” (DP 10.17.2013c)

• “Also, the U.S. Constitution guarantees us our mineral rights. If you own the minerals under your land, you have the right to extract them.” (DC 12.28.2013c)

The state of Colorado represents a place, a set of laws and rules distinct from federal law, and an identity. Colorado is understood to be exceptional in its implementation of safe fracking practices and its role in American energy production. The PFP storyline claims that “Colorado has some of the strictest regulations in the country” (BE 05.23.2013a). There is also a distinctive way of life in Colorado that is at risk if fracking is regulated at the local level. Irresponsible short-term energy development might be a problem elsewhere, but it “certainly isn’t how we do it here in Colorado” (DC 11.09.2013b).

• “Given that the United States has more active drilling rigs than the rest of the world combined, one might argue that Denver is on its way to becoming the center of the oil and gas universe.” (DC 08.25.2013b)

• “Colorado has been on the forefront of this revolution.” (DC 09.08.2013b)

• “A moratorium or unrealistic restrictions on energy production threatens our quality of life in Colorado.” (DC 11.16.2013)

The need for jobs and economic development is taken for granted in the PFP storyline, as is the knowledge that fracking produces jobs and boosts the economy. Because “our economy is driven by the oil and gas industry” (DC 08.18.2013a), jobs and
growth are at risk if fracking is restricted. Moratoria and bans will result in a loss of economic vitality and tax revenues. In the PFP storyline, fracking brings economic stimulus, jobs, and tax revenues, all free from complications. In making decisions about moratoria and ballot measures, Coloradoans need to “keep in mind the livelihoods of the 111,000 people who help keep Colorado running strong” (DC 08.24.2013).

- “For those following the debate over hydraulic fracturing, or ‘fracking,’ the associated economic benefits of the oil and gas industry are already well known.” (DC 08.24.2013)

- “This fools’ errand would stifle our economic growth and jeopardize our international security by leaving us more reliant on foreign oil.” (DC 11.23.2013b)

The cities and counties considering fracking regulations do not have existing economies based on oil and gas extraction. Therefore, risks to the economy and jobs are important at the state level. At the local level, economic opportunities will be lost if fracking is banned. Businesses will avoid places with regulations that are unfriendly to the oil and gas industry.

- “[There are] reams of unintended consequences for anyone loosely affiliated with oil and gas companies, including the Boulder-based wireless radio company that would have employed several dozen workers in Lafayette -- workers that would have shopped in our local stores and eaten in our local restaurants.” (DC 12.07.2013a)

- “In all likelihood, big oil will not be all that hurt by banning fracking in Colorado. They have the resources and ability to uproot their operations and
take them to another state -- along with the tens of thousands of jobs and hundreds of millions of dollars in tax revenue.” *(DC 12.19.2013b)*

When the Leeds School of Business study is published, it is used to establish the importance of the industry to Colorado’s economy and job market. This storyline promotes that message, which is presumed to be based on unbiased facts and calculations, as proof that real people will be harmed by bans. Fracking is capable of producing “many American jobs that will never be outsourced nor supplanted by cheaper labor overseas” *(DC 11.23.2013b)*. These are good jobs that pay “about 1.5 times higher than the average income in Colorado” *(DC 08.24.2013)*.

- “This week, CU’s Leeds School of Business reported that Colorado’s oil and gas industry supported 110,000 Colorado jobs in 2012 and generated $29.6 billion of economic activity.” *(DC 08.25.2013b)*

- “In the end, this creates $30 billion in economic output that helps everyone else pay their bills and feed their families.” *(DC 08.24.2013)*

- “They have the resources and ability to uproot their operations and take them to another state -- along with the tens of thousands of jobs and hundreds of millions of dollars in tax revenue.” *(DC 12.19.2013b)*

**Agents and their motives.** The PFP storyline is intent on debunking and attenuating the “ridiculous rants of the anti-fracking crowd” *(DC 05.26.2013b)*. It seeks to counter the “negative line coming from the frenetic environmentalists” *(DC 06.25.2013a)*. The information from fracking opponents is said to be unsubstantiated and deceptive. Fracking opponents are portrayed as an arrogant, selfish minority of
environmentalists with a “‘Ban! Ban!’ mentality” (*DC* 11.23.2013b). They are unreasonable, and they disrespect other people’s rights and livelihoods.

- “They fight extraction of cheap and virtually limitless oil and natural gas through their efforts to ban fracking.” (*DC* 08.18.2013a)

- “Opponents of fracking are a vocal lot and they know how to push buttons and garner political sympathy. They want fracking bans and know how to scare people and proclaim all kinds of potential unsubstantiated environmental and health consequences.” (*DC* 08.26.2013b)

- “The anti fracking activists who believe every conversation should start and end with a denunciation of energy companies wouldn't even give [Hickenlooper] a break while he toured communities overwhelmed by historic floods” (DP 10.09.2013)

Anti-fracking activists push an agenda “so radical and confusing that even council members who oppose hydraulic fracting say it goes too far” (*DP* 10.17.2013c). They are “trying to take the property rights away from mineral rights owners” (*DC* 08.18.2013a). Their true intent is not to protect their communities, as they say. They are actually “carbon nay-sayer utopists” (*DC* 11.23.2013b) whose ultimate objective is to stop the production and use of fossil fuels altogether.

- “Of course, what the no-frack crowd really wants is to choke off the supply of natural gas to encourage wide scale (non-carbon) alternative energy development.” (*DC* 11.23.2013b)

- “This is building toward a statewide fracking ban initiated in 2014” (*DC* 08.18.2013a)
• “Its idea of sound planning is apparently an industry shutdown.” (DC 10.29.2013)

The PFP storyline charges that fracking opposition is organized by outsiders and are not independent citizen efforts. These accusations question the sincerity of the activists’ desire to protect cities and implies ulterior motives. Outsiders do not have the interests of city residents or Coloradans at heart. Those considered outsiders include statewide organizations opposed to fracking in Colorado, national environmental groups, and any anti-fracking groups from other states.

• “She criticized the opposing camp for having leaders who haven’t lived long in Broomfield and questioned just how local and grassroots the group really is.” (DC 08.18.2013a)

• “Despite what may have been reported, these extreme environmental groups are well-funded, highly sophisticated political campaigns.” (DC 11.16.2013)

• “Clean Water Action, for example, has supported fracking bans or moratoriums in several states as well as anti fracking events here.” (DP 10.09.2013)

• “Such groups have little interest in regulating drilling in Colorado. They want to outlaw it, which is what a statewide fracking ban pretty much would do.” (DP 11.24.2013)

The PFP storyline wants people to know that they are being lied to by anti-fracking activists. They are using “the same old environmental scare tactics about potential problems that may exist, even though fracking has been studied extensively and been used for more than 50 years in the United States” (DC 05.04.2013b). There is a lot
of “predictable environmental handwringing, negative health related claims, and other assorted hyperbole” (DC 05.26.2013b). Activists are manipulative, using emotion and preying on the public’s fears to create a negative view of fracking.

- “Opponents of fracking are a vocal lot and they know how to push buttons and garner political sympathy.” (DC 05.26.2013b)
- “Think issues through without the influence of an emotional mass.” (DC 12.28.2013c)

Reasonable people are contrasted with the extremist anti-fracking opponents. Where “fractivists” (DP 06.23.2013) want unreasonable regulations, thoughtful people listen to reason and seek balance. They understand that Colorado families will be hurt by bans. They amplify the message put forward in the Industry storyline that “we’re all after the same thing, responsible energy development” (DC 11.09.2013b). Finding a solution to the conflict calls for compromise, compassion for other Coloradans, and common sense. Other cities have been able to accommodate the industry, and citizens Broomfield, Boulder, and Lafayette should be reasonable, too.

- “The larger story in Colorado and especially along the Front Range may in fact be how many communities have come to terms with the prospect of increased drilling without resorting to such histrionics.” (DP 06.23.2013)

The PFP storyline paints fracking opponents as sponsored by outside interests, but the pro-fracking organizations are made up of reasonable, ordinary people who understand the truth about fracking. Pro-fracking groups strive to show that they are grassroots, independent, and motivated by citizens’ interests. They are concerned about
the lives of ordinary people. The PFP encourages consideration of the oil and gas employees, their families, and their livelihoods.

- “However, it amazes me to see the hostility towards those who power our lives in more ways than one. While we debate how to extract the resources that we use for everything from gasoline to t-shirts, we need to keep in mind the livelihoods of the 111,000 people who help keep Colorado running strong.” (DC 08.24.2013)

- “Lastly, oil and gas workers are just like the rest of us; they have their roots here in Colorado. They’re our neighbors. They work in our communities. Their children attend our schools. They volunteer in our towns and cities and step up and serve when called upon.” (DC 11.09.2013b)

- “Two pro-fracking groups, It’s Our Broomfield Too and the Broomfield Balanced Energy Coalition, also joined the debate to persuade voters to welcome fracking in Broomfield because of economic benefits.” (BE 12.28.2013a)

The oil and gas industry is an agent, although its role is limited in this storyline. COGA receives no direct mentions until after the elections, and Energy in Depth does not appear at all. The industry’s motives are simplified to the desire to produce oil and gas. It is credited with only a limited political role in the interest of protecting its ability to do business. The industry supports jobs and economic output. Its main objective is “responsible energy development” (DC 11.09.2013b). Though the possibility of an industry lawsuit is recognized, this storyline portrays the lawsuit against Longmont as initiated by the state, not COGA. The industry’s role in legal complaints and filings is
limited until after the election, when COGA is praised as “right to stand up for the rights of mineral owners” (DC 12.19.2013b).

- “He said oil and gas companies are trying to do their jobs safely and effectively.” (BE 05.23.2013a)
- “There’s almost no end to many frivolous claims or to people’s growing mistrust of extractive industries and unfortunately some of the concerns are valid. Many concerns are perpetrated by sloppy drilling practices that occur when smaller and less experienced oil and gas companies use shortcuts and poison the well for larger and more responsible firms that operate safely and appropriately.” (DC 05.26.2013b)

Metaphors, rhetoric, and situated meanings. For a short, time, the PFP storyline tells people who opposed fracking to buy up the mineral rights under their land. It is incumbent upon property owners when purchasing land to know who owns the subsurface mineral rights. Blame for the problem of split estates rests with people who purchased land without mineral rights. After Jared Polis points out that ownership of mineral rights is not sufficient to protect one’s property from the impacts of fracking, this argument dies out.

- “There is a market solution to this problem – buy the property or mineral rights. Put up or shut up.” (DC 05.11.2013)
- “What people have to know when they buy property is whether the mineral rights have already been sold.” (DP 05.04.2013a)

According to the PFP storyline, fracking opponents are outright hypocrites. Their lifestyles are fossil fuel-intensive, but they ignore their need and dependence on oil and
gas. They have not “walked-the-talk” (DP 06.08.2013) when it comes to their own energy use.

- “Boulder residents own more than 61,000 gasoline or diesel powered cars and trucks -- essentially one for every adult in the city.” (DC 10.23.2013b)
- “As long as I’m driving my car, heating my house, cooling my fridge, and watching my TV, I accept the fact that I need energy. That energy will come from somewhere, and there are risks no matter where it comes from.” (DC 11.23.2013c)
- “And if you continue to choose oil and gas you can not stand up and oppose that which you create!” (DC 11.29.2013b)

People who oppose fracking are preventing the development of clean and safe natural gas that will provide a solution to many of the environmental concerns on their agenda. Fracking for gas is the solution to the environmental crisis because it is clean fuel that will replace coal.

- “Dr. Strangelove found a way to love the bomb. Environmentalists should find a way to adore hydraulic fracturing because it may be the only credible way to save the planet from whatever current eco-crisis exists.” (DC 05.26.2013b)
- “Binder said he feels taking measures to prevent fracking in Boulder is hypocritical considering that natural gas is viewed as a gateway fuel to renewable energy sources that the city covets.” (DP 06.03.2013d)

Fracking opponents are also considered hypocritical because they only want to protect their own interests and property. They express concern for communities and the
environment but what they really want is to prevent energy development in their own backyards. Advocates of bans and moratoria are selfish and elitist. This is not entirely consistent with the position that fracking opponents are outsiders whose true objective is a full ban fracking. Nevertheless, these two ideas co-exist in this discourse.

- “So the rest of Colorado, along with other states, will apparently have to do the heavy lifting for Boulder County. After all, someone has to keep all those iPads glowing.” (DP 06.23.2013)
- “If the objective is to drive the practice out of your backyard your arrogance is shameful. If not from your backyard our fuel source will be taken from and affect someone else’s back yard or another species shrinking habitat.” (DC 11.29.2013b)
- “In other words, they are saying in effect that they’re willing to see someone else's neighborhood trashed in order to get the product that makes their lifestyle possible - and that they’re unwilling to share the burden of producing that product. This is an immoral argument, and those who genuinely care about the environment should not allow themselves to be corrupted by it.” (DC 10.23.2013b)
- “To attack the production of the fuels that are the foundation of both Boulderites’ personal lifestyles and life of one's community -- and to defame those who produce those fuels (as Boulder's anti-fracking activists routinely do) -- while continuing to use those fuels is an act of towering hypocrisy.” (DC 10.23.2013b)
There is no need for new regulations because current regulations are sufficient protections. For all cities and counties, the PFP storyline makes assurances that existing moratoria, permitting processes, and safety regulations will prevent any problems for residents.

- “Marty Robinson, a retired engineer who worked in the oil and gas industry for 20 years, said he believes the regulations are strong enough to protect residents and that worries about severe health concerns are overblown.” (BE 05.23.2013a)
- “Frack on! But use the protection afforded by these laws!” (DC 11.23.2013b)

This storyline argues that fracking will never be a problem in Boulder and Lafayette because the oil and gas companies do not want to drill there. The resources are not productive enough to be attractive to the industry. This argument seems out of harmony with the Industry storyline’s position that cities must remain open to fracking. In the Industry storyline, there is no discussion of the commercial value of the Niobrara formation near or under Boulder or Lafayette.

- “The measure is a ‘waste of time’ because Boulder is not fertile ground when it comes to natural gas deposits” (DC 06.02.2013b)
- “There is a reason why drilling has not taken place in Boulder’s backyards and will not in the future. If you see where Boulder is and where the oil and gas producing fields are within the Denver-Julesburg Basin, they don’t match up.” (DP 06.08.2013)

The attempts by cities and counties to slow oil and gas development are said to preempt the need for ballot measures. By the end of August, Boulder County, Boulder
City, and Lafayette have moratoria in place. There is active interest in development in the Broomfield area, with drilling and land use permit applications submitted. Broomfield is planning to enter into an MOU which will impose “strict environmental and regulatory standards” (DC 10.16.2013b) in return for approval to drill within city limits.

- “Ultimately, the Broomfield City Council approved rules that require companies seeking timely approvals to adopt a host of ‘best practices’ that go well beyond state or federal law. The ordinance is a model of how communities can control their own destiny without simply trying to ban drilling.” (DP 10.17.2013c)

- “It is surely interesting to see the validity of a petition seeking a voter-approved ban on fracking being challenged at the same time the Lafayette City Council is moving forward with its own plan to place a moratorium on fracking.” (DC 08.25.2013a)

- “A ban on all oil and gas activities is not currently warranted, given that Lafayette recently adopted a three-year moratorium on new oil and gas activities.” (DC 10.13.2013m)

The PFP storyline claims that there no need for fracking regulations at the local level, and any such attempt at rulemaking would clearly be a violation of Colorado state law. The state’s interest in oil and gas production supersedes the home rule authority of cities and counties, making regulation of oil and gas the state’s domain. This differs from the construct of property rights as a constitutional guarantee.

- “Local governments cannot ban oil and gas operations.” (DP 10.17.2013c)
• “This is highly questionable legally and ethically and is almost certain to get the city sued -- either by the oil and gas industry or by the State of Colorado, which views local government attempts to regulate oil and gas production locally as an unlawful usurpation of its powers.” (DC 10.23.2013b)

The ballot initiatives risk exposing the cities to expensive and unwinnable lawsuits brought by COGA and COGCC. Although the cities attempt to protect themselves by proposing temporary measures, they are effectively enacting fracking bans.

• “Isn’t it entirely possible that either move from the activists or the City Council will draw a lawsuit because local bans violate state law?” (DC 08.25.2013a)

• “By extending its moratorium on oil and gas exploration for five years, Boulder is attempting to use the moratorium process as a substitute for a permanent ban on oil and gas exploration in the city or on city owned land.” (DC 10.23.2013b)

Assumptions about natural relationships and figured worlds. In this storyline, the oil and gas industry is being treated unfairly. The allegiance to industry in the PFP storyline is unsurprising, given the support from COGA and other industry affiliates. The Industry storyline hints at unfair treatment, but in the PFP storyline, it becomes an important issue. There is a cry for balance because people are only hearing the “negative line coming from the frenetic environmentalists” (DC 06.25.2013). The industry is only providing what consumers demand. People should try to understand the industry’s side of the story.
• “The oil and gas industry has been painted as an evil empire, and they are not.” (BE 05.23.2013a)

• “While he said he is ‘no friend to the industry’ he became familiar with fracking while working as a consultant for state oil and gas regulatory agencies in several states and feels the city council is only hearing the negative side of the facts about it.” (DC 06.02.2013b)

• “Linda Reynolds, an 18-year resident of Broomfield, joined the group because she felt that fracking was getting a bad name and that only one side of the story was being told.” (DC 08.18.2013a)

• “The fact is fracking is not done for the pleasure or benefit of some fat cat billionaire or some evil corporation. They only profit by providing that which we desire. We are fracking.” (DC 11.29.2013b)

During the September floods, the governor downplays the spills and contamination from oil and gas operations. Hickenlooper compares them to the amount of raw sewage that was carried away by flood waters. He points out that people are upset about release of crude oil and condensates, but irrationally ignore the risk of raw sewage. An editorial in the Denver Post amplifies this message. It claims that the “shameless use of floods to attack drilling” was out of proportion to the problem, and shows that there is a “pervasive anti drilling bias” (DP 10.09.2013).

• “Since the governor spoke, the estimate of oil and condensates released from overturned tanks has risen to 45,000 gallons, still not even close to the quantity of raw sewage.” (DP 10.09.2013)
The Pro-Fracking Public storyline parallels the Industry rhetoric that the public is uninformed about fracking and needs to be educated. This characterization applies to reasonable people who are opposed to, questioning, or neutral about fracking (as opposed to intentionally misleading activists). The uneducated public’s susceptibility to the false information promulgated by the fracking activists is a risk to the fair, reasonable, and legal regulation of fracking. There are two sides of the issue, and only one of them has been represented in the public debate. Educating voters will correct the misinformation from anti-fracking campaigns.

- “The fear of fracking is based on a lot of false and exaggerated information.” (DC 06.02.2013d)
- “I think there is just a lot of hype and hysteria and the city council is only really hearing from one side. … I want to present some facts from the other side and I am disappointed that there aren’t more individuals who really know the business being asked to speak.” (DC 06.02.2013b)
- “There sure are a lot of Chicken Littles out there, and we want people to know that the sky is not falling.” (BE 07.29.2013)
- “Pro-fracking groups, including members of It’s Our Broomfield, Too, said the close vote shows there is more to be done to educate people about fracking.” (BE 11.15.2013a)

Facts and information are assumed to be sufficient to convince people to support fracking. The PFP storyline seeks to bring honesty and balance to the conversation by “working hard to get the truth out about fracking” (BE 07.29.2013). Ensuring the supply
of energy is not for “amateurs and second-guessers” (DC 12.22.2013b). Information will help the public understand that bans are not in their best interests.

- “The pro-fracking group will begin organizing public discussions and information sessions to show another side of the argument -- a side that shows how fracking has safely and effectively provided fuel, jobs and income for Broomfield and beyond, she said.” (BE 08.02.2013)

- “It’s so important that we inform voters that this (ban) is not a good thing for them.” (BE 08.02.2013)

Another underlying assumption in this storyline is the idea that domestic energy production and independence from imports is a natural and desirable goal for the country. In this way, the PFP storyline differs from the Industry storyline, which rarely discusses energy independence and never disparages any energy-supplying country. For the Pro-Fracking Public, the desire for energy independence is important for economic, security, and political reasons. Some texts express a sense of pride in American oil and gas production.

- “Instead, politicians are now talking about American ‘energy independence’ without having to cross their fingers behind their backs.” (DC 08.25.2013b)

- “Meanwhile, the United States has rapidly moved toward being largely energy independent, changing world politics and improving our nation's economic standing.” (DC 09.28.2013b)

- “Last November we also became the world’s second largest petroleum producing nation after Saudi Arabia.” (DC 05.26.2013b)
• “It is technologies like this that will allow Coloradans to continue to produce domestic energy for many years, ultimately helping lead the United States towards energy independence.” (DC 11.09.2013b)

This storyline suggests a sense of international competition inherent in the production of energy. Production rank is a source of pride, although it does not necessarily equate to energy independence. In some texts, there is an implication of sinister intent on the part of countries that supply the United States with fossil fuels.

• “Denver wasn’t third in the United States but third in the world, right behind Dubai and Calgary, and, as such, first in the United States as the place to be if your business is oil and gas.” (DC 08.25.2013b)

• “The U.S. Energy Information Administration estimates China might produce natural gas reserves that surpass those in Canada and the United States combined.” (DC 05.26.2013b)

• “First, is for North America to be independent from the darker parts of the world for our energy.” (DC 06.25.2013)

• “I don’t want to buy my energy from Russia, I don’t want to buy my energy from Saudi Arabia.” (DC 08.18.2013a)

Dependence on foreign energy is a risk. In one sense, it leaves the United States reliant and beholden to other countries. In another, energy dependency leads the country into wars to ensure the flow of oil. We must be realistic about “the geopolitical environment (especially the increasingly unstable Middle-East)” (DC 11.23.2013b) and pursue domestic energy.
• “This fools’ errand would stifle our economic growth and jeopardize our international security by leaving us more reliant on foreign oil.” (DC 11.23.2013b)

• “More items to consider -- do we want energy independence? Could this mean less dependence on OPEC, and perhaps less fighting to get the energy?” (DC 12.28.2013c)

**Goal Framing.** The framing in the PFP storyline hinges on foregone gains. The objective is to persuade people and politicians to support fracking on the basis of the lost opportunity for America to achieve energy independence, and for individual property owners to capitalize on their mineral rights. The state’s economy and jobs are at risk if fracking bans become widespread, and the loss to be suffered with fracking bans is part of the discourse. However, because the cities and counties in the CBM case study are not currently receiving those benefits from fracking, the local risk is framed as a foregone gain.

There are other losses discussed, but the PFP storyline does not dwell on them. The possibility of lawsuits is acknowledged. Bans on fracking are potential risks to energy-intensive lifestyles, but as the charges of hypocrisy point out, there is an expectation that energy will be produced elsewhere. Overall, this storyline has a negative frame, predicting that the implementation of fracking regulations will leave people worse off than they would be without bans.

**Rationalities.** The PFP storyline is based on a social rationality. Information to support statements is gathered from a variety of sources, including government agencies, university professors, scientific studies, industry reports, mass media, and common
knowledge. Most of the discussion of evidence and knowledge revolves around human and environmental health, although the study on Colorado economics also enters the discussion.

The ways that science is used to support the safety of fracking belie a desire for certainty in the face of risk. In this storyline, as in others invoking social rationality, there is a tendency toward polarized thinking that pushes the idea that fracking is either safe or unsafe. The lack of proof of fracking’s harms is understood to be evidence that there are no substantial risks involved. There is “no conclusive evidence that fracking is harmful to the health” (DC 10.17.2013b). Similar to the Industry storyline, participants in the PFP ask why there are no examples of harms, since fracking has been around for 50 years without harming people.

- “If fracking is as bad as portrayed, then why aren’t there hundreds of examples of harm done to public health?” (DC 05.04.2013b)
- “President Obama’s former head of the Environmental Protection Agency told a U.S. Congressional committee under oath that there has never been a proven case where fracking has contaminated drinking water and results from a recent year-long, intensive study conducted by the U.S. Department of Energy failed to find any evidence of contamination as well.” (DC 08.25.2013a)

The warnings about health and environmental risks coming from fracking opponents are said to be unsupported by scientific evidence. The PFP storyline refutes and attenuates those claims by reference to studies which are said to prove fracking is safe. In most texts, the studies are never cited or attributed.
• “But the idea that widespread fracking is poisoning drinking water supplies is so far at least an unsubstantiated charge by opponents, and it should be reassuring to the public that another study has confirmed this.” (DP 07.22.2013)

• “There’s no evidence that fracking is harmful to groundwater or the environment, and there are legitimate studies that back that up.” (BE 08.02.2013)

In a few instances, particular studies are held up as evidence in support of PFP positions. The research findings from North Dakota, Wyoming, and Pennsylvania are broadly applied without consideration of different circumstances. Studies in Colorado are underway, with the expectation that science can and will establish the safety of fracking. There is trust in science, but potential for ideologically-biased interpretations. Scientific and technological advances are also expected to make fracking safe and solve energy problems.

• “What The Associated Press is calling a ‘landmark federal study’ by the Department of Energy monitored fracking fluids for a year that were injected deep underground in wells in western Pennsylvania. By tagging the fracking fluid with ‘unique markers,’ federal scientists could locate them if they migrated into groundwater. They didn’t. Indeed, no trace of the fluid was detected in a monitoring zone that was still a mile below drinking water.” (DP 07.22.2013)
• “A team of CU-Boulder scientists received a $12 million National Science Foundation grant to explore ways to understand and prevent any negative environmental impacts of fracking.” (DC 12.22.2013b)

• “Science, hand-in-hand with the human heart and mind, can help us solve our energy issues.” (DC 12.28.2013c)

There is skepticism and cynicism about people’s ability to think critically about risks. The environmentally driven issues in the election are called “silly and ridiculous” (DC 08.18.2013a). Truth and facts are in the hands of the fracking supporters, and this attitude supports their efforts to educate the public. There is an attitude that other people are irrational, and would prefer to hold onto their preconceptions about fracking despite the facts. One author describes the propensity for people to hold beliefs based on group affiliation, but applies that knowledge only to the opposition’s arguments.

• “In other words, it’s human nature to group yourself with people you find to be like-minded, and then to attribute truth to their beliefs, without validating those beliefs independently.” (DC 12.28.2013c)

• “They are currently offering a public information series entitled ‘Fracking Sense’ that hopes to reach out to all sides of the current controversies that have emerged over issues related to fracking although there will always be those whose unfounded personal beliefs will never be influenced by facts.” (DC 12.22.2013b).

• “A batch of state-of-the-art studies could come out tomorrow assuring us that fracking is safe. Almost nobody will believe the studies. Remember how
nuclear engineers assured us that nuclear energy was perfectly safe? Look at nuclear energy now.” *(DC 11.23.2013c)*

The rhetoric in the PFP storyline sometimes discusses or attempts to evoke emotion. It charges that opposition to fracking is based on fear and irrational responses that lead to “emotional knee-jerk reactions” *(DC 12.22.2013b)*. PFP participants fault environmentalists for their “fear mongering and the half-truths these extremists are using to create angst in our local communities” *(DC 11.16.2013)* and “resorting to such histrionics” *(DP 06.23.2013)*. Negative emotions and mistrust are stirred up against fracking opponents by calling them hypocrites, outsiders, and deceivers. This serves to discredit them as sources of legitimate information.

- “Enviro-elitists strive to lessen our use of carbon fuels without regard for the cost.” *(DC 08.13.2013a)*
- “Seems to me a vocal minority of activists are dominating the discussion, injecting hysteria into a process that needs level-headedness. What we don’t need is fear mongering.” *(DC 08.25.2013a)*
- “There’s so much unsupported speculation about the hazards of natural gas extraction that some modest amount of reason and intelligence is required. Instead of responding to the abundant amount of baloney on the internet, and amateur ‘documentaries’ like Josh Fox’s largely debunked movie called ‘GasLand’, thoughtful people should be aware what the University of Colorado is currently involved with instead.” *(DC 12.22.2013b)*

This storyline draws on expectations of fairness and democracy. Common sense should prevail in policy-making, and it should be based on obvious, undeniable truths.
There is an expectation that a fracking decision will somehow be able to accommodate all points of view. The PFP storyline makes this a moral and ethical choice. The anti-fracking movement is using morally and legally questionable tactics that must be challenged.

- “We need a common-sense approach that takes all viewpoints of our community into account.” (DC 08.25.2013a)
- “For those following the debate over hydraulic fracturing, or ‘fracking,’ the associated economic benefits of the oil and gas industry are already well known.” (DC 08.24.2013)
- “I know for a fact that I am not the only one in our community who thinks fears around the oil and gas extraction process of fracking are largely over blown.” (DC 08.25.2013a)
- “Do we, as a community, have the right (morally or legally) to deny these constitutionally backed rights of our neighbors?” (DC 12.28.2013c)
- “When standing in opposition, it always helps to consider what you stand for.” (DC 08.25.2013b)

**Summary.** The PFP storyline presents a wide-ranging set of risks to convince people to support fracking. Among them are economic vitality and jobs; private property rights; energy independence; and moral, ethical, and constitutional principles. Cities, Colorado, and the country risk losing the benefits of fracking if moratoria or bans are implemented. There is a risk of being deceived by hypocritical homeowners and radical environmentalist who do not want fracking in their backyards.
Citizens are being lied to by outsider activists with hidden, anti-energy motives who misinform the public and sow fear. The rhetoric of the PFP appeals to the public’s sense of fairness and the desire to be seen as rational decision makers. It plays on the democratic ideals and constitutional protection of property, that property being the mineral rights owned by individuals and corporations.

The Pro-Fracking Public’s ties to industry is largely absent from the storyline. The groups do not acknowledge the financial or organizational support provided by COGA and other industry actors. Funding disclosures are covered in news reports, but are not made directly by the groups. This storyline assumes that reasonable people are unduly influenced by environmentalists, but not by industry or financial interests. Box 7.4 shows the discursive elements of the Pro-Fracking Public storyline.

| Storyline: | Colorado's economy, jobs, private property rights, industry's rights, and U.S. energy independence are in jeopardy if lawmakers or the public succumb to misinformation being distributed by the anti-fracking activists. |
| Entities: | Metaphors, rhetoric, and situated meanings: |
| Fracking | Buy mineral rights |
| Natural gas | Hypocrites |
| Property rights | There is no need for a ban |
| Colorado | Against state law |
| Economy and jobs | |
| Agents with motives: | Assumptions about natural relationships and figured worlds: |
| Fracking opponents | Industry is being treated unfairly |
| Reasonable people | Public is uneducated |
| Oil and gas industry | Energy independence is good |
| Rationality: | |
| Social | |
| Goal framing: | Negative goal framing - If fracking is banned, people and communities will forego gains. |

Box 7.4. Pro-Fracking Public Storyline
**Lawsuits Storyline**

The Lawsuits storyline is dominated by the texts and statements of the politicians, candidates, and officials who take a conservative approach to. As individuals they may or may not be in favor of fracking, but they are united in their opposition to the ballot measures and charter amendments that would effectively ban fracking, whether permanently or temporarily. Such a move on the part of officials or voters would subject cities and counties to the risk of lawsuits brought by the state or the industry.

Some of the local politicians who oppose the citizen initiatives attempt to limit fracking through other means, such as fees and water restrictions. Eventually, and in some cases reluctantly, the Boulder County Commission, Lafayette City Council, and Boulder City Council eventually instituted temporary moratoria to slow oil and gas activities within their boundaries. Broomfield entered into a MOU with Sovereign Energy, which would allow limited drilling with extra protective measures. These moves were, at least in part, attempts to preempt citizens’ calls for a complete fracking ban by making the ballot measures unnecessary.

Most of the content of this storyline comes from the comments of current politicians, city officials, and candidates as they are reported in 67 news articles. Only three opinion pieces are part of this storyline. Not all of the participants in this discourse have institutional authority in city and county matters. Although they do not have local decision-making power, they do wield political influence. These include U.S. Representative Cory Gardner and Senator Mark Udall. Past political office holders also contribute to this discourse.
There are several risks discussed in this storyline, but the one that causes the most concern among this group is the risk of a lawsuit. State-level politicians and COGCC regulators assert the state’s interest in oil and gas operations. By law, the state’s interest would preempt local regulations. In the Lawsuits storyline, the court ruling on the 1992 oil and gas ban in Greeley had already decided the matter.

Participants in this storyline feared a lawsuit akin to the one COGA and COGCC were pursuing against Longmont. These are the lawsuits that officials are concerned about, even though other types of lawsuits and complaints are filed against the cities and counties. Broomfield was forced to defend itself in lawsuits over the ballot language, and then again over the election counts. Lafayette saw a formal protest over the language of the initiative petition. These types of legal actions are not referred to as risks in the Lawsuits storyline. It is the risk of a COGA and COGCC suit that occupies the officials participating in this discourse.

**Storyline.** The uniting theme in this storyline is the opposition to local bans on fracking, regardless of personal opinions of fracking. Some politicians, including the governor, support fracking. Others take a more cautious approach or qualify their opposition, limiting it to fracking within their cities. All of them claim that local restrictions are beyond the authority of cities and counties. All participants recognize the legitimacy of the state’s interests in the regulation of the oil and gas industry, whether or not they agree with it.

Restrictions would lead to a loss of the potential benefits of fracking, namely economic health and energy independence. Fracking prohibitions would violate rights to access minerals. However, this storyline prioritizes the risk of lawsuits. With protection
of the cities and counties as the highest priority, the time and cost of defending illegal regulations presents the most immediate threat.

- “I am opposed to fracking and the adverse impacts that it has on a community. I believe that more can be done to address these impacts and better protect people. However, I am against the fracking ban proposal.” *(DC 10.13.2013j)*
- “There is no need for a ban that is illegal by state law and could cost the City money in litigation costs when we have had no interest in new drilling.” *(DC 10.13.2013o)*
- “Simply stated, the question of allowing fracking is outside the county jurisdiction and while I will proudly represent the long-term interests of Broomfield residents, my concern today is the immediate safety of the residents and the financial well-being of Broomfield.” *(DC 10.13.2013b)*

**Entities.** The Lawsuits storyline is more focused on political and legal issues than energy decisions. Nevertheless, natural gas is praised for its benefits independent of the construct of oil and gas as the industry and its activities. Natural gas is presented as an important resource because it is cheap and clean. Oil does not share in the praise for natural gas in this storyline, where only four statements refer to oil alone. None of those references are in a positive light—two refer to oil spills, one to foreign oil dependency and one to abandoned oil wells.

- “In his recent comments at FrackingSense, Gov. Hickenlooper said that natural gas could help in addressing climate change because it emits less CO2 than other fossil fuels when it is burned.” *(DC 05.12.2013)*
• “‘The reason we’re not freezing in this building is because we’re burning natural gas,’ Wilson said. ‘The reason we’re not freezing in our homes is because we’re burning natural gas.’” (DC 05.08.2013)

• “There’s been a lot of discussion lately about the dramatic growth in the supply of domestic oil and natural gas that has turned American-made energy into our nation’s latest success story.” (DC 05.23.2013b)

Fracking is lauded as a technological advance that creates great benefits by providing inexpensive, abundant energy. Fracking has revitalized American energy production and created an economic boom. The benefits of fracking are seen to accrue to society. Only one statement names industry as a beneficiary. Fracking is praised as innovative, and it is also constructed as an ordinary, well-known practice in the industry.

• “We’d like to be a part of figuring out how the resources can be developed to the fullest potential for the benefit of the world and ourselves.” (DP 05.05.2013)

• “This boom has been made possible by American ingenuity and advances in horizontal drilling and hydraulic fracturing (fracking). Since 1947, fracking has been successfully and safely performed over 1.2 million times.” (DC 05.23.2013b)

• “Newly appointed Secretary of Interior Sally Jewell testified before Congress that as a petroleum engineer, she has ‘fracked a well before’ and ‘understands the risk and rewards and that it’s essential and has been for decades.’” (DC 05.23.2013b)
There is some hesitation about fracking in this storyline. It is embraced, but with qualifications. Statements imply that fracking may have some undesirable effects. The reassurances about the effectiveness of safety regulations confirm that there are risks that require regulation. Some statements suggest that fracking is uncontrollable, either because of the nature of fracking itself or the practices of the industry.

- “Hickenlooper said science has made fracking more effective and safer than it was before.” (DC 05.02.2013)
- “But Domenico said that the controversy over the public health and environmental impacts of ‘fracking’ is one thing, ‘our ability to regulate it is another thing.’” (DTC 05.21.0213a)
- “I know and you know that fracking is not a threat to our community when it’s done safely and responsibly” (DC 09.08.2013)
- “A lot is riding on finding the sweet spot where we can safely pursue fracking, ... while assuring neighbors their health isn’t in (danger).” (GT 08.09.2013a)
- “Fallin is a proponent of ‘safe hydraulic fracturing,’ saying it requires ‘careful management, responsible and reasonable regulation and caution when it comes to the environment and safety.’” (DP 09.10.2013a)

In this storyline, the concept of rights is constructed to emphasize mineral rights. Even when rights are referred to as property rights or legal rights, the meaning always includes mineral rights. Surface rights are not discussed without also establishing the equal importance of mineral rights.

- “It’s a matter of balancing the interests of residents with industry rights, he said.” (DP 05.05.2013)
• “Yet City and County Attorney Bill Tuthill has said a ban likely would not be upheld in court, because it infringes on mineral owners’ rights.” (BE 07.29.2013)

• “In Colorado, property owners can own surface rights to a property without owning the rights to minerals below.” (BE 07.29.2013)

Early on, the conflict between surface and mineral rights holders is represented as a lack of diligence on the part of buyers in real estate purchases. This reasoning is also behind the idea of protecting Boulder City’s open space lands by purchasing the underlying mineral rights.

• “He often pointed to mineral rights and that we must be vigilant in our purchase,” (DC 05.11.2013a)

• “The city may need to buy up mineral rights for existing open space properties to prevent fracking there.” (DC 06.13.2013)

There is much attention given to the mineral rights belonging to private citizens, even though this storyline recognizes that the oil and gas industry is the likely party to litigation. Individual mineral rights owners may need to be protected, but they do not pose the same magnitude of risk that the industry does. The conflict over mineral rights is framed as competing interests among individual property owners. This appears to be more palatable than as a fight between citizens and industry, especially where it would mean that politicians are taking sides against the citizens.

• “Health and safety wording needs to be prominent, but to omit that citizens will also be deprived of property rights would be shortsighted.” (BE 08.14.2013)
- “Democratic Gov. John Hickenlooper’s office disagreed, saying ‘the Colorado Constitution protects the rights of people to access their property above and below ground.’” (DP 11.20.2013a)

Candidates and officials recognize the inherent conflict between types of rights, but are unwilling to make statements prioritizing one type over the other. There is an expressed desire to find a balance between them, although there is no indication what that middle ground might be.

- “We are going to claim our right is better than someone else’s right?” (DC 10.02.2013)
- “Councilman Kevin Jacobs said the tricky business of crafting fair ballot language means balancing the sometimes-competing rights of community members.” (BE 08.14.2013)

The perceived risk of legal action against local governments originates in the tension between city and county authority to make laws and the state’s interests in regulating oil and gas development. Colorado home rule cities and counties are entitled to create their own laws to the extent that they do not conflict with the interests of the state. The state’s interests in the regulation of oil and gas extraction is taken for granted in this storyline. Both state and local officials engage in the legitimation of state authority. Adamant proponents of this position include the governor, a U.S. Senator, and a U.S. Representative. City and county officials take a milder approach, recognizing that the state’s authority established in court limits their ability to regulate fracking.

- “‘When you ban fracking, you really say you are going to supersede the state’s authority,’ Hickenlooper said.” (DC 05.02.2013)
• “Domenico noted that state laws and court rulings have given the Colorado Oil and Gas Conservation Commission, rather than individual counties, the predominant authority to regulate oil and gas development and have limited local governments’ ability to adopt rules stricter than the state’s regulations.” (DTC 05.21.2013a)

• “Wiesley said Issue 300, otherwise known as the Lafayette Community Rights Act, contravenes state law and will invite litigation from the state and the industry.” (DC 10.01.2013)

Any attempts to regulate at the local level must be carefully designed to avoid crossing into state interests. Local policy makers proceed with caution to avoid risking further loss of power to the state. As a result, the preference in this storyline is for cities and counties to create alternatives to bans that use land use regulations and fees to discourage development. State officials decline to help establish what local rulemaking will be tolerated.

• “‘How the State responds will depend on exactly what the City Council does with regard to a moratorium on hydraulic fracturing -- its rationale for taking action, the duration and scope of a moratorium, etc.,’ Randall said in an email.” (DC 05.08.2013)

• “A long-term moratorium, city officials have said, could bring legal challenges that place city regulatory powers at risk. Carr said a moratorium extending beyond two years has yet to be tested.” (DC 06.02.2013c)

Agents and their motives. The motives this storyline attributes to the oil and gas industry are benign in comparison to other storylines. The industry is portrayed as
reasonable, although assertive in its protection of its rights. The Lawsuits storyline places the industry’s rights and interests on par with the rights and interests of citizens.

Industry is understood to be well-organized and poised to file lawsuits to block unacceptable regulations. Local politicians fear that “moratorium extensions might not be ‘legally defensible’ if challenged by the oil and gas industry” (DTC 06.06.2013c).

Industry is seen to be a significant stakeholder in state and local matters, and there is concern over the increasing friction between the industry and communities in the state.

- “We tried to work with all the stakeholders, including industry and the administration.” (DP 05.09.2013)
- “Sen. Mark Udall, D-Colo., called for reason in a debate that has pitted a growing number of Coloradans against the oil and gas industry over the industry’s rapid growth along the Front Range.” (GT 08.09.2013a)
- “Mayor Pro Tem Steve Kracha and Councilman Brad Wiesley, the two incumbents in the race, said the city cannot trample on the rights of oil and gas companies to legally extract energy by enacting a ban.” (DC 10.02.2013)

The industry is portrayed as generally operating safely and within existing rules. Problems are attributed to a few small companies that do not adhere to best practices. The irresponsible companies are the exceptions, leaving the good companies to pay the price for their transgressions.

- “Mayor Pat Quinn said he hopes any new standards Broomfield adopts will help the city and county foster relationships with ‘the good ones,’ or oil and gas operators that are willing to meet high regulatory standards and follow best practices.” (DC 06.04.2013b)
• “The environmental errors that do make headlines usually are at the hands of ‘bad actors,’ which tarnish the image of the entire industry, he said.” (GT 08.09.2013a)

In several instances, officials’ statements about fracking are reported in the coverage of their participation in industry events. These include speeches by Senator Udall and the executive director of COGCC at COGA conference; a forum on shale energy hosted by Hickenlooper; and a Natural Gas Symposium hosted by a former governor and director of Colorado State University’s Center for the New Energy Economy. The politicians engaged in this discourse deny any allegiances to the oil and gas industry. They represent their connections to industry as giving them insight but not creating bias.

• “Planning commissioner Blaugrund said that despite some of the hearing speakers’ charges, no one on the Board of Boulder County Commissioners or the advisory planning panel ‘is in the pocket of industry.’” (DTC 06.06.2013c)

• “This issue will not go away, so I believe my oil and gas industry background will benefit the community. Many council members contacted me for clarifications and advice during the MOU process.” (DC 10.13.2013g)

• “‘I am constantly attacked now for being in the pocket of oil and gas, or somehow subservient to their philosophy or their wish,’ he said. ‘The Quakers have a term called “fair witness,” someone who comes in and they don’t have an ax to grind ... and that is what I try to be.’” (DC 05.02.2013)

The Lawsuits storyline constructs the public as a collective entity. The public is treated as more of a special interest than as voters whom politicians represent. Alternately
referred to as citizens, residents, communities, and the public, they are situated in opposition to the industry. These terms are used to reference groups united by their common interests. When referred to as *people*, the word tends to mean individuals rather than the *populus*. Individual people are said to be concerned about or impacted by oil and gas activities, while the public is a group pitted against the industry. Unlike other storylines, this one makes minimal use of families to represent the public.

- “New people are coming to terms with what it’s like to have (oil and gas crews and facilities) as a neighbor.” *(DP 05.05.2013a)*
- “City Council held town hall meeting early in the summer and listened to people who expressed concerns about fracking.” *(DC 10.13.2013f)*
- “Local communities have to have a say in if and where drilling occurs.” *(DC 06.22.2013a)*
- “City councilors wanted to draw up wording that encompassed the complex issue of fracking in Broomfield while representing concerned residents, he said.” *(BE 09.05.2013a)*
- “Finally, these communities may be pleased that Colorado has a strong set of rules, but they also fear that they have far too little input into the permitting process.” *(DP 12.22.2013a)*

According to the Lawsuits storyline, the state government, led by Governor Hickenlooper, is a significant risk for cities and counties. This holds true whether or not the politicians support fracking, and is even a claim made by the governor himself. The state works closely with COGA, acting through the COGCC. The COGA-state alliance is based on industry interests and COGCC’s mandate to foster oil and gas development. The
assertion of state authority empowers COGA to fight local fracking regulations, and
COGA’s threat of lawsuits gives the state a platform to advance its interest in being the
statewide regulator. In several of the storylines, the state and the governor are accused of
representing the industry’s interests. The difference is that in this storyline, that support is
considered to be fair and just.

- “‘We do stand ready to support an energy company that does file a lawsuit in
  response to the ban,’ said Eric Brown, a spokesman for the governor,
  following the speech.” (DTC 07.11.2013c)
- “And decisions on where and how wells are drilled can be made, state
  officials insist, only by the Colorado Oil and Gas Conservation Commission.
  ‘We believe that uniform regulations are important for the state, and we have
  the expertise to set those regulations,’ said Matt Lepore, director of the oil and
gas commission.” (DP 06.16.2013a)
- “‘COGA’s interest in this case is to overturn the charter amendment so that its
  members can proceed with oil and gas production using fracking as a method
  of production in wells located in Longmont,’ Mallard wrote. ‘The
  commission, on the other hand, has a broader interest in its ability to protect
  its plenary and regulatory authority to regulate the technical aspects of oil and
gas drilling, generally, in Colorado.’” (DTC 07.11.2013c)

Hickenlooper said that allowing local regulation would be contagious and create
incentives for more communities to do the same. Therefore, communities that attempt to
ban fracking will face litigation, either from the state directly or from industry with the
state’s support. Hickenlooper was an active contributor to the construction and amplification of lawsuits as a risk. At the same time, he was the source of that risk.

- “The Colorado Oil and Gas Conservation Commission considers regulating oil and gas drilling to be its responsibility and has sued Longmont to assert its authority. Gov. John Hickenlooper, a former petroleum geologist, warned other communities that they would be sued, too, if they tried to ban fracking.” (DC 05.08.2013)

- “Hickenlooper said Longmont’s action would create pressure for other local governments to adopt their own regulations and ‘stir up a hornet's nest.’” (DP 07.12.2013)

**Metaphors, rhetoric, and situated meanings.** Lawsuits and are the central risks that this storyline warns against. Lawsuits will be costly for the cities, and take resources from city services and projects. This risk remains present in discourse throughout the CBM case study. Lawsuits are known, predictable, and somewhat preventable risks. They are the reason city officials cannot ban fracking, and lawsuits are the reason the ballot measures should not be passed.

- “Any further Boulder County moratorium extensions might not be ‘legally defensible’ if challenged by the oil and gas industry.” (DTC 06.06.2013c)

- “If the five-year ban passes in Broomfield in November, ‘I’m not liking our chances of defending that if it needs to be defended ... I’m fairly confident we would see a legal challenge,’ Tuthill said.” (BE 08.14.2013)

- “We do not have this power and if this issue is passed it is likely that Lafayette will have to spend a large sum on litigating this proposal, money
that could be better spent on services such as the library, parks, streets and
more.” (DC 10.13.2013j)

The governor’s threat to sue cities that ban fracking is explicit. Although industry
representatives do not issue such direct warnings, industry’s ability and propensity to
bring lawsuits loom large. Companies’ needs to maintain access to mineral rights and
their desire for limited regulation make litigation over bans inevitable. The joint
COGA/COGCC lawsuit against Lafayette reinforces the time and monetary costs of a
city’s attempts to ban fracking.

• “Mayor Appelbaum said that Boulder should look at the development of the
Longmont lawsuit and other activities in Colorado. Councilmember Ageton
said that legally the moratorium could be costly for Boulder” (DP 06.08.2013)
• “One need look no further than Longmont -- where both the industry and the
Colorado Oil and Gas Conservation Commission have sued the city over its
voter-supported fracking ban -- to see where the debate might end up, he
said.” (DC 08.27.2013a)

It is worth noting that lawsuits brought by COGA and the state over mineral rights
and state authority form the basis for this perception of risk. Broomfield was sued over its
ballot language and again over the election process. Lafayette went to court over the
language of the citizen’s petition. These types of procedural lawsuits did not serve as part
of the rhetoric used to argue against bans, moratoria, or ballot initiatives.

Colorado’s 2013 legislative session ended in early May. During the session, the
governor and his administration had supported about half the bills on oil and gas and
“tried to work with sponsors with the others” (DP 05.09.2013) in order to make them
more acceptable. Their efforts to modify legislation had effectively scuttled all but two of the bills. Hickenlooper’s administration insisted that oil and gas regulation belonged at the state level, but had blocked most of the proposed regulations and changes to existing laws.

- “The administration was opposed to a few bills, such as the groundwater-testing legislation, and to the form of some, such as the changes to the oil and gas commission, Salazar said.” (DP 05.09.2013)

Without strong state regulation, and lacking the authority to ban fracking, local officials began seeking lower-risk ways to constrain it. Due to the risk of lawsuits, they also wanted to halt the movement toward ballot initiatives that would put the decision in the public’s hands. By creating some alternative controls, there was hope that the public would be dissuaded from more extreme ballot measures. Political actors began to rely on the rhetoric that fracking could be limited and made safe by forms of regulation that were not outright bans.

- “Trying to defuse activists’ momentum, they implemented a moratorium in August even though no new well has been drilled in the area for more than 50 years.” (DP 10.13.2013i)

- “The county commissioners have attempted to stay on the right side of the state by focusing their regulations on the local impacts of fracking, rather than the practice itself.” (DC 05.08.2013)

- “‘Our goal is to use the county's land use authority, to adopt the most protective rules recognizing the role of the state … to push the line but not go
over,” said Kim Sanchez, Boulder County planning manager.” (DP 06.16.2013a)

Boulder’s City Council considered buying mineral rights for open space lands to prevent fracking there. The Boulder County Commission considered phased-in permitting and additional fees. Broomfield negotiated a stringent MOU with Sovereign Energy, expecting it to serve as a model for other oil and gas agreements.

- “Jones, Domenico and Gardner did agree last month to direct their staff to suggest ways Boulder County could limit the numbers of well pads and wells that might be drilled and operated once the county resumes reviewing the development applications it expects to get for such facilities.” (DTC 06.06.2013c)

- “If the state Supreme Court ultimately rules against Longmont’s voter-approved fracking ban, the City Council could simply not enforce Boulder’s moratorium, City Attorney Tom Carr said.” (DC 07.16.2013a)

- “‘We were able to negotiate for extra conditions and stricter requirements than the state's for things such as pits,’ said Diane Kocis, the county’s oil and gas director.” (DP 06.16.2013a)

- “The MOU helps to mitigate possible risks involved in fracking if adequately enforced, while, for the moment, helps to avoid costly litigation.” (DC 10.13.2013b)

While this storyline holds that these types of alternative measures are the only avenue available to cities, some officials expressed doubts about their efficacy. In Boulder County, with “35 wells proposed for eight well-pad locations that have gotten
COGCC approval” *(DTC 06.06.2013a)* awaiting land use review, it was clear that companies were only were waiting for the moratorium to expire.

- “Lopez said there’s ‘ample evidence’ that ‘we are not prepared’ for oil and gas exploration once it gets under way in unincorporated Boulder County.” *(DTC 06.06.2013a)*
- “Planning commissioner Dan Cohen said he felt that the phasing in of wells would be ‘a superficial band-aid on a bigger problem.’” *(DTC 06.06.2013c)*
- “I'm not convinced the phasing proposal is going to do much of anything to slow down the number of applications that we get.” *(DTC 06.06.2013c)*

Between Boulder City Council’s stated support for a ballot measure and the publicity over Jared Polis’ unsuccessful attempts to protect his property by purchasing of mineral rights, preparations to buy open space mineral rights fell by the wayside. The discussion of alternatives faded in Lafayette when the public was unconvinced that alternative measures would provide sufficient protections and continued with their efforts to put initiatives on the ballots.

In trying to give meaning to their actions or inactions, participants in the Lawsuits storyline employ a rhetoric of balance. Political actors expected to find a resolution to the fracking conflicts by balancing the interests of citizens, industry, and the state. None of the participants in this discourse have an answer to what that balance should be, but they all argue that the ballot initiatives are not a good solution to the problem.

- “‘We are trying to balance public health, legal rights, energy and environmental impacts and frankly trying to do it without complete information,’ Jones said” *(DP 06.16.2013a)*
• “‘We are trying to take a balanced approach’ that protects residents while being fair to operators, said City Council member Todd Schumacher.” (DC 08.06.2013)

• “Yet council members said the [MOU] vote was needed now in order to balance the rights of mineral rights owners with the concerns of residents who wanted more safety assurances about drilling practices.” (DC 08.25.2013)

This storyline assures everyone that politicians are working hard to resolve conflicts over fracking. Politicians implore citizens to be reasonable, compromise, and let the lawmakers do their work. They encourage the industry to work with cities and citizens to avoid backlash. Some politicians’ comments to industry, however, imply that the “residential ire over drilling” (GT 08.09.2013a) is irrational and uncompromising.

• “I’m encouraging everybody to sit at the same table, understand that the goals I think everybody shares are the same, but we differ on how to reach those goals.” (DC 06.22.2013a)

• “I extend an invitation today, to partner to reach the summit, avoid political labels and find common sense compromises.” (GT 08.09.2013a)

Participants in this storyline assert that there is no need for a ban on fracking. They argue that only politicians and experts can fully understand the complexity of the issue. Only they are capable of balancing all the competing interests in a fair and equitable way. Officials have the communities’ interests at heart and have designed regulations that will protect them. Bans and ballot measures are unnecessary. In Lafayette, the argument arises that there is no demand for drilling and therefore no need to create rules about it.
• “It’s as if there is fracking in Lafayette. There isn’t. It’s as if there is no moratorium in place in Lafayette. There is. It’s as if state law allows a city to ban fracking. It doesn’t. And, it’s as if your city doesn’t care. It does, and so do I.” (DC 10.25.2013a)

• “If any initial wells are found to not be meeting the county’s regulatory standards, we shut them down. (5.31.2013-3)

• “Most council members at Tuesday’s meeting said they do not believe a moratorium is necessary, mostly because they were already delaying meetings with oil and gas applicants in order to re-examine the city’s policies.” (DC 06.04.2013b)

• “Why put citizens of Lafayette on the hook for legal costs that will surely come when adequate provisions are already in place? Let the moratorium work.” (DC 10.31.2013a)

• “There is no need for a ban that is illegal by state law and could cost the City money in litigation costs when we have had no interest in new drilling.” (DC 10.13.2013o)

**Assumptions about natural relationships and figured worlds.** Assumptions about fracking’s support of jobs and economic health are not the main argument, but they are present in this storyline. Oil and natural gas production is called “the economic lifeblood of Colorado” (DC 05.23.2013b) and “an industry that is vital to our economy” (DP 12.22.2013a). Participants in this discourse assume that “when energy is doing well, so is the economy” (GT 08.09.2013a).
• "Economic benefits of Colorado’s drilling boom are huge, and Gov. John Hickenlooper has been a steady supporter.” (DP 10.13.2013i)

• "If a number of local communities passed bans or moratoria, a critical part of our economic engine in Colorado would just disappear.” (DP 12.22.2013a)

• "The unemployment rate would almost certainly be higher right now were it not for the job growth that has accompanied this domestic energy juggernaut.” (DC 05.23.2013b)

At the time, few jobs and little economic activity in the cities and counties came from oil and gas. With few local jobs and little local economic data, state and national figures are used as evidence for fracking’s importance for jobs and the economy. There is an assumption that there will be overall benefits, but little argument that the cities and counties will directly benefit from fracking.

• “Citing a recent IHS study, she said the energy boom from shale reserves and hydraulic fracturing has led to 2.1 million jobs and $75 billion in federal and state revenues, added $283 billion to the gross domestic product and lifted household incomes by an average of more than $1,200.” (DP 09.10.2013a)

• “According to a recent report from Citigroup, continued strength in domestic oil and gas exploration and production could generate 3.5 million new jobs over the next seven years while expanding GDP by as much as 3 percent.” (DC 05.23.2013b)

This storyline also makes assumptions about cities losing businesses because of perceived unfriendliness to fracking and the oil and gas industry. Politicians in Lafayette
used the story of a communications equipment supplier to the industry as an example of business driven off by the prospect of fracking regulation.

- “A company that makes radios used by oil and gas companies as well as other industries decided not to locate in Lafayette because of the potential impacts from this amendment.” (DC 10.25.2013)

- “The wording of the initiative is too broad and can have negative impacts on the city. The Denver Business Journal reported in September that a technology company decided not to relocate to Lafayette because the initiative could have an impact on their business” (DC 10.13.2013o)

Fracking is assumed to be responsible for lowering of energy costs and increasing supply. This is seen as a particular advantage for the poor. Because fracking has been so successful in reducing the price of energy, there will be a “costly financial impact on low-income households if a moratorium succeeds” (DC 10.13.2013f).

- “Nationally, the low price of these domestic energy resources has translated into billions of dollars of savings for the American consumer.” (DC 05.23.2013b)

- “Gas production from fracked shale has grown 40 percent since 2008.” (DC 10.13.2013f)

- “According to the Sept. 8 Wall Street Journal, fracking has reduced energy costs for the poor approximately $10 billion per year over the past five years.” (DC 10.13.2013d)

Although fracking is considered to be a safe activity, the Lawsuits storyline presumes that regulations are necessary. It is also taken for granted that with the right
regulations, fracking can be made entirely safe. Potential risks to public health and safety are the justifications for regulations, although the potential harms are not named. To a lesser degree, environmental protections are seen as legitimate reasons for rules and restrictions.

- “Public safety is No. 1.” (DC 06.04.2013b)
- “As a member of the Energy & Commerce Committee in the U.S. House, I can assure you fracking is highly regulated, with a focus (as it should be) on safety.” (DC 05.23.2013b)
- “Hand in hand with that, Hickenlooper added, there must be regulations that protect Colorado residents and the environment.” (DP 09.10.2013a)
- “A lot is riding on finding the sweet spot where we can safely pursue fracking, ... while assuring neighbors their health isn’t in (danger).” (GT 08.09.2013a)
- “Broomfield would require lots of information and regulations to make sure Sovereign and other operators are drilling in the safest, most effective manner.” (DC 08.06.2013)

There are some internal contradictions in this storyline. Even though it claims that regulations are adequate, it anticipates that they can and should be improved upon. New rules will be needed as the use of fracking spreads. The state’s standards are simultaneously considered to be adequate and inadequate, as demonstrated by the elevated safety standards in the Broomfield MOU. The MOU is held up as a model for future agreements throughout the state. In the Lawsuits storyline, politicians and the public alike must trust that the state will enforce regulations and hold operators accountable.
• “The MOU will allow Sovereign to drill 21 total wells on four sites as long as the company complies with 35 of Broomfield’s new, more stringent oil and gas drilling standards, which are among the strictest regulations between an oil and gas company and a city in Colorado.” (BE 09.05.2013a)

• “However, council members agreed that they need to update oil and gas policies and explore ways to work with oil and gas drilling applicants to ensure heightened safety standards.” (DC 06.04.2013)

• “John Hickenlooper said Monday he welcomes the increasing production of natural gas in Colorado while holding the oil and gas industry to ‘highest standards’ to prevent any negative effects of fracking.” (DP 09.10.2013a)

• “We came up with over two dozen areas based on best practices that we could make safer for our citizens.” (DC 10.13.2013b)

This storyline gives a nod to the idea that energy independence is a desirable objective. This taken-for-granted knowledge is invoked without detailed discussion of how energy independence goals provide local benefits. Because the national agenda for energy independence can be supported by energy produced in Colorado, opposition to fracking would be morally wrong.

• “Greeley City Manager Roy Otto says the city embraces the notion of weaning the nation from foreign oil.” (DP 05.05.2013)

• “I can tell you that Colorado-made energy is making us safer and a more secure country.” (GT 08.09.2013a)
• “A vote against ‘fracking’ will essentially be a vote against drilling in Colorado, which is contributing to America gaining energy independence.” (GT 10.16.2013a)

• “‘That is simply extraordinary,’ said Fallin. ‘For the first time, North American energy independence is truly a possibility.’” (DP 09.10.2013a)

**Goal Framing.** The dominant goal framing is a positive frame urging people to avoid a loss. Opposition to moratoria and ballot initiatives will protect cities and counties. Because lawsuits are considered a near-certainty if bans are implemented, there is a high risk of lost time, money, and reputation. A secondary strategy for discouraging the public’s attempts to regulate fracking is the prospect of harm to the economy and job market. Because oil and gas production is not a strong presence in the local economies, a ban on fracking was portrayed as a foregone gain rather than a loss for local economies. For the state and country, a choice in favor of a ban would be a loss. These are both negative goal frames appealing to similar concerns at different scales.

**Rationality.** The Litigation storyline is unequivocally political in its rationality. It grapples with the conflicts between surface and mineral rights; state and local authority; and individuals and industry. This storyline seeks solutions based on shared values, although it struggles to find that common ground.

There is emphasis on balance and hope for solutions acceptable to all. It asks people to be calm and see other points of view, including the fact that local politicians are caught between public responsibility and the limits of state government. The need to take some kind of action encourages pragmatic, instrumental decisions, such as when temporary moratoria were adopted to block citizen initiatives. There is also a
need to convince people not to make brash decisions. Officials lament the lack of available information assessing the risks and benefits of fracking. They call for more research to be done. Boulder County Commission went as far as to fund a study to evaluate air quality.

- “Hickenlooper said the science on the impacts of fracking is far from settled, and the focus should be on getting ‘better, more persuasive facts.’ He said once there is an accepted set of facts about fracking, opponents and proponents will have a baseline for reasonable discussion and compromise.” (DC 05.02.2013)

- “He added that industry and citizens benefit from responsibly developing natural gas reserves and by putting in place ‘pragmatic’ rules to protect the environment and human health.” (DP 09.10.2013a)

Officials rely on evidence-based information where it is available. Potentially biased sources are accepted, provided there are numbers to back up the claims. Citigroup, the Wall Street Journal, IHS (an industry analysis firm), and the Denver Business Journal are all cited as sources of information. No evidence of adverse health or economic impacts is discussed. Personal accounts are not considered valid or politically expedient, and are dismissed as anecdotal.

- “Hickenlooper’s response was that those stories are anecdotal and would require further investigation.” (DC 05.11.2013a)

- “Safety concerns of opponents don’t seem to be grounded in current medical fact, although continued research is encouraged.” (DC 10.13.2013d)
Politicians want to be seen to be making evidence-based decisions. As discussed above, they refute accusations that they are industry advocates. When they make decisions that align with public attitudes against fracking, they deny being influenced by public opinion.

- “‘I understand the (anti-fracking) sentiment completely,’ Domenico said, ‘but the most helpful (input) were ones that looked to scientific studies, and had specific comments about how we could make our rules tighter and stronger, and what we should specifically look at that applies to health and safety.’” (DC 06.22.2013b)
- “‘It was important, but it wasn’t the only factor, either,’ said Commissioner Deb Gardner, who pointed out that people opposed to an extended moratorium also contributed to the size of Tuesday’s crowd. ‘We also had a lot of other information that was particularly new since our last meeting.’” (DC 06.22.2013b)

The contextual nature of political rationality is perhaps one of the most important aspects of the tension between local and state regulation. Politicians elected at the state level argue that the state should regulate fracking. Officials at city and county levels, believing that they do not have legal authority, argue that they must advocate for their constituents in ways that are within their purview. In this storyline, that means protecting against lawsuits and proposing alternative means for regulating fracking.

**Summary.** The Lawsuits storyline takes the duty for city and county officials to protect the cities and counties for granted. This assumption contrasts with the Pro-Initiative Politics storyline, which frames the duty of city officials as the protection of
citizens. In stressing the protection of the cities and counties, the Lawsuits storyline places the municipal welfare over the individual citizens’ interests and objections.

Fracking bans are seen as risks on two fronts. The first and primary risk is the probability of lawsuits brought against the local governments. The second is the loss of benefits from fracking, namely jobs and economies. For the cities and counties in question, this is a weak argument because they did not contribute substantially to the existing local economies. They were not potential losses, but lost opportunities, which did not seem to have much traction with the public. For the state-level politicians, the loss of jobs and economic activity are more serious threats.

The Lawsuits storyline is characterized by conflicts that cannot be resolved quickly or easily. There is tension between types of rights, between state and local authority, and between a public pushing for protections and local officials trying to avoid lawsuits. This discourse expresses a desire for greater protections and more careful enforcement of fracking rules. Local officials hoped to achieve this through policies carefully designed to steer clear of the state’s interests and the trampling of mineral rights holders. On the other hand, they needed to convince upset citizens that the existing regulations and cautious approaches to allowing oil and gas development will offer adequate protections. Ultimately, those efforts were unsuccessful. The Lawsuits storyline is summarized in Box 7.5.
Additional Themes in Discourse

There are two additional themes in the CBM case study that run through the storylines in subtle but noticeable ways. These two discursive elements are war and women. Women and mothers are important in both the discourses of pro- and anti-fracking groups. Words and symbols associated with war are used in every discourse.

**War.** Words like attack, fight, battle, defend, combat, as well as more subtle war metaphors are used in all storylines. The images and rhetoric of war go beyond merely fighting the opposing side and defending against unwanted development. They are varied and vivid, calling on both ancient and modern symbols of warfare.
• “We are on the frontline of drilling and we have to continue to defend the health, safety and beauty of our towns because we are underdogs.” (DC 05.20.20213)

• “At this rate, the next war will be over clean water because of carelessness in the race for energy.” (DC 05.31.2013-3)

• “‘We’re ground zero,’ one man whispered to a man next to him.” (DC 06.26.2013)

• “And he and other activists beat that drum so insistently that it seems to influence the most unlikely audiences.” (DP 07.22.2013)

• “Boulder, 30 miles from Denver, is, arguably, Ground Zero for the fight against the technology that made this oil and gas revolution possible -- fracking.” (DC 08.25.2013)

• “The big battle in our country is really a revolution in values.” (DC 09.13.2013)

War words suggest the intensity and passion involved in the debate. They may indicate the perception that fracking is a form of violence. The calling of emergency meetings to discuss how to defend a city are reminiscent of revolution and rebellion.

• “More than 200 people turned out to discuss how to ‘defend Boulder County from hydraulic fracturing’ at the Boulder meeting.” (DC 06.02.2013a)

• “This is a movement that is going to place community rights and self-defense against corporate interests.” (DC 07.26.2013a)
• “And yet anti fracking groups swiveled into combat mode almost immediately, raising alarms about the quality of planning by regulators and energy companies.” (DP 10.09.2013)

• “An end to fracking is the most crucial fight of our lifetimes.” (DC 06.07.2013b)

There are battles and refugees from the fracking crisis. Language invokes images of invasion, with Colorado as a” battle zone for hashing out the national problem of wanting increased domestic energy production but also an environmentally sustainable future” (DP 10.13.2013i).

• “The one certainty that just about all sides agree on is that the battle will go on.” (DP 06.16.2013a)

• “‘How would your family like to be fighting a multinational mining company drilling at the foot of your driveway’ he asked Wednesday.” (DC 07.13.2013a)

• “They’re kind of refugees from our own property, with very little recourse.” (DC 07.25.2013)

Ideas and ideology become weapons, and revenge becomes a motive. The fight extends beyond the fracking debate, stirring up conflict over fundamental values, such as who has the right to vote, the role of government, and property rights. Democratic ideals and the will of the people are casualties of this war.

• “Some legislators have said the loss of anti oil and gas bills signaled the defeat of the will of Coloradans.” (DP 06.07.2013c)
• “Today powerful corporations armed by their wealth and backed by the Commerce Clause of the U.S. Constitution win the big legal victories.” (DC 09.13.2013)

• “State and COGA officials vow to fight to protect the industry’s right to develop the minerals in which they have a right to, stating bans amount to an unconstitutional ‘taking’ of private property without compensation.” (GT 11.07.2013b)

• “The greatest weapon that the ‘ban fracking’ movement has is that Encana and Anadarko and the rest have fought to protect their right to frack in our communities, and that the state seems to prefer to defend industry than to protect us from dangerous practices.” (DC 11.13.2013b)

• “The lingering effort by Rep. Jared Polis to seek revenge for oil rigs drilling too close to his Weld County compound is evident in his Dec. 5 home-rule rant against Colorado oil and gas companies.” (DC 12.07.2013a)

Talk of victory reinforces the idea that there will be winners and losers. The stakes are significant. For citizens against fracking, they face an unfair battle against powerful corporations. Fracking advocates see the activists to be in hopeless pursuit of an undefeatable opponent.

• “The free market would determine the winners and the losers.” (DC 06.21.2013)

• “They expect expensive court battles and do not expect most to be won. Losses are more illustrative of their message.” (DC 10.25.2013a)
• “But Simon Lomax, western director of Energy in Depth, said anti-fracking forces are ‘desperately’ trying to score small victories in places like Lafayette and Broomfield because they have lost multiple battles at the national and state levels.” (DC 12.04.2013a)

**Women.** Women and mothers are used in the rhetoric of both the pro- and anti-fracking public. Women are vociferous participants in the fracking debate. As activists, some choose to portray identities as women and mothers, but not all the women involved in activism do so.

• “Broomfield also has a pro-fracking citizen group called It’s Our Broomfield, Too. The pro-fracking group is known for wearing hot pink shirts with the phrase ‘Mothers In Love With Fracking.’” (BE 07.29.2013)

Activists hold an anti-fracking rally on Mother’s Day, and one opinion writer asks Governor Hickenlooper for a fracking ban as a Mother’s Day gift. Much discussion of fracking revolves around the protection of families and children. Mothers are cast as the protectors of families, children, and homes, thus they have a special stake in the fight against fracking. Women are also protectors of the earth, organizing a performance to call attention to the contamination of water.

• “Mother’s Day is a celebration honoring mothers and motherhood and the influence of mothers in society. And although this is my day to be honored, a mother’s job is never done, and every day I think about my kids, their health, wellbeing and what the future holds for them.” (DC 05.12.2013a)

• “As a mother of two I am concerned with the onslaught of oil and gas drilling in our communities.” (DC 05.06.2013a)
• “Gov. Hickenlooper did little to ease my, and I’m sure, other mother’s worries and concerns about our neighborhood oil and gas operations while our families experience health complications.” (DC 05.12.2013a)

• “Local moms, children and activists delivered several hundred postcards Monday to the three county commissioners before holding a rally on the Boulder County Courthouse lawn, urging the commissioners to extend a fracking moratorium.” (DC 05.13.2013a)

• “‘Fracking is a problem,’ said Ixeeya Beacher, who choreographed and organized the Boulder water dance. ‘It steals water out of the ecosystem and returns it to the earth contaminated and radioactive.’” (DC 06.15.2013)

Women’s participation is sometimes used as a discursive mechanism to trivialize the issues. Women are sometimes made to appear uneducated. One organizer described the opposition group It’s Our Broomfield, Too as “a bunch of older ladies in pink T-shirts and some moms and pregnant ladies with their kids” (BE 07.29.2013).

• “If Governor Hickenlooper had encouraged, or even allowed, the legislature and the COGCC to adequately regulate oil and gas development and keep it out of our suburban cul-de-sacs, the angry moms would have all gone home.” (DC 11.13.2013b)

At some points, the fracking fight is made to appear as one among women. The director of the Colorado Women’s Alliance wrote an opinion claiming that “drilling is good for the environment” (DC 11.16.2013). She expresses disappointment that women are “inundated with negative, often inaccurate information” (DC 11.16.2013) and have been susceptible to the “immoral tactics” of extreme environmental groups. Two writers,
one affiliated with a different women’s advocacy group, reject those claims by challenging the author’s efforts to protect families and the earth.

- “Colorado Women’s Alliance continues to encourage all women to research the science of fracking and push back on fear mongering and the half-truths these extremists are using to create angst in our local communities.” (DC 11.16.2013)

- “I am thrilled to hear that Colorado Women’s Alliance supports responsible energy development! Then I assume they are a big proponent of renewables such as wind and sun and would love to hear more about what they are doing to support initiatives in energy projects that will truly enhance the safety and well being of our communities and families.” (DC 11.19.2013c)

Following the election, the Denver Post reported on a survey confirming that women are less supportive of fracking. This may be an effect of gender differences in risk perception.

- “‘With a large gender gap,’ Quinnipiac reported, ‘Colorado voters support fracking for natural gas and oil 51-34 percent. Men support it 60-30 percent while women are divided with 42 percent for fracking and 38 percent opposed. Support is 80-9 percent among Republicans, 51-32 percent among independent voters, while Democrats are opposed 54-26 percent.’” (DP 12.08.2013)
Summary of the 2013 Colorado Ballot initiatives

Without fracking, oil and gas production from the Niobrara formation would not be viable. Residents along Colorado’s Front Range saw the proliferation and expansion of fracking operations in nearby Weld County and wanted to prevent the advance of fracking operations into their communities. Although precedent in Colorado held that cities and counties could not ban oil and gas operations, citizens in Boulder City, Lafayette City, and the City and County of Broomfield attempted to do so using public action, petitions, and ballot measures.

This case study is a local issue in which the opponents to development lived in the area in question and had a personal stake in the outcome. Some people, and a majority of those who voted in these towns, found fracking to be an unacceptable risk. They feared that their homes, health, and families would be endangered if fracking was allowed to take place. As stakeholders, they wanted to protect their communities. They constructed the idea of community rights as fundamental human rights, akin to civil rights.

Other people saw the fracking bans and moratoria as threats to jobs, economies, and property rights. There was risk for communities in attempting to restrict fracking. The governor of the state, John Hickenlooper, had threatened to sue Colorado municipalities that attempted to regulate or ban fracking. It was no idle threat. The state regulatory agency for oil and gas, COGCC, had joined an industry lawsuit against Longmont, Colorado to overturn a measure passed there in 2012.

The members of the public and the politicians who aligned with the anti-fracking movement perceived fracking to be a risk to health, safety, air, water, and the
environment. They saw the industry and their own state government as risks to their communities’ rights to self-determination and autonomy. Insofar as the local governments refused to take action, they became risks, too. Although the state claimed the authority to force a community to accept fracking, that power did not seem fair or ethical to people who believed the government should follow the will of the people. Aware of the risk of lawsuits, they believed the state should be challenged. It was important to many citizens and a few politicians to make the statement, legal or not, that they did not want fracking in their cities or near their homes.

Most lawmakers who participated in discourse argued against the regulations on the grounds that the cities would be taken to court. They were, in part, correct. Lafayette and Fort Collins, another Colorado city that passed a ballot measure in 2013, were named in lawsuits within weeks of the election. The courts decided against Lafayette, Longmont, and Fort Collins in 2014, and the Colorado Supreme Court upheld the ruling in 2016. Boulder and Broomfield were not sued, but their fracking regulations were also rendered invalid.

As a former petroleum geologist, the governor might have been in a position to help explain the risks and benefits of fracking. Indeed, he made attempts to educate the public. Although he professed neutrality, his background as an industry employee, his assertions that fracking is perfectly safe, and his threats to sue Colorado cities destroyed his credibility with people concerned about fracking.

One of the principal arguments over fracking revolved around the problem of health and safety risks. Those who defended fracking insisted that it has been in use for many years with no demonstrable health risks. They used this as evidence that fracking
must be presumed safe. This represents a social rationality that relies on common sense, tacit knowledge, and a desire for certainty. It is also an argument useful to political rationality, particularly in a regulatory system that demands evidence of harm to justify restrictions. Fracking opponents challenged the assumption of safety, making claims to scientific proof, relaying informal knowledge, and sharing personal examples of health problems attributed to fracking. This reasoning also invoked a social rationality. In the face of so much uncertainty, the possibility of risk translated into the presumed likelihood of harm. The issue of safety went unresolved, with each side of the issue asking the other to show unequivocal, scientific proof of safety or harm.

Claims from proponents that fracking is safe did nothing to assuage fears that neighborhoods would be industrialized. The fracking supporters gave little notice to concerns over noise, lights, odors, and reduced property values. Instead, the debate was primarily defined by health and safety risks and the rights of different entities.

Conflicts involving rights took several forms. State rights were in tension with cities’ and county’s right to govern under home rule authority. Communities clashed with their governments over the duty to protect the health, welfare, and safety of citizens. Community rights come up against corporate rights, and surface rights were in conflict with mineral rights. The ideals of democracy, the will of the people, and constitutionally guaranteed rights and freedoms were all involved in the assumptions, figured worlds, and rhetoric of competing discourses.

For those opposed to fracking, the uncertainty about its effects, the secrecy of the industry, and the relatively recent technology made fracking an unfamiliar risk. The uncontrollability, potential severity, and irreversibility of fracking harms made it a
dreaded risk. Their inability to stop the invasion of fracking made it involuntary. These are psychometric characteristics that contribute to the perception of high risk.

Politicians were divided over the risks to the cities and counties. On one side was a small group that believed politicians should protect their constituents by standing up for community rights and following the will of the people. The opposing politicians wanted to protect the community from the risk of expensive and protracted legal battles over fracking bans with the state and the industry. They also saw regulation as a threat to property rights, jobs, and economic prosperity.

Some of the local politicians expressed opposition to fracking in their cities, but felt that the ballot initiatives were the wrong approach. These individuals were not necessarily in favor of fracking, but they were unwilling to try to control it with bans and moratoria. Instead, they tried to slow and control the advance of fracking with alternative measures such as road fees, increased inspections, and other forms of red tape. When the anti-fracking movement gained momentum, politicians instituted temporary moratoria although they denied the influence of public pressure.

The discourse of the pro-fracking public included a number of arguments, although none were particularly compelling or well-honed. It argued for the economy and jobs benefits of fracking, the property rights of mineral rights owners, and claimed that fracking would help bring about energy independence. For a time, it claimed that fracking was the gateway to a clean energy future. The storyline’s rhetorical strategy involved the allegation that the public had been willfully deceived by anti-fracking activists. Vilifying activists as lying extremists was a mechanism to attenuate competing messages and destroy the public’s trust in the activists’ motives and education efforts.
The contest between homeowner rights and mineral rights was a part of the rhetoric for pro- and anti-fracking discourses. The discourse of those who supported fracking—public, politicians, and industry alike—challenged the legality of the regulations on the basis that mineral rights are property rights guaranteed by the U.S. Constitution. Banning fracking would be an unconstitutional taking of those rights without compensation.

The HSCR discourse claimed that the rights of corporations to access and profit from minerals should not be more important than a citizen’s property right and personal investment in their home. Late in the case study, the issue of mineral rights reappeared as pro-fracking storylines asserted that Colorado families with ownership of mineral rights will be harmed if fracking is banned.

The argument that people should buy up mineral rights to prevent fracking is a short-lived one, due to Jared Polis’ conflict with fracking. His experience was a vivid illustration of how a homeowner can be affected by the decisions of others. He also showed the public how little say the public has when industry wants to develop, and how ineffective state regulators can be.

The industry’s position was voiced by professional representatives who attempted to control the conversation about fracking. Their discourse was lithe and adaptive, frequently reframing their objections to fracking regulations. As for risks, the Industry storyline presented several perspectives. At the heart of them all was the risk that if ballot measures passed, the oil and gas industry would be unable to access resources in the area. Spokespersons claimed that bans were a risk to citizens because they would forego the benefits of oil and gas jobs and economic vitality. The industry discourse also attempted
to discredit activists by calling them hypocrites for benefitting from fossil fuels but opposing their extraction.

Industry representatives worked hard to attenuate the negative publicity of untimely events. Jared Polis’ grievances and the floods in September put the industry on the defensive. The petition drives, locally-approved moratoria, and passage of ballot measures were defeats for the industry. COGA invested heavily in stopping regulation through sponsorship of anti-initiative groups and lawsuits. In matters of law, the industry lost the lawsuits over procedures but ultimately won the fight over the legality of local fracking regulations.

What is notable about the industry’s approach is that it initially sought public approval of fracking as a mandate on the social license to operate. This is evident in the stories of communities living in harmony with the industry, the assertions of the benefits of fracking, and the declaration of a desire to de-polarize the issue.

Industry wanted a social license to operate, but it wasn’t a necessity. Throughout the case, the industry held power, money, and ability to litigate. The governor was on its side, and ultimately, so was the law. The values expressed in the Industry storyline were dressed in concern for the cities and mutual understanding while it tried to dissuade the public and politicians from opting for regulations. In the end, the industry resorted to legal action to enforce the prioritization of corporate access to mineral resources over community wishes and homeowner’s rights.

Industry and both public discourses claimed that people needed to be educated about fracking. They expressed a need to correct the misinformation coming from competing discourses. It was assumed that once people understood the truth, they would
support whatever position was being advocated. The deficit model of risk communication
was present on both sides of the issue. Both pro- and anti-fracking participants professed
to know the truth.

Supporters of fracking took the position that fracking would be bring economic
benefits and create jobs. This argument may have merit, but in Boulder and Broomfield
counties, oil and gas were not important sectors of the local economies. Fracking
opponents claimed that fracking would harm existing job and economic drivers, such as
tourism, recreation, and amenity lifestyles. It may be that voters felt that the threat to the
existing economic activities outweighed the risk of a lost opportunity.

There were two discourse coalitions evident in this case study. The first was
among the HSCR public and the HSCR politicians. They applied different rationalities
and used slightly different discursive agents. They recognized the same risks and framed
the problem in parallel ways.

The second discursive coalition was between the Industry and the Pro-Fracking
Public storyline. This alliance may have been based on ideology, but it was most
certainly based at least in part on financial support. They attacked fracking opponents in
the same ways, and they assumed that the reasonable members of the public only need to
be educated to inoculate them against false claims about fracking. The negative goal
framing of foregone gains was common to both. The PFP storyline defended the industry
against unfair treatment. Both storylines appealed to social rationality, although the
Industry storyline attempted to appear politically rational.
CHAPTER 8
CONCLUSIONS

Modern societies depend on the concentrated, high-quality, inexpensive energy supplied by fossil fuels. As the best resources are depleted and energy becomes more expensive and difficult to produce, there is an impulse to turn to technology and previously unusable sources of oil and gas in order to maintain supply. The choice to develop—or not develop—resources such as oil shale, tar sands, and tight oil and gas comes with a variety of perceived risks.

In making decisions, risk experts and policy makers are often at odds with the public over the evaluation of risks. The public’s perceptions have been assumed to be uninformed, uneducated, irrational, and overly emotional. The disparities between public and expert judgments of risk are often blamed on a deficit of information and science literacy. Given that definition of the problem, the logical solution was to attempt to inform and educate the public.

This deficit approach has been largely unsuccessful in resolving the differences in risk judgments. It neglects the public’s interest in the outcomes and potential contributions as part of an extended peer community. Public participation is an important part of democratic processes of governance. Risk perceptions contain important sociocultural values and meanings that are not supplied by science alone.

The purpose of this research is to contribute to an understanding of energy-related risk perceptions through the analysis of discourse, frames, and content in three case studies. This work was based on theories of discourse that propose that knowledge is
created through the interactions of people in social and historical contexts. Qualitative analysis provides insight into the processes of social construction that contribute to knowledge about energy and perceptions of risk. The case studies have explored how discourses present different accounts of risk and compete for acceptance as truth.

There are several things this work was not designed to do. Its intended purpose was to study socially shared understanding of risk, not to study any single individual’s risk perceptions. It does not endeavor to determine a dominant discourse, nor does it attribute causality for the outcomes of the cases to the success or failure of any discourse. Finally, there has been no attempt to compare perceived risk with “true” levels of risk.

**Description of the Research**

This research was conducted through qualitative analysis of discourse, content, and framing of texts in three case studies. The object of analysis was the communication of risks in energy development decisions. Texts for the case studies came from publicly available newspapers and archives of public comments.

This approach to the study of risk perception used a novel combination of research tools, techniques, and theories. The SARF furnished a conceptual framework consistent with a social constructionist approach, and theories of risk perception were applied in the interpretation of the texts. Findings have been presented in a storyline format that provided a structure for the discussion and comparison of discourses within and across case studies. Analysis has also included discussion of the worldviews, rationalities, and goal framing represented in the storylines.
Qualitative analysis of language in use was the primary approach to this research. Discourse analytic tools and methods were supplemented with the quantification of content. Limited quantification of content has been included in the analyses of the PEIS case studies.

The news reports that composed roughly half of the texts in the CBM case study contained mixed perspectives and unrelated content. Due to the nature of those texts, word counts and percentages were of limited value. Quantification was only used in the early exploration of the data, and it was not included in the write-up of analysis.

Descriptions and evaluations of groups of texts captured content, context, and meaning, but this is not the sole function of discourse analysis. Analysis must also consider how a discourse functions to create meaning and strives for acceptance as truth in the face of competing discourses. The tools selected for this analysis of discourse came from the work of Hajer (1995), Dryzek (2013), and Gee (2011, 2014). The social creation of risk was also evaluated through the perspectives of goal framing (Levin et al., 1998), rationalities (Garvin, 2001), and cultural worldviews (Dake, 1990, 1991, 1992; Kahan, 2012b; Kahan, Jenkins-Smith & Braman, 2011; Thompson et al., 1990; Wildavsky & Dake, 1990). Seven elements of discourse were evaluated for each storyline. Six elements were included for all case studies. For the seventh, worldviews were evaluated in the PEIS discourses, and rationalities of the discourses were described for the CBM case.

In the PEIS storylines, risks were constructed as encompassing a broad set of energy issues beyond the OSTS decision. Those risks involved global concerns such as international trade, the world economy, and climate change. In the CBM storylines, risks were tied to social structure, values, and rights. These differences may be a function of
resources, technologies, scale of the decision, proximity, personal exposure to risks, or a combination of factors.

**Application of the SARF**

The SARF was adopted as the conceptual framework for the construction of social knowledge of risk. Each case study can be understood as a product of repeated iterations of the SARF. For example, concern over risks to the environment drove the creation of NEPA. NEPA, in turn, led to a process for evaluating making decisions about environmental risks. The national government passed the Energy Policy Act of 2005 in response to energy risks. It defined certain problems and initiated processes intended to provide solutions. The 2008 PEIS was required as a result of its enactment. The 2012 PEIS arose from new information and the recognition of risks that had not been adequately addressed in the 2008 decision.

At the outset of research, the SARF was used to examine the sources of information, social stations, individual stations, and behaviors identified in Figure 4.1. The texts came from direct communications to government agencies and mass media news publications. Content was analyzed for descriptions of risk cognition in social contexts. The texts under analysis were designed to promote political and social actions and to elicit behavioral and organizational responses. Communications took place within social processes of orderly rulemaking and the disorder of conflicting perceptions of risk. These parts of the SARF are circled in blue in Figure 8.1.
Figure 8.1. Components of the SARC Found in Use in Case Studies. Adapted from Kasperton, R.E. and Kasperton, J.X. (1996).
The discourse in these cases was found to include additional pathways and interactions between components of the SARF. These new dimensions are circled in orange in Figure 8.1. The structure, content, and language use in the texts indicated the influence of opinion leaders, volunteer organizations, and cultural and social groups in the generation of social knowledge of risks. The content of texts provided evidence of intuitive heuristics as well as the cognition, evaluation, and interpretation of information through cultural worldviews.

Some authors described individual senses as part of their creation of knowledge about risks. These included the appreciation of beauty, the smells and noise of oil and gas operations, and physical experiences of illnesses. Social networks, both formal and informal were in evidence as important factors in creating and circulating knowledge of risks. Professional information brokers were also found to play significant roles, although they did not always do so in the public view.

There were significant differences in the case studies with respect to advocacy groups. In the PEIS cases, national and regional groups conducted letter-writing campaigns and produced petition-style submissions. Those efforts appear to have made members of the public aware of the PEIS comment window and helped inform them about possible risks of the OSTS decisions. Most of the campaign form letter submissions came from anti-development environmental groups. There also appears to have been one or more pro-development organizations that encouraged and influenced the pro-development letter writing campaigns.

In contrast, during the fracking debate in Colorado, families and neighbors banded together to form groups that addressed the local issues. Groups such as Our
Broomfield and East Boulder County United were grassroots organizations. Local chapters of national groups, state-level organizations, and anti-fracking activists from other states had minimal involvement. To counter the anti-fracking message of local activism, pro-development groups were formed with industry support.

Advocacy groups, regardless of position or case study, appear to have played significant roles in disseminating information, activating the public, and engaging politicians. They created messages and encouraged the public to amplify them. In the CBM case, groups were important forces for both the amplification and attenuation of messages.

The SARF does not independently propose testable relationships. It must be combined with other theories for explanatory or predictive potential. The SARF is meant to bring competing theories and small-scale models into a single framework to provide structure, facilitate comparative interpretations, and stimulate new questions.

In this respect, the SARF has provided a conceptual map for discursive processes, facilitated the interpretation of discourse using various risk theories, and prompted new research questions, as discussed below. The observed connections and relationships in these case studies demonstrate the usefulness of the SARF for this type of research. Had the SARF been an inappropriate conceptual model, evidence of new connections, feedback, cycles, and impacts might not have appeared.

**Discourses Present in Case Studies**

The first research objective was to analyze and characterize discourses present in the texts. This analysis described a total of 18 storylines in the three case studies.
Discourses were differentiated by the perceived risks expressed in the texts, the storyline elements, and the underlying assumptions.

In the 2008 PEIS case study, analysis yielded six discursive storylines. Four storylines explicitly opposed OSTS development, and one supported it. The sixth storyline claimed that there was insufficient evidence to make a decision to allow the expansion of OSTS development. The premise of the argument would suggest that unbiased evidence should guide the decision. However, word choices and the types of information thought to be missing indicate an assumption that the missing evidence would show unacceptable levels of harm, leading to the conclusion that development should be limited.

The discourses emphasized different risks in their arguments for or against allowing OSTS leasing. The close parallels between the content of texts and the campaign letters indicate that advocacy groups were a source for much information and knowledge of the PEISes and the risks associated with OSTS development.

The 2012 PEIS was a revisitation of the 2008 decision. It proposed alternatives that would either leave the 2008 decision in place or reduce the amount of land available for OSTS leasing in various ways. The 2012 PEIS case analysis produced seven discursive storylines. Three of these were closely related and expressed support for OSTS development. Four storylines opposed OSTS development. The texts in this case also reflect strong influences from organizations attempting to involve and inform the public by encouraging private citizens to amplify their messages.

In the November 2013 elections, three cities in Colorado included ballot measures to regulate fracking. The CBM case study of public discourse surrounding the push for
local regulation included five storylines of risk. There were two sets of closely paired storylines. The discourse of politicians in support of the measures was closely aligned with the general public’s anti-fracking discourse. The discourse of the pro-fracking public bore a strong resemblance to the discourse of the oil and gas industry. The fifth storyline came from the discourse of officials and politicians against local regulation of fracking.

The discursive storylines were named for the primary risks identified. Each case study’s discursive storylines are listed in Table 8.1. The Pro-OSTS and Pro-Fracking Public storylines defined the potential harms of not using the energy resources as the greatest risks. The Not Enough Information storyline claimed that a reasonable and responsible decision could not be made with the available information, thus OSTS development was too great a risk. The Industry storyline asserted that the industry itself would be at risk if it was regulated.

**Shared Dimensions of Discourse**

Across discourses, there were several fundamental social constructs that were so well understood they faded into the background and became part of the context. These ideas and shared assumptions about society, culture, and energy provided the foundation for additional layers of social meanings.

All discourses shared the construct of subsurface rock formations as energy resources. The debates in all case studies rest on the expectations that attempts will be made to produce energy from them. Without the commonly held belief that there will be interest and investment in exploration and/or production from those resources, there would be no decisions about development to be made.
Table 8.1. Discursive Storylines by Case Study

<table>
<thead>
<tr>
<th>Title</th>
<th>2008 OSTS PEIS</th>
<th>2012 OSTS PEIS</th>
<th>2013 Colorado Ballot Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better Options than Fossil Fuels</td>
<td>Anti</td>
<td>Pro</td>
<td>Health, Safety, and Community Rights</td>
</tr>
<tr>
<td>Irresponsible Government</td>
<td>Anti</td>
<td>Pro</td>
<td>Health, Safety, and Community Rights</td>
</tr>
<tr>
<td>Misuse of Public Lands</td>
<td>Anti</td>
<td>Anti</td>
<td>Industry</td>
</tr>
<tr>
<td>Not Enough Information</td>
<td>Anti</td>
<td>Pro</td>
<td>Lawsuits</td>
</tr>
<tr>
<td>Not Worth the Destruction</td>
<td>Anti</td>
<td>Anti</td>
<td>Pro-Fracking Public</td>
</tr>
<tr>
<td>Pro-OSTS</td>
<td>Pro</td>
<td>Anti</td>
<td></td>
</tr>
<tr>
<td>Unsafe for People on the Environment</td>
<td>Anti</td>
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</table>
Discourses drew on shared assumptions as taken-for-granted knowledge, but they constructed rival meanings around them that led to different conclusions about risks. For example, all discourses adhered to fundamental expectations that government, policy, and the burden of risk should be fair. What constitutes fairness was a source of great disagreement.

Storylines shared the assumption that more energy and new resources are necessary, but proposed different ways of solving the problem. Pro-development storylines advocated for the expansion of fossil fuel use through the development of unconventional resources as the solution to the energy problem. Environmentally-conscious storylines also accepted the notion that existing conventional resources will be insufficient and new ones must be promoted. They endorsed increased use of renewable energy resources and a transition away from fossil fuel dependence as the reasonable solution.

American identity and energy. The discourses in these case studies indicate that energy is intertwined with the American identity. Energy supports American ways of life, and people are aware of its importance. Risks that involve energy also threaten American ways of life. There was limited discussion of how energy contributes to daily life, suggesting that this knowledge is so embedded in understandings of U.S. culture that it does not need to be explained.

Energy development decisions were seen to present an opportunity for the United States to lead. Disputes among discourses occurred over which direction the country should lead. Some discourses were adamant that America should compete to develop OSTS technology ahead of other countries. They claimed that America could protect
itself by producing domestic energy and controlling its own energy destiny, along with energy prices. Doing so would ensure that the country’s position of world leadership remained secure.

Other discourses endorsed a different kind of leadership. These discourses pushed for Americans to lead the world by abandoning fossil fuels and transitioning to renewable energy. They claimed that the United States has a moral and ethical obligation to reduce its greenhouse gas output. The country could use its influence and innovativeness to help stop climate change and reduce environmental harms. Renewable energy resources, which were only occasionally combined with conservation, were assumed to be capable of sustaining both America’s ways of life and position in the world. Transitioning to renewable energy would provide leadership in terms of social progress, environmental stewardship, and sustainability.

These disparate visions of U.S. involvement with energy were important components of many of the storylines. One advocated for the country to become an energy leader through competition, the other encouraged a shift in resources as leadership by example. Both left in place the expectations of American leadership, influence, and even supremacy.

Part of the American-ness invoked in the arguments of discourses was connected to constitutional principles. These were assumptions about how American society should or does function. Democracy and property rights are two concepts enshrined in the U.S. Constitution and reinforced through the texts and actions of participants in the case studies.
Democracy. Democracy was a central facet of the American identity constructed in the discourses. The decisions about energy were represented as risks to democratic principles. The content of texts and the act of participating in the policy making process expressed the belief that people should have a say in energy development decisions. Discourses maintained that the will of the people should guide energy policy and risk governance. They also challenged government to represent and protect the American people’s interests instead of special interests.

It appears that people were acting on their democratic ideals when they submitted form letters to the BLM. That type of participation indicates efforts to amplify the messages of advocacy groups through numbers. It is also possible that some participants interpreted the comment process to be a public vote.

In the CBM case study, citizens demonstrated a desire for a democratic process in energy policymaking. People attended public meetings to provide input. When elected leaders were reluctant to follow the will of the people, voters took the matter into their own hands thorough petitions and ballot initiatives. The belief in a representative government was present in all discourses. The disparities came from different views on the role of elected officials and the interests they should be protecting.

Fairness. Along with democracy, there was an overarching expectation of fairness evident in discourses. In discussing fairness, discourses focused on explanations of what was fair or unfair about their positions. They did not directly confront opposing arguments about fairness. For example, the HSCR discourse in the CBM case stated that oil and gas operations unfairly impinge on property rights, but they did not address the fairness of preventing the use of mineral rights by people and entities that own them.
Discourses did not present guiding ethical principles for their arguments; they instead focused on subjective judgements of fairness.

**Progress.** Progress in various forms was expected and taken for granted in every discourse. Industry, pro-development, and anti-development storylines all presumed technological progress will make new possibilities available and will clear the path for their preferred energy resource. Whether advances come in the form of intensified renewable energy production, efficiency, or extraction techniques, there was an expectation of continuous improvement. Where technology did not yet exist, as with oil shale and tar sands, progress would make commercial production possible. Where technology did exist, as with fracking and renewables, innovation would make resource use safer, cleaner, and cheaper.

Progress was also anticipated in science and research. Both pro- and anti-development discourses expressed the belief that new and improved research will provide better information for the evaluation of risks. It was an underlying assumption in all discourses that thorough, unbiased, and comprehensive science will provide unequivocal proof of safety or harm. This was true even for the Not Enough Information storyline, in which the basic argument came closest to a scientific rationality.

Expectations of progress were not limited to engineering and technology. Some discourses constructed social progress as the evolution of culture and values in ways that will lead people to protect the environment and conserve resources. Pro-development discourses required progress to support narratives of rivalry for technological supremacy, production, and position which must be undertaken at the risk of falling behind.
Opponents of a discourse were often portrayed as being roadblocks to progress. Most anti-development discourses portrayed further investment in fossil fuels as regressive and preventing sustainable resources from being developed. Pro-development discourses claimed that opponents were unreasonably opposed to the resources in question, and desired only to stop technology, economic expansion, job growth, energy independence, and all fossil fuel use.

Trust. There was a notable lack of trust evident across cases and discourses. Participants in discourse did not trust governments to protect them, and they did not trust each other to make reasonable choices. Pro and anti-development discourses expressed distrust in the opposition’s information and motives. Anti-development discourses mistrusted the oil and gas industry and any person or entity affiliated with it. There was friction over what information and people were credible, but it was the perceived untrustworthiness of the government that provoked moral outrage.

Discourses in all three case studies made government a risk, largely on the basis that the people and institutions of government cannot be trusted. Government was seen as a primary source of risk in the Misuse of Public Lands, Irresponsible Government, HSCR, Regulations Hurt Local Economies, and Unfair Obstacles discourses. In the CBM case, trust was a powerful mechanism for attenuation of competing discourses. By undermining the public trust, discourses attempted to discredit sources of information. This strategy was used by the Industry and Pro-Fracking Public discourses to attenuate unfavorable events and local governments, and in the HSCR discourse to discredit the state government, the governor, COGA, COGCC, and the Industry rhetoric.
The idea of science itself appeared to be trusted in discourses, and there was an overall desire for more research and evidence. There was frustration that scientific studies were not being conducted more quickly or comprehensively. Bias in science was seen as the fault of researchers and industry. Scientists might be accused of ignoring important evidence, and at times portrayed as indifferent to suffering, but there was still overall confidence in science as an institution crucial to understanding and regulating risks. Industry-produced science was less trusted, although there was little discussion of the origins and sources of information.

**Government.** In one form or another, government was considered to be an agent in most discourses. The BLM was an extension of the federal government in the PEIS cases. The CBM case involved city, county, state, and federal governments, with Governor John Hickenlooper and the COGCC also representing the state government. Governments were frequently understood to be allies of the oil and gas industry. This led to strong criticism from anti-development discourses but only conditional praise from development proponents. As a regulator, government was regarded by anti-development discourses to be ineffective and irresponsible.

Notions about how government should operate were part of the figured worlds that discourses projected. Deviations from those ideals were grounds for mistrust and moral outrage. Assumptions and rhetoric revolved around who and what should be protected, from what, and whose interests the government should represent.

The government was expected to resolve a range of philosophical dilemmas that included the good of the many versus the good of the few, public versus private interests,
conflicting constitutional interpretations, and the role of the government itself, all within the setting of these energy development decisions.

The motivations attributed to government varied. Those attributed to the BLM ranged from fulfilling its mission to protect the land and serve the public interest in the Too Much Destruction discourse to participation in corruption and greed in the Misuse of Public Lands discourse. In the CBM case study, the governor personified the voice of reason for fracking supporters and the corrupt politician for fracking opponents. City and county governments were seen as swayed by extremist views or as noble defenders of private citizens against corruption, money, and power.

All discourses expressed the expectation that government should provide comprehensive energy policy. There was a widespread assumption that government is responsible for the energy supply, energy security, and stability in the energy markets. Use of public land and public resources was expected to be part of that role, but there was disagreement over the energy resources that should be developed and promoted through policy.

**Property rights.** Property rights hold a prominent place in the cultural ideals of American-ness and democracy. Whether property was thought of as public lands, mineral rights, or private homes, discourses were concerned with the ownership and control of property. Constitutional protections for private property were the subject of arguments in the CBM case. These arguments hinged on the Fifth Amendment, which states that no person shall be deprived of property without due process of law. In the PEIS cases, discourses argued that the government and the BLM have a duty to be responsible custodians of public lands, ensuring that they are used for the public good. Pro-
environmental discourses viewed this obligation as the protection and preservation of the land and water, ecosystems, and public use. Pro-development discourses argued that use of the land for energy production is the greater good and will yield public benefits.

**Domestic energy.** Another point of commonality was the assumption that domestic energy resources are preferable to imported fuels. Reasons for this preference varied among discourses, but all seemed to see benefits in terms of the supply of energy and the security of that supply. Pro-development storylines included national security, international competition, and foreign control of the global supply of petroleum in their reasoning. Anti-development storylines encouraged transition to renewable energy sources, which would be produced locally or regionally.

**Energy.** Energy was widely expected to be plentiful, cheap, and readily available. To a great extent, energy was treated as a generic entity. Types of energy were not well differentiated in these discourses. Storylines tended to assume that all forms of energy are substitutable. Wind and solar power were proposed as alternatives to oil and gas without attention to the advantages of liquid fuels or the challenges and costs of such a substitution. This was particularly true in the PEIS case studies, where entire storylines were built on the assumption that renewable energy can simply take the place of fossil fuels. The purposes and applications for different fuels went largely ignored. The exception to this was in the CBM case study, where natural gas was recognized as used for heating and electricity generation.

**Economy.** The rhetoric of jobs and economic benefits presented a simplified assessment of the impacts of oil and gas. Such arguments took a very narrow view of one isolated sector of the economy. There were some attempts to highlight the impacts of
development on other facets of the economy, such as recreation and tourism, but they did not become prominent themes in anti-development discourses. Jobs and economic benefits were one of the few areas where a specific study was referenced in arguments. In the CBM case, pro-development discourses pointed to the study conducted by the Leeds School of Business\textsuperscript{25}. This study provided an argument for allowing local development on the basis of statewide benefits. Perhaps for this reason, or perhaps because people simply did not trust the findings, the attention the study received was short-lived.

The argument for the economy and jobs painted a picture of the benefits, to the near exclusion of any risks. The possibilities of future economic fluctuations or boom/bust cycles were not part of this mental model, even though those patterns had been part of the local and national experience. Perhaps because of the rising trajectory of energy prices, discourses included little discussion of the risk of a bust following an energy boom. The one pro-development discourse to address busts was Regulations Hurt Local Economies, where texts explained that bust cycles are problems of the past and are no longer possible. This may be an instance of the inverse relationship of risks and benefits in perception, where risks are perceived to be low when the perception of benefits is high (Alhakami & Slovic, 1994; Finucane, Alhakami, et al., 2000).

**Industry.** Industry straddled two elements of discourse; it was constructed as both an agent and an entity. In most PEIS discourses, it was a powerful force but not an active participant in public discourse. In the CBM case study, the industry played a significant

\textsuperscript{25}This study was later found to have undisclosed industry sponsorship and control.
role but companies remained anonymous agents, acting through COGA as the primary representative.

The oil and gas industry portrayals by anti-development storylines tended to be of an entity that is powerful, greedy, reckless, uncaring, corrupt, and corrupting. Pro-development discourses focused on the industry as an economic driver, provider of jobs, and an instrument of energy/national security. There was very limited discussion of industry as a provider of energy products.

**Patterns observed in discourses.** Across all case studies, there were patterns to discourses that appear to be connected to the proximity of the perceived risks. When dangers were thought to be close in time or space, discourses constructed gas and particle emissions as pollution risks. When dangers were distant, the same types of emissions were considered climate change risks. Families were in danger when risks were near, while remote risks were threats to future generations.

When risky activities were considered to have local impacts, grassroots advocacy groups formed and citizens worked to educate each other. For larger scale and more distant developments, national groups assumed the role of informing the public about the decision and educating them about the risks.

In the CBM case, discourses used rhetoric claiming that proponents of competing discourses were uneducated. Discourses assumed that only those in agreement possess the necessary knowledge and information to make sound judgments. They stated a desire and an obligation to educate others as to the true nature of the risks. Educational efforts were seen as dishonest and manipulative propaganda by the opposition. Attempts to
apply the deficit approach to risk communication were not well-received, regardless of the source or position on development.

In all three cases, environmentalists were consistently demonized by the pro-development discourses. As the enemy, environmentalists were portrayed as unreasonable, extremist, and regressive. Even in the CBM case study, where the main argument for fracking regulation did not focus on the environment and environmental groups were minimally involved, environmentalists were constructed as the adversaries. Anti-development activists were labeled environmentalists, but the discourses held no equivalent term for pro-development activism.

Labelling opposing activists as outsiders was a widely-used approach to attenuating competing messages. Outsiders were constructed as having ulterior, hidden motives. Outsiders do not understand the local people, needs, or issues, and have no right to meddle. The outsider accusation seemed to have traction when applied to anti-development activists, but was less effective when applied to pro-development activists or industry.

**Inconsistencies.** In some discourses, the underlying assumptions were inconsistent with the arguments presented. The rhetoric of the Environmentalists Have Hijacked the System discourse maintained that the system of government that produced the decision in the 2008 PEIS worked correctly. It claimed that the requirement to conduct a new PEIS undermined the orderly decision-making process. This position did not recognize the courts as part of the checks and balances that constitute that same system of government. To declare that the system had been hijacked by extreme environmentalists using the judicial system was inconsistent with the assertion that
government should be left to function unimpeded. Furthermore, pro-development forces brought the same legal system to bear against the cities and counties in the CBM to prevent passage of fracking regulations.

There is an argument for local control that is applied inconsistently by pro- and anti-development discourses. In the PEIS case studies, pro-development discourses maintained that control over resources should belong to local people. In those cases, the anti-development discourses accepted the authority of the federal government over the decision.

In the CBM case study, the anti-fracking discourses advocated for local authority and autonomous decision-making. They claimed that the state has no right to dictate policy over matters of local concern. The pro-development discourses argued against both local control and federal authority. The situated identities embraced by discourses suggest a strategy of scaling down to claim the right to local control. American identity was countered by the Western Slope identity; Coloradan identity was offset by city identity. What was considered the right and fair location of decision-making authority was conditioned by position and affiliation.

**Changes in Discourse, Framing, and Content of Energy-Related Risks Over Time**

Discourses are set in social, cultural, and historical contexts that condition the production, dissemination, and interpretation of texts. As the contexts change, discourses change. Discourses also change in response to the actions of others and the adaptations of
competing discourses. They may incorporate new information, blend with other discourses, or undergo change from within.

The two PEIS case studies provided an opportunity to observe change across several years using two snapshots in time. They offered a diverse set of discourses and risk perspectives for analysis. The CBM case study showed the ongoing processes of meaning-making. Discourses changed and adapted with attempts to construct, amplify, and attenuate messages about risk. Together, the case studies show how discourses can bridge time and issues.

In its concern about risks to the climate, future generations, and the environment, the Better Options than Fossil Fuels in 2008 was paralleled in 2012 by the Stop Climate Change discourse. The Irresponsible Government discourse of 2008 also projected risks to the planet, environment, and climate. Attention shifted from the perceived motivations and misdeeds of the BLM and government agents in 2008 to impacts and the actions of companies in 2012. The Unsafe for People and the Environment discourse applied social knowledge of fracking in its construction of OSTS development risks. It was analogous to the HSCR discourse that arose in the CBM debate a year later.

The Pro-OSTS discourse of 2008 divided into three closely-related discourses in 2012, all of which show signs of being influenced by industry. In the 2013 CBM case, the industry, through its representatives and associations, became a participant in pro-development discourse. It also sponsored the public groups in support of industry with contributions and expert consultants.
Changes in the PEIS Case Studies

The 2008 PEIS comment period occurred when energy prices and demand were high and climbing higher. In the time between the 2008 and 2012 PEIS comment periods, the country went through an economic crash and the beginnings of a recovery. Energy prices dropped briefly during the downturn. By 2012, energy prices were close to pre-crash levels. Unemployment was high, and in most counties in the OSTS region, rates were higher than their state averages. Discourses in 2008 focused on the need for a decision that would create more energy. In 2012, anti-development discourses concentrated on environmental and resource risks, while pro-development rhetoric stressed the need for a decision that would support local economic drivers.

The vast majority of pro-development comments in 2012 came from Colorado. They focused on oil shale resources, most of which are located in Colorado. This, too, may be a result of the joblessness and economic stress in the OSTS region. It is possible that the potential for oil shale to improve local economies and personal circumstances motivated people to participate in discourse and the PEIS decision-making.

The 2008 and 2012 PEISes addressed two resources – oil shale and tar sands. The discourses emphasized tar sands in 2008, but focused on oil shale in 2012. These shifts in discourse were likely the result of changes in energy supplies and social knowledge of energy. In 2008, oil production from Canadian tar sands was a relatively new contributor to the global energy supply. By 2012, shale oil and gas produced with horizontal drilling and fracking technology were the energy newcomers. Neither of these resources is an equivalent of the oil shale and tar sands resources that were under consideration in the PEISes. Nevertheless, it is evident in the texts that the social knowledge of Canadian tar
sands and shale oil and gas was applied to the evaluation of OSTS risks and benefits. This is indicative of heuristics at play, as discussed below.

Anti-development discourses in 2008 and 2012 were concerned with resource consumption, particularly the energy and water that would be required for OSTS production. In 2008, energy inputs were a primary target for arguments. In 2012, there was more emphasis on water. This difference is likely due in part to the tight energy markets in 2008. The beginnings of the widespread drought of 2012-2013 may have played a role in the concern over water in 2012, although the drought is not referenced in the texts that were sampled for the case study.

Changes in the CBM Case Study

There were frequent events in the CBM case study that compelled discourses to adapt and respond. Jared Polis’ fight with the energy company drilling on his neighbor’s property rippled throughout the case study. His complaint, legal filings, and public statements put the Industry discourse on the defensive. It responded by painting Polis as unreasonable, elitist, and attention-seeking. The Industry discourse scrambled to reassure the public and minimize the impacts of floods that inundated fracked oil and gas wells. One of the ways Industry discourse, along with the governor, tried to attenuate the messages of risk was to point out other risks that the public was not concerned about. The Industry discourse adopted the message that fracking is well-regulated and that operators cooperate with COGCC to ensure that there are no risks.
With the incremental successes of anti-fracking groups, the Industry and Lawsuits discourses amplified the message of state authority. Those storylines escalated the risk of lawsuits as cities, counties, and citizens proceeded toward passage of ballot measures. For the citizens opposed to fracking, the hesitation of local governments to produce regulations underscored the vulnerability of cities. This prompted a rhetoric of policy makers’ responsibility to represent the interests of the citizens. Recognizing that there was little political will to stand up against industry interests and the governor, citizens rallied for community rights. What had been a discourse of public health, safety, and environmental concerns became one of the right to self-determination through a democratic process. The complaint filed against Lafayette over the ballot measure petition language suggested disregard for the rights of citizens and cities. Threats to democracy gave rise to the will of the people as part of the rhetoric of anti-fracking discourses.

After passage of the ballot measures, the Industry discourse responded in multiple, somewhat contradictory ways. Spokespersons attenuated the victory by claiming it was only symbolic. Within weeks, industry groups filed lawsuits against towns over election procedures and results. This response suggests that the industry perceived the cities’ measures to be a greater risk than public statements claimed. Finally, the Industry discourse retrenched in a deficit model of risk perception as it resolved to increase public education efforts in the future.
Worldviews

The evaluation of worldviews applied Cultural Theory and cultural cognition theory. Cultural worldviews were evident in the PEIS cases, where discourses dealt with a more tightly-defined problem and set of possible solutions than in the CBM case study. For the PEIS case studies, discourses evaluated the alternatives proposed by the BLM for conformity and conflict with pre-existing ideas about nature and government. The choices were well-defined, although discourses did not always accept the range of choices the BLM presented. Several discourses redefined the problem and proposed new solutions that better fit their underlying assumptions and worldviews. In contrast, participants in the CBM case constructed their own problem definitions and set of solutions. CBM discourses focused on persuasion, reasoning, and rationality.

Discussions about the role of government and attitudes about nature provided valuable information for assessing worldviews. Ideal roles for government were used to gauge the group dimension, and attitudes about nature helped assess cultural worldviews embedded in discourses. The cultural worldviews are presented in Table 8.2.

In the PEIS case studies, the group dimension of cultural worldviews appeared to be most pronounced, with some fluidity and exchange across the grid dimension. Prioritization of the freedom of businesses and markets was a sharp contrast to the belief that government should provide protections and set limits. The communitarian-individualism divide may have been at the root of conflicts among discourses.
Table 8.2

*Cultural Worldviews of the PEIS Discourses*

<table>
<thead>
<tr>
<th>Storyline</th>
<th>Worldview</th>
<th>Case Study</th>
<th>Position on Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Worth the Destruction</td>
<td>Egalitarian Communitarian</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Stop Climate Change</td>
<td>Egalitarian Communitarian</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Unsafe for People and the Environment</td>
<td>Egalitarian Communitarian</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Irresponsible Government</td>
<td>Communitarian, mixed Hierarchical and Egalitarian</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Better Options than Fossil Fuels</td>
<td>Communitarian, mixed Hierarchical and Egalitarian</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Not Enough Information</td>
<td>Hierarchical Communitarian</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Protect Parks</td>
<td>Communitarian, indeterminate Grid</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Too Many Resources to Gamble</td>
<td>Egalitarian Communitarian</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Misuse of Public Lands</td>
<td>Hierarchical Communitarian</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Pro-OSTS</td>
<td>Individualism, mixed Hierarchical and Egalitarian</td>
<td>2008 PEIS</td>
<td>Pro</td>
</tr>
<tr>
<td>Regulations Hurt Local Economies</td>
<td>Hierarchical Individualism</td>
<td>2012 PEIS</td>
<td>Pro</td>
</tr>
<tr>
<td>Environmentalists have Hijacked the System</td>
<td>Hierarchical Communitarian</td>
<td>2012 PEIS</td>
<td>Pro</td>
</tr>
<tr>
<td>Obstacles are Unfair to Companies</td>
<td>Egalitarian Individualism</td>
<td>2012 PEIS</td>
<td>Pro</td>
</tr>
</tbody>
</table>
The inequity in the distribution of risks and benefits violated the principles of fairness that are important to communitarians. The widespread imposition of risks for the benefit of private companies was objectionable, especially when it involved the use of public resources. Fossil fuel development was perceived as a source of involuntary risk for people who say they want renewable energy and were not being given that choice. Individualists believed that the government’s meddling and regulations were a waste of time and money. Financial gain was seen as a just reward for the investment and risk of producing much-needed energy. Development was understood to provide indirect benefits to society in the form of healthy economies, jobs, energy supply, national security, and energy independence.

Communitarians and individualists both invoked American ideals in their arguments. Their priorities were different—public and environmental protections on one side, with free market capitalism on the other—but they were nonetheless grounded in a shared understanding of an American ethos and democratic principles. This could be important information for scientists and politicians interested in reducing polarization. It may point toward ways to communicate about science and risks that avoid biased assimilation, identity-protective cognition, and cultural availability bias.

The level of engagement that advocacy groups were able to generate and the amplification of their messages indicate that such groups were trusted by many people. Their successes lend credence to the cultural credibility heuristic (Kahan, 2012a; Kahan et al., 2010). Advocacy groups educated and activated like-minded people who shared a given identity, strengthening the idea that “people like us” take a certain position on OSTS development. This is likely to have prompted discourses that expressed strong
worldviews, which in turn might have reinforced or produced biased assimilation, identity-protective cognition, cultural availability bias, and polarization.

**Worldviews in the CBM case study.** The worldviews in the CBM discourses were not reliably identifiable. Discourses supported the level of government that corresponded with the preferred positions on fracking policy. Pre-existing opinions about fracking appear to have driven positions on the appropriate location of responsibility for risk governance.

The Industry discourse expressed a strong affiliation with the individualism side of the group dimension. To a lesser degree, the Pro-Fracking Public discourse did as well. The values expressed by anti-development discourses in the CBM case were not sufficient to determine affiliation. The desire to protect health, safety, families, and homes is not defining of any worldview. There were expressions of concerns for nature, but those were instrumental to and overshadowed by human health and safety.

Anti-fracking discourses demanded that fracking be regulated at the local level. For pro-fracking storylines, regulation should come from the state. It is worth noting that the reasoning used to support that position could also have been used to argue that regulation belonged at the national level. This is a possibility considered in only one text, authored by U.S. Representative Cory Gardner, which firmly rejected federal jurisdiction over such matters. His logic advocating for specialized knowledge and expertise could have likewise been applied in favor of local regulatory authority.

The inconsistencies in these positions indicate that worldviews may be somewhat flexible, as the cultural cognition of risk theory has suggested. To the extent that worldviews are manifest in the CBM discourses, stances appear to be dependent on issues
in combination with worldviews. This finding supports the assertion of cultural cognition theory that worldviews may not be as rigid as Cultural Theory first proposed.

Rationalities

Rationalities were most readily apparent in the CBM case study, where there was an ongoing exchange of ideas in the public forum. CBM discourses sought to persuade by presenting evidence and conclusions based on claims to knowledge and information. Arguments relied upon formal, social, and popular sources of information. Competing discourses presented counterarguments with claims of contradicting evidence. Attempts at attenuation included efforts to undermine trust and discredit opponents. Very few texts referenced specific scientific studies; instead, their statements simply asserted that such evidence exists.

Table 8.3 lists the rationalities found in the CBM case study. The Pro-Fracking Public and Health, Safety, and Community Rights discourses showed a strong tendency for social rationality, while the Lawsuits storyline was pragmatic and political. The politicians’ variation on the HSCR storyline applied a political rationality that, like the politicians who participated in it, occasionally crossed into social rationality with expectations of democracy and fairness.

Discourses tended to subscribe to the view that policymaking should not be contaminated by irrationality from the public. Arguments for and against fracking were supported by evidence, whether scientific or circumstantial. Texts rarely included traceable reference to such supporting science. It appears that knowledge of such
### Table 8.3  
*Rationalities of the 2013 Colorado Ballot Measures Discourses*

<table>
<thead>
<tr>
<th>Storyline</th>
<th>Rationality</th>
<th>Position on Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health, Safety, and Community Rights</td>
<td>Social</td>
<td>Anti</td>
</tr>
<tr>
<td>Health, Safety, and Community Rights (Politicians)</td>
<td>Political</td>
<td>Anti</td>
</tr>
<tr>
<td>Industry</td>
<td>Social</td>
<td>Pro</td>
</tr>
<tr>
<td>Lawsuits</td>
<td>Political</td>
<td>Pro</td>
</tr>
<tr>
<td>Pro-Fracking Public</td>
<td>Social</td>
<td>Pro</td>
</tr>
</tbody>
</table>

studies was socially shared rather than first-hand. Discourses also claimed that the absence of evidence constituted proof of safety or harmfulness.

When accounts of harm were dismissed as unsubstantiated, the motivation of scientists and politicians was called into question. Discourses expressed the belief that scientists did not conduct research on health and safety risks because of their own personal biases. Both pro- and anti-fracking discourses maintained that science is capable of providing unequivocal proof of safety or harm, even if it has yet to happen.

With its calls for compromise and claims to reasonability and protection of the public’s interest, the Industry discourse attempted to appear political in its rationality. The Industry narrative was indeed attempting to influence policy and risk governance. However, it used strategies of social rationality. The arguments were to be accepted on the basis of trust in the sources. There were appeals for common sense, reasonableness, and fairness. The rhetoric presented the safety of fracking with certainty and sought to undermine and attenuate competing discourses with uncertainty. The Industry discourse
was shifting and multifaceted, but offered little in the way of substantial evidence or consistent application of underlying principles.

**Rationalities in the PEIS case studies.** The PEIS cases took place in contexts of structured, deliberate political rationality. The PEIS discourses relied heavily on common sense and taken-for-granted knowledge, making explicit reasoning or legitimation of information unnecessary. The rationalities expressed in public comments tended to be social. Like the Industry discourse, the Not Enough Information storyline in the 2008 PEIS strove to invoke a scientific or political rationality. The discourse presented an argument based on the need for more scientific evidence and was designed to appeal to the policy-making mission of the BLM. This suggests a sensitivity to the NEPA process and the political rationality that was not present in other PEIS discourses. In spite of the attempt to respond to the BLM’s politically rational application of the best available science, the texts indicated that a decision against development should be based on expected, not extant, evidence against development. Although this bears similarity to the precautionary principle applied to risk governance in some countries, it is not grounds for policy making by agencies of the U.S. government.

**Theories of Risk Supported in Case Studies**

**Economic Theories of Risk**

Every discourse in these three case studies expresses a realist-objectivist perspective on risk. There is an assumption that a true level of risk exists and is knowable, given sufficient research to provide data about outcomes and probabilities. In
general, participants strove to appear to be rational agents making reasonable decisions and urging others to do the same.

Discourses expressed various economic approaches to risk. Pro-development discourses argued that exploiting fossil fuel resources would provide economic benefits through the jobs and economic stimulus. They also suggested that the greatest expected utility would come from the use of public lands for the production of domestic energy. Anti-development discourses challenged that view, claiming that the greatest good would be achieved by leaving OSTS resources unused or prohibiting fracking within city boundaries. These discourses conceived of utility in terms of dollars, and also in terms of such things as security, aesthetics, recreational opportunities, global climate, and public health. Disparity in utility measures and differences in predictions were fundamental differences among discourses.

**Heuristics – Availability and Representativeness**

Discourses applied the social knowledge of Canadian tar sands and shale oil and gas produced by fracking to the judgements of OSTS benefits and risks. The BLM’s informational materials explained that the tar sands in the United States are not the same as those in Canada and that different, yet-to-be-developed techniques would be needed for extraction. Neither are oil shale deposits the same as the tight formations that are fracked for oil and gas, commonly referred to as shale oil and gas. Heuristics are evident in the substitutions of knowledge, although there appears to be a mixture of the availability or representative heuristics in use.
The strong presence of tar sands in the discourses in 2008 was likely the result of information in the public sphere about Canadian tar sands. Pro-development rhetoric pointed to Canadian tar sands as an example of the promise that U.S. tar sands hold for abundant domestic oil production. Anti-development discourses used Canadian tar sands as an example of the environmental destruction and pollution that would be created by the use of U.S. tar sands.

In 2012, both pro- and anti-development discourses focused on oil shale. This was likely a result of the rise in production of shale oil and gas made possible by fracking. Because of the extant technology, abundant resources, and high productivity of major fields, there was optimism about the future of shale oil and gas. The public knowledge of risks and benefits of fracking and shale bed production appears to have been applied in discourses of oil shale.

These substitutions represent both the availability and representativeness heuristics. To the extent that people believed oil shale to be the same as shale oil and Canadian tar sands to be the same as U.S. tar sands, the availability heuristic would be responsible. The similarities in the names of the resources were a contributing factor, as was evidenced by the confusion in the texts. The representativeness heuristic would have been in use when it was understood that the resources were not the same but might have some similarities. It is also important to note that people, in seeking some basis on which to make judgments in the face of very little information about risks, drew information from resources with greater information availability and lower levels of uncertainty. Although there was a shortage of knowledge about fracking (as demonstrated in the 2013 CBM case), the substitution of limited fracking information was preferable to the dearth
of information about oil shale. Discourses were used to create certainty where there was none.

**Prospect Theory and Goal Framing**

Discourses did not present arguments through risky choice frames in the traditional way described by Prospect Theory. Instead, goal frames were used for persuasive arguments. These can be viewed as an adaptation of Prospect Theory. Goal frames have four possible outcomes: obtain gains, forego gains, avoid losses, or suffer losses. As shown in Table 8.4, all four goal frames have been used in the case studies. The use of goal frames prompted decision-makers to assess the future with and without the desired choice. The baseline future without the desired choice determined the reference point. Choices that improved upon that reference point were positive frames. Frames were negative when they projected the lack of the desired choice making for a worse future.

When the assumption was that the baseline future will be worse than the present, frames used a rhetoric of suffering or avoiding losses. The desired choice had the power to avert the inevitable loss, while other choices will allow it to happen. Outcomes were framed in terms of gains when the future was expected to be no worse than the present. The desired choice would bring gains, but not making that choice would be forfeiting gains that would otherwise occur. Figure 8.2 illustrates this relationship of goal framing to Prospect Theory.
Table 8.4  
*Goal Framing in Discourses*

<table>
<thead>
<tr>
<th>Storyline</th>
<th>Goal Framing</th>
<th>Case</th>
<th>Position on Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irresponsible Government</td>
<td>Suffer losses (forego private gains)</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Not Worth the Destruction</td>
<td>Suffer losses</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Better Options than Fossil Fuels</td>
<td>Avoid losses</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Not Enough Information</td>
<td>Avoid losses</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Pro-OSTS</td>
<td>Obtain gains</td>
<td>2008 PEIS</td>
<td>Pro</td>
</tr>
<tr>
<td>Misuse of Public Lands</td>
<td>Avoid losses/Suffer losses</td>
<td>2008 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Stop Climate Change</td>
<td>Suffer losses</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Unsafe for People and the Environment</td>
<td>Suffer losses</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Environmentalists have Hijacked the System</td>
<td>Obtain gains/Avoid losses</td>
<td>2012 PEIS</td>
<td>Pro</td>
</tr>
<tr>
<td>Protect Parks</td>
<td>Avoid losses</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Regulations Hurt Local Economies</td>
<td>Obtain gains</td>
<td>2012 PEIS</td>
<td>Pro</td>
</tr>
<tr>
<td>Too Many Resources to Gamble</td>
<td>Avoid losses</td>
<td>2012 PEIS</td>
<td>Anti</td>
</tr>
<tr>
<td>Obstacles are Unfair to Companies</td>
<td>Avoid losses/Forego gains</td>
<td>2012 PEIS</td>
<td>Pro</td>
</tr>
<tr>
<td>Industry</td>
<td>Forego gains/Suffer losses</td>
<td>2013 CBM</td>
<td>Pro</td>
</tr>
<tr>
<td>Pro-Fracking Public</td>
<td>Forego gains</td>
<td>2013 CBM</td>
<td>Pro</td>
</tr>
<tr>
<td>Health, Safety, and Community Rights</td>
<td>Avoid losses</td>
<td>2013 CBM</td>
<td>Anti</td>
</tr>
<tr>
<td>Health, Safety, and Community Rights (Politicians)</td>
<td>Avoid losses</td>
<td>2013 CBM</td>
<td>Anti</td>
</tr>
<tr>
<td>Lawsuits</td>
<td>Avoid losses</td>
<td>2013 CBM</td>
<td>Pro</td>
</tr>
</tbody>
</table>
Figure 8.2. Goal Framing Combined with Prospect Theory. Adapted from Kahneman and Tversky, 1979 and Levin, Schneider, and Gaeth, 1998.

This goal framing approach can provide clues about whether the future is expected to be better or worse. The most frequently used goal frame was avoiding losses. This suggests that there may have been a commonly held expectation that the future was likely to be worse, but there were choices to be made that could mitigate that undesirable future. Only pro-development discourses projected a neutral or better future with gains to be had. Aside from the Industry discourse, only anti-development discourses spoke of suffering losses if the desired choice was not made. The Industry discourse combined predictions of foregone gains with warnings of losses to be suffered – losses that would be imposed by lawsuits filed by the industry.
The tendency for framing in terms of losses may have been a constructive use of the negativity bias, where people tend to pay more attention to negative information than positive (Meyerowitz & Chaiken, 1987). Loss frames were also likely playing on anticipated regret. Negativity and anticipated regret may have been especially salient when the risks had the psychometric characteristics of dread.

**Psychometrics**

The Health, Safety, and Community Rights storyline exemplified several psychometric characteristics of risk. Catastrophic potential, unfamiliarity, unfairness, and involuntariness of risk all played into the construct of dreaded risks described by this discourse. Fracking was believed to pose extreme risks to human health, especially the health of children. The lack of information, secrecy, and the newness of fracking in the area made the risks unknown. People had little of control over exposure to the risk because the industry, the state government, and the governor all insisted that citizens do not have the right to keep fracking out of their cities. Homeowners could be involuntarily subjected to fracking if split estate mineral rights or neighboring property owners permitted it. Although fracking may have been in use for years in other places, it was new and unfamiliar in the cities and neighborhoods attempting to ban it. Given the tendency to see possible risks as probable, the worst outcomes of fracking risks were constructed as almost certain.

**New Types of Risk**

All three case studies involved technologies for energy production that were relatively new. The Industry and Pro-Fracking Public discourses asserted that fracking
had been in use for more than 60 years. However, the combination of high-volume techniques, horizontal drilling, and chemical additives made modern fracking a relatively new technology. Fracking fluid was perceived as a novel risk that threatened water supplies. The secrecy surrounding the chemical makeup of fracking fluids caused alarm in discourses that considered fracking to be a risk.

Air and water were seen as vectors for pollutants to travel, creating widespread and chronic risks. The possibility for contamination of groundwater and aquifers through fracking was perceived as a new dimension of energy production risks. When energy development was connected to climate change, the risks became global and long-term. The flooding in Colorado that resulted in spills, broken pipes, and washed-away tanks pointed out the risks of combined natural-technological risks. It opened up the possibility that food supplies as well as waterways could be tainted by petroleum products and fracking fluids. The combination of new technologies, new locations, and new hazards contributed to the perception of new and potentially catastrophic risks.

**Emotions**

It is not possible to know the internal emotional states or feelings of individuals with the methods used in this study. Analysis was limited to the observation of the social constructs of emotions surrounding the issues. In the PEIS case studies, most discourses and participants attempted to present calm, well-reasoned arguments. Emotional statements were infrequent. Expressions of emotions in discourse tended to coincide with anger at government, violations of democratic principles, and lack of control. The Irresponsible Government discourse was the most emotional of the PEIS discourses,
where some texts expressed fury at the BLM through swearing and hostile, belligerent comments. In the 2012 PEIS, the discourse of Environmentalists Have Hijacked the System was antagonized and angry.

Positive emotions were expressed through past experiences in the landscape of the West. Stories conveyed fond memories and hopes for future generations to have similar experiences. Pro-development discourses did not relay the same kinds of positive emotional connections to experiences.

Emotions ran high in the CBM case study. Risks were vivid, salient, and expected to be close. Fears for families and future generations were common themes in the anti-fracking discourses. Dread and lack of control appear to be responsible for the anger and outrage expressed. People from neighboring areas wrote and attended meetings to relay their negative experiences with fracking and to encourage communities to fight for their rights.

Inverse Relationships

Inverse relationships may have been a driving factor for some of the discourses, especially those in favor of development. Two underlying assumptions ran through the pro-development discourses. The first was that energy development would produce economic stimulus and jobs. The second was that energy independence was an important goal. The perception of these benefits may have driven down perceived risks. Benefits were frequently discussed in the pro-development discourses, and only discourses in favor of development used gains in goal framing.
Anti-development discourses used goal framing with the loss perspective. They tended to evaluate the costs, as in Too Many Resources to Gamble and Not Worth the Destruction. Such discourses saw risks to the near exclusion of benefits. Most discourses worked under the assumption that domestic energy was desirable. However, the anti-development discourses did not concede to any benefits associated with oil shale, tar sands, or fracking.

**Risk Society**

These discourses indicate that the participants are aware of the risks tied to energy. The risks of oil shale, tar sands, and the Niobrara formation are risks of the modern era. Those resources would pose little risk were it not for the technology and desire to produce energy from them. People recognized that the risks created by tapping into these resources are global, ubiquitous, and dispersed.

It is the attempt to label anti-fracking activists hypocrites that exemplifies the idea of a risk society. As people sought to protect themselves, their homes, cities, and families from fracking risks, the Industry and Pro-Fracking Public discourses branded them hypocrites. Those discourses claimed that everyone needs, uses, and benefits from fossil fuels. Therefore, it was hypocritical to expect to be protected from the impacts of energy production. By banning fracking, the cities would only displace the impacts, not prevent them. According to the Industry and Pro-Fracking Public rhetoric, it was only fair that residents should accept the burden of risk from fracking facilities that were constructed as a necessity of modern life.
Women and Risk

The importance of women as a trope in the CBM case study raises some questions about the demographics of risk. Women and non-whites have been shown to perceive higher risks than white males (Flynn et al., 1994). In the CBM case study, women played prominent roles as advocates both for and against fracking. Many of them presented themselves in ways that make their identities as women part of the discourse. The Mother’s Day rally, Mothers Against Fracking, and the opposition group, Mothers in Love with Fracking, highlighted women’s roles as mothers. As discourse, these actions and statements constructed mothers and women as protectors of children, families, and homes.

Motherhood was amplified as important to the understanding of risk by the news reporting, content of texts, and the formation of the counter-group. Mothers in Love with Fracking strove to attenuate the risks to families, but reinforced fracking as a women’s issue. The statement by a COGA spokesperson shaming women for involving their children in protest attempted to negate the role of anti-fracking women and mothers as protectors by suggesting they were exploiting their children for political purposes rather than actually keeping them safe.

Whether women were involved in activism in this way because they perceived higher levels of risk cannot be determined by this research. It is possible that women and/or society believe that women or mothers see risk more clearly. The ways that gender, identity as women, and roles as mothers were used in discourse appear to have helped shape the construct of risk in this case study. How and why they originate and operate are topics for further study.
Limitations and Directions for Future Research

Discourses are always situated in particular contexts, relationships, and social knowledge. As such, analysis of discourse is also conditioned by those factors and limited in its ability to make generalizations. These results are contingent upon the cases studied, the resources, the sources of data, and myriad other factors. The use of multiple case studies was instrumental for evaluating the similarities and differences in discourses across time, spatial scale, and decision processes. In other respects, analysis has been limited in its focus on unconventional fossil fuel resources in three states. Data came from a narrow range of sources, and the PEIS data are one-way communications.

These limitations suggest avenues for further research to expand upon this study. Discourses and perceptions of risks related to other energy resources, particularly renewable energy, will be important to understand as societies grapple with energy problems. Application of these methods to case studies in other places, decision-making processes, and communication channels can build upon the results of this work and make discursive analyses of energy and risk more generalizable. Historical case studies may be helpful for recognizing patterns in discourses of risk and energy.

Results of this work also suggest new theoretical applications. The success of advocacy groups in their engagement of the public merits further study. Social movement framing theory (Snow & Benford, 1988; Benford & Snow, 2000) may be a productive angle for analysis of the construction of risk in conjunction with the SARF.

These findings suggest that research into two theories of risk may be especially important for future study. The first is the inverse relationship between risks and benefits.
This appears to be a strong factor in perceptions and rhetoric of energy risks. The second, and perhaps closely-related, is the cultural cognition of risk. The discourses in these case studies showed evidence of some of the proposed mechanisms of cultural cognition of risk. Further inquiry may show how discursive constructions contribute to or avoid biased assimilation, cultural availability, and cultural credibility.

Although cultural worldviews are not characterized in terms of attitudes about energy, worldviews are likely to be determining factors in the assessments of energy benefits and risks. Egalitarian communitarians, with the views that nature is ephemeral and conservation is good, are likely to see great benefits in renewable energy resources while ignoring possible risks. Egalitarian individualism, with its prioritization of economic growth, free enterprise, and standards of living, is likely to emphasize the benefits of fossil fuels and ignore risks. Characterizing these relationships may help in the search for ways to overcome the inverse relationship and the propensity for polarization over energy decisions.

**Recommendations for Communication**

The aim of this research was to expand the understanding of public perceptions and processes of meaning-making surrounding risk and energy. The results offer insights that may be useful for communicating in ways that improve public understandings of science and application of science in policymaking. First among them is to recognize that public discourses tend to work on a social rationality. Social rationality accepts knowledge from formal, informal, and popular sources if those sources are trusted. Information must relate to social and cultural knowledge and experiences.
When communicating about energy and risks, it is important to consider the shared social constructs of national identity and democracy. Energy risks are interpreted through the cultural knowledge of American-ness. Energy risks can easily become threats to national identity and ways of life. While the idea of national identity is shared, what that identity is and what actions it prescribes are variable. Invoking American-ness in communication can be a powerful unifying theme, but it may backfire if the message or communicator is bound to any one version of national identity.

Democracy goes hand-in-hand with American identity. There is an expectation that decisions will be inclusive and fair. Science and policy communicators may need to explain how decisions and decision-making processes adhere to and support these values. Entities constructed through discourse, such as progress, economic health, rights, or public lands, can have divisive meanings. Beyond the ideal of democracy, conceptions of government may also be contentious. These entities that carry different meanings in competing discourses are likely to give rise to biased interpretations, selective filtering, and polarization.

Scientists need to accurately represent their work, but it is critical to understand that content without meaning leaves information open to interpretation and misuse. Without relevance and relatability, there may be a loss of trust. Translating research into socially accessible narratives may improve trust and demonstrate that the concerns of the public have been taken into account. Inclusion of socially validating information such as fairness and common sense may also increase public receptivity.

One suggestion from cultural cognition theory for communicating science and policy is to design communication to appeal to multiple cultural worldviews (Kahan,
This research supports that recommendation, although it will be important to approach this strategy with care. Some efforts at persuading and educating others were seen as disingenuous and manipulative.

Two such attempts to present arguments designed to appeal to competing groups were clumsy and appear to have been unconvincing at best. Pro-development texts in the 2012 PEIS claimed that developing the OSTS resources in the United States would be an environmentally friendly choice because of the strong environmental regulations in force. They claimed that other countries would develop resources in harmful and polluting ways if the United States did not do so first. In the CBM study, pro-fracking discourses presented an argument that natural gas produced by fracking would provide clean energy.

In all case studies, but especially in the CBM case, anti-development discourses asserted that local economies would be harmed if resources were developed. On the surface, these positions were framed in terms of the interests of the other side of the ideological divide. However, they were insensitive to the underlying beliefs, attitudes, and values of those other cultural worldviews.

The hundreds of thousands of comments from advocacy groups indicate that the organizations were trusted and relied-upon sources of information. As such, they have the potential to be communication channels that could moderate the messages or act as an intermediary between scientists and the public. There could be ways to enlist advocacy groups to help reduce polarization and motivated reasoning. They have demonstrated knowledge and understanding of policy-making systems and can act effectively within them. The difficulty will be that groups appeal to particular worldviews and currently contribute to polarization, as demonstrated by the Hijacked discourse and the
demonization of environmentalists. Furthermore, some groups may have no desire to reduce polarization and ideological conflict.

Conclusions

This research explored the ways in which perceptions of risk are socially constructed. It used the Social Amplification of Risk Framework as a conceptual foundation and applied risk theory to the interpretation of discourse, framing, and content. This work integrated social theories of risk with the qualitative analysis of language in use to evaluate the social construction of energy and conflicts surrounding energy policy and development decisions. It fits into a larger body of risk perception research and the newly emerging field of energy communication research. Results suggest possible avenues for improving communication around risk and energy issues.

Social trust in the people, institutions, and processes responsible for decision-making and risk management is vital. A lack of trust can make government itself into a perceived risk. Governor John Hickenlooper of Colorado stands as an illustration of the need for public trust and knowledge of perceptions of risk. Hickenlooper was trained as a petroleum geologist. His dual role as a scientific expert and a democratically elected official might have made him an effective facilitator for resolving disparate evaluations of risk among politicians, the public, and the oil and gas industry. Instead, he squandered his credibility by making himself a champion of the oil and gas industry. He claimed to be neutral, but his actions and insistence that fracking was safe were inflammatory, destroyed trust, and angered constituents. His threats to sue Colorado cities over citizen
initiatives was viewed a risk to democratic ideals. His public messages were tone deaf and insensitive to the genuine concerns of citizens.

It is likely that Hickenlooper’s familiarity with the industry and his perception of fracking’s benefits lowered his perceptions of risk. His public statements and his actions rejected the public’s perceptions of risk as invalid. As reflected in the discourse at the time, people felt that he treated them as though they were misinformed and irrational. Malakoff and Mervis (2016) urged policy makers and scientists to develop a deeper understanding of risk perceptions. Hickenlooper’s missteps demonstrate why such work is needed. The task of researching and communicating that knowledge will fall to scientists. Reigning in conflict and polarization will need to be a collaborative effort among scientists, policy-makers, and the public.

The public invoked a social rationality in the discussion and evaluation of these energy decisions. Following that lead, communicating in ways that are accessible to a social rationality may be a pathway to building trust. In social rationality, democracy and fairness are expectations. Information must fit with common sense, social realities, and cultural considerations. It needs to be relevant to personal concerns and experience. People need to be able to understand their place in the narrative. Although further research will be needed, the CBM case study holds an example of such a rationality-identity mix.

In contrast to Hickenlooper, U.S. Representative Jared Polis’ communications resonated with the public. Polis spoke of personal experience, and in telling a vivid story, he made policy matters salient for people who might be vulnerable to the risks of fracking. He invoked political and social rationalities in ways that supported each other.
He did not abandon his political identity, yet he was able to convey understanding and respect for people’s fears and perceptions of risk. In his speech and writing he acknowledged his own perceptions and emotions. He demonstrated to the public that he was both a politician and a citizen.

Polis’ approach might hold a key lesson for scientists in how to build trust among non-scientists. Critical scientific information communicated through the use of parallel scientific/social rationalities may provide context for information and situate it in shared values and personal experience. Information should be presented in relatable language and narrative. Common sense explanations combined with scientific information are more likely to be effective than scientific rationality alone. It may be beneficial to outline the ways that democracy and fairness are supported by the recommended actions.

These case studies showed that the public expects science to provide answers. Blending scientific rationality with social rationality could build on the public’s desire for scientific input in decision-making. Scientists should recognize that just because scientific knowledge is generated under a scientific rationality, it does not need to be communicated with only that type of rationality to the public or policy makers.

Deliberately evaluating risks and benefits in communications may help build trust while at the same time balancing inverse relationship distortions. This may also soften cultural cognition mechanisms such as biased assimilation and polarization that create resistance to information.

Perceptions of risk are neither trivial nor irrational. They offer important insight into social values and commitments to group identity. Public participation in risk governance is a crucial part of the democratic process, and can encourage the
contribution of meaningful information and public buy-in. Conflicts over perceptions of risk can derail efforts to create workable solutions to intransigent problems. Reducing polarization around issues such as energy policy and sustainability is a worthwhile objective for scientists, policy-makers, and the public.
REFERENCES


Cave v. The City and County of Broomfield, No. 2013CV30313 (Colo. 17 D. Feb. 27, 2014).


APPENDIX

APPLICATION OF ANALYTIC TOOLS

The application of discourse analytic tools is shown in Table A.1. The features of texts—their content, structures, and functions—were used to interpret the processes of meaning-making. Discursive elements are complex and interacting, thus the table cannot account for all connections between texts, tools, and interpretations. Discourse is considered language in use, and features of texts were analyzed as contributions to collections of texts that produced and promoted various accounts of risk. Social, cultural, and historical contexts were also critical to the interpretations and analyses of discourses. Evaluation of rationalities, goal frames, and worldviews employed the criteria illustrated in Figures 2.1, 3.2, and 4.2, respectively.
<table>
<thead>
<tr>
<th>Discursive Element</th>
<th>Textual Content/Structure</th>
<th>Discursive Meaning-Making</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Things of value at risk</td>
<td>Construction of things, people, principles, and ideas</td>
<td></td>
</tr>
<tr>
<td>Things that create risk</td>
<td>What hazards or threats are present or expected</td>
<td></td>
</tr>
<tr>
<td>Policies</td>
<td>Contexts, expectations, and limitations</td>
<td></td>
</tr>
<tr>
<td>Alternatives to risky propositions</td>
<td>What substitutes are viable, reframing of the problem, competition, attenuation</td>
<td></td>
</tr>
<tr>
<td><strong>Agents and their motives</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People/organizations involved in risk</td>
<td>Who creates/benefits/suffers from the risk</td>
<td></td>
</tr>
<tr>
<td>People/things of value at risk</td>
<td>Who or what is threatened or harmed, voluntariness, control</td>
<td></td>
</tr>
<tr>
<td>Portrayal of self/group/others</td>
<td>Construction of identities</td>
<td></td>
</tr>
<tr>
<td>Roles, expertise, authority</td>
<td>Rationality, what kinds of people do what kinds of things, trustworthiness, bias</td>
<td></td>
</tr>
<tr>
<td>Responsibilities, duties, care</td>
<td>Integrity, trust, ideals</td>
<td></td>
</tr>
<tr>
<td>Moral and ethical evaluations</td>
<td>Goodness/badness, trust, emotion</td>
<td></td>
</tr>
<tr>
<td>Collective good/individual interests</td>
<td>Worldviews, what is right, how should things be</td>
<td></td>
</tr>
<tr>
<td>Discursive Element</td>
<td>Textual Content/Structure</td>
<td>Discursive Meaning-Making</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Metaphors, rhetoric, and situated meanings</td>
<td>Losses/gains, costs/benefits</td>
<td>Goal frames, inverse relationships, assumptions about the future</td>
</tr>
<tr>
<td></td>
<td>Examples, comparisons</td>
<td>Heuristics, ideals</td>
</tr>
<tr>
<td></td>
<td>Future states</td>
<td>Goal framing</td>
</tr>
<tr>
<td></td>
<td>Problem framing</td>
<td>Rationality, ideals, worldviews, heuristics, taken-for-granted knowledge, implied solutions</td>
</tr>
<tr>
<td></td>
<td>Meanings, literal and implied</td>
<td>Construction of knowledge and truth, taken-for-granted knowledge, group affiliations</td>
</tr>
<tr>
<td></td>
<td>Criticism of other views, repetition of themes, responses to other texts</td>
<td>Amplification, attenuation, competition for acceptance</td>
</tr>
<tr>
<td></td>
<td>Criticism of evidence</td>
<td>Rationality, validation of information and sources, trust</td>
</tr>
<tr>
<td></td>
<td>Changes in rhetoric</td>
<td>Amplification, attenuation, new information, or event</td>
</tr>
<tr>
<td></td>
<td>Evidence, proof</td>
<td>Rationalities, worldviews</td>
</tr>
<tr>
<td></td>
<td>Harms, protections, voluntariness, control</td>
<td>Things of value, psychometric characteristics of risks</td>
</tr>
<tr>
<td></td>
<td>Feelings, emotions</td>
<td>Affect heuristic, psychometric characteristics of risks</td>
</tr>
<tr>
<td>Discursive Element</td>
<td>Textual Content/Structure</td>
<td>Discursive Meaning-Making</td>
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<tr>
<td>--------------------</td>
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</tr>
<tr>
<td>Figurative language</td>
<td>Emotional content, how are arguments presented to achieve favorable outcomes,</td>
<td></td>
</tr>
<tr>
<td>Metaphors, rhetoric, and situated meanings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argument structure, content</td>
<td>Goals, rationality, worldviews</td>
<td></td>
</tr>
<tr>
<td>Solutions, preferred choices/actions</td>
<td>Worldviews, values, group affiliations, connections between knowledge and action</td>
<td></td>
</tr>
<tr>
<td>Assumptions about relationships/Figured worlds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideals, the way things should be</td>
<td>Worldviews, expected behavior for people/institutions, obligations, duty, how should people/institutions behave</td>
<td></td>
</tr>
<tr>
<td>What is normal/appropriate</td>
<td>Taken-for-granted knowledge,</td>
<td></td>
</tr>
<tr>
<td>Who has what control and why</td>
<td>Power, authority</td>
<td></td>
</tr>
<tr>
<td>What should be protected</td>
<td>Things of value, vulnerability to risk</td>
<td></td>
</tr>
<tr>
<td>Roles and responsibilities</td>
<td>Values, relationships</td>
<td></td>
</tr>
<tr>
<td>Evidence, proof, believability</td>
<td>Rationality, worldviews, trust</td>
<td></td>
</tr>
<tr>
<td>What people care about, how things will be in the future</td>
<td>Values, worldviews</td>
<td></td>
</tr>
<tr>
<td>Problems</td>
<td>Deviance from expected norms</td>
<td></td>
</tr>
<tr>
<td>Discursive Element</td>
<td>Textual Content/Structure</td>
<td>Discursive Meaning-Making</td>
</tr>
<tr>
<td>--------------------</td>
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</tr>
<tr>
<td>Decision-making/makers</td>
<td></td>
<td>Power, responsibility, authority, autonomy</td>
</tr>
</tbody>
</table>
Temis G. Taylor

4001 W 600 S                              (801) 455-1279
Logan, UT 84321                           Temistaylor@gmail.com
USA

Education

Ph.D.  Environment and Society, 2018
       Department of Environment and Society, Utah State University
       Dissertation: *Energy and Risk: Discourse, Framing, and Content*

M.S.   Bioregional Planning, 2011
       Department of Environment and Society, Utah State University
       Thesis: *Alternative Futures for the Upper Colorado River Ecosystem: Phase Two*

B.S.   Communications, Women’s Studies minor, *Cum Laude*, 2001
       University of Utah, Salt Lake City, Utah

Research

Current Research:

- Energy communication
- Public discourses, framing, and content in risk communication
- Building trust and the social capital of science through communication strategies
- Cultural cognition and rationalities in the communication of science
- Social perceptions, amplification, and attenuation of risks
- Measures of complexity in human systems

Research Interests:

- Conservation and control of public lands and resources
- Coupled human and natural systems approaches to planning and problem solving
- Diminishing returns of complexity
- Narratives and framing of resource limits, climate change, sustainability, and environmental policy
- Political, economic, and social facets of stranded assets
- Resilience, sustainability, and complexity in built environments
- Resource and natural capital depletion versus human innovation and technology
- Sociocultural factors of risk perception in environmental conservation and planning
- Strategies and effects of NGOs on public attitudes and policy-making processes
# Teaching

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Instructorship</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>USU 6900</td>
<td>Responsible Conduct of Research, Co-Instructor</td>
<td></td>
<td>Fall 2016, 2017, Spring 2017, Summer 2016</td>
</tr>
<tr>
<td>ENVS 2340</td>
<td>Natural Resources and Society, Instructor</td>
<td></td>
<td>Fall 2012, Spring 2014</td>
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<tr>
<td>ENVS 6200</td>
<td>Bioregional Analysis and Planning</td>
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<td>Studio Teaching Assistant, Fall 2009, 2010</td>
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<tr>
<td>ENVS 6210</td>
<td>Bioregional Management and Policy</td>
<td></td>
<td>Studio Teaching Assistant, Spring 2010, 2011</td>
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<tr>
<td>PE 1910</td>
<td>African Dance, Co-Instructor</td>
<td></td>
<td>Invited lectures, Spring 2012</td>
</tr>
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</table>

Weber State University - Art and Culture Through Movement and Music (Student Club) Instructor, 2012-2014

# Professional Positions

<table>
<thead>
<tr>
<th>Position</th>
<th>Dates</th>
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<tbody>
<tr>
<td>Graduate Fellow, Instructor</td>
<td>August 2016-December 2017</td>
</tr>
<tr>
<td>Research Integrity and Compliance, Utah State University</td>
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<tr>
<td>Subject Matter Expert, Environment and Humanities Prometric, Ireland</td>
<td>April 2013-March 2017</td>
</tr>
<tr>
<td>Graduate Fellow, Board Member</td>
<td>June 2011-July 2016</td>
</tr>
<tr>
<td>Institutional Review Board, Utah State University</td>
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<tr>
<td>Instructor</td>
<td>August 2012-May 2014</td>
</tr>
<tr>
<td>Environment and Society, Utah State University</td>
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<tr>
<td>Graduate Teaching Assistant</td>
<td>May 2009- May 2011</td>
</tr>
<tr>
<td>Bioregional Planning, Utah State University</td>
<td></td>
</tr>
<tr>
<td>Graduate Research Assistant</td>
<td>August 2008- May 2011</td>
</tr>
<tr>
<td>Bioregional Planning, Utah State University</td>
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</tr>
</tbody>
</table>
Past Projects

Alternative Futures for the Upper Colorado River Ecosystem: Phase Two. Prepared for the US Fish and Wildlife Service

An Economic Analysis of Oil and Gas in the Uintah Basin. Prepared for Uintah and Duchesne Counties in Utah

Bear River Basin Alternative Futures. Prepared for the US Fish and Wildlife Service

Bear River Climate Change and Adaptation Workshop and Study. Sponsored by The Nature Conservancy

Framing and Discourse: Water Rights and the Yampa River, Bioregional Planning

Private Property Conservation Policy Effectiveness through Spatial Analysis, Bioregional Planning

SNOTEL Analysis for the Western United States 1970-2010, USU Climate Program

Summit County Alternative Futures. Prepared for Summit County, Utah

Publications


Presentations and Design Workshops


2010. Degiorgio, Joan, McCarthy, P., Cross, M., Garfin, G., Gori, D., & Tuhy, J. Bear River Climate Change and Adaptation Workshop and Study. Sponsored by The Nature Conservancy, University of Utah, Salt Lake City, Utah. May 26-27. (Contributing participant)

Professional Service

Co-Founder and Executive Member, Logan, Utah chapter of 500 Women Scientists
Co-Instructor, Geodesign Workshop for Moab, Utah, 2018
Board Member, Institutional Review Board, Utah State University, 2011 - 2017
Contributor, Utah Association of Women in Psychology Newsletter, 2012
Co-Presenter, National Council of University Research Administrators, 2004
Editorial Board Member, Research Management Review, 2004-2008

Professional Development

Data Carpentry Workshop, Utah State University, 2017
Software Carpentry Workshop, Utah State University, 2017
USU Communicating Science Series, 2016-2017
Alan Alda Center for Communicating Science, Plenary Session, 2016
Urbanization, Sustainability, Resilience, and Prosperity Working Group, Arizona State University, 2013
Writing Winning Proposals Workshop, Utah State University, 2012, 2016, 2017
Form-Based Code Workshop, Envision Utah, Salt Lake City, 2012
Place-Making with Transit, Envision Utah, Salt Lake City, 2012
Collaborative Institutional Training Initiative Certifications, Utah State University, ongoing
Bear River Climate Change and Adaptation Workshop and Study, The Nature Conservancy, Salt Lake City, 2010
Community Citizen Planner Certification, Utah Council of Governments, 2008
National Environmental Policy Act Certificate, Quinney College of Natural Resources, Utah State University, in progress