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Landscape of Desire: Identity and Nature in Utah's Canyon Country

Greg Gordon

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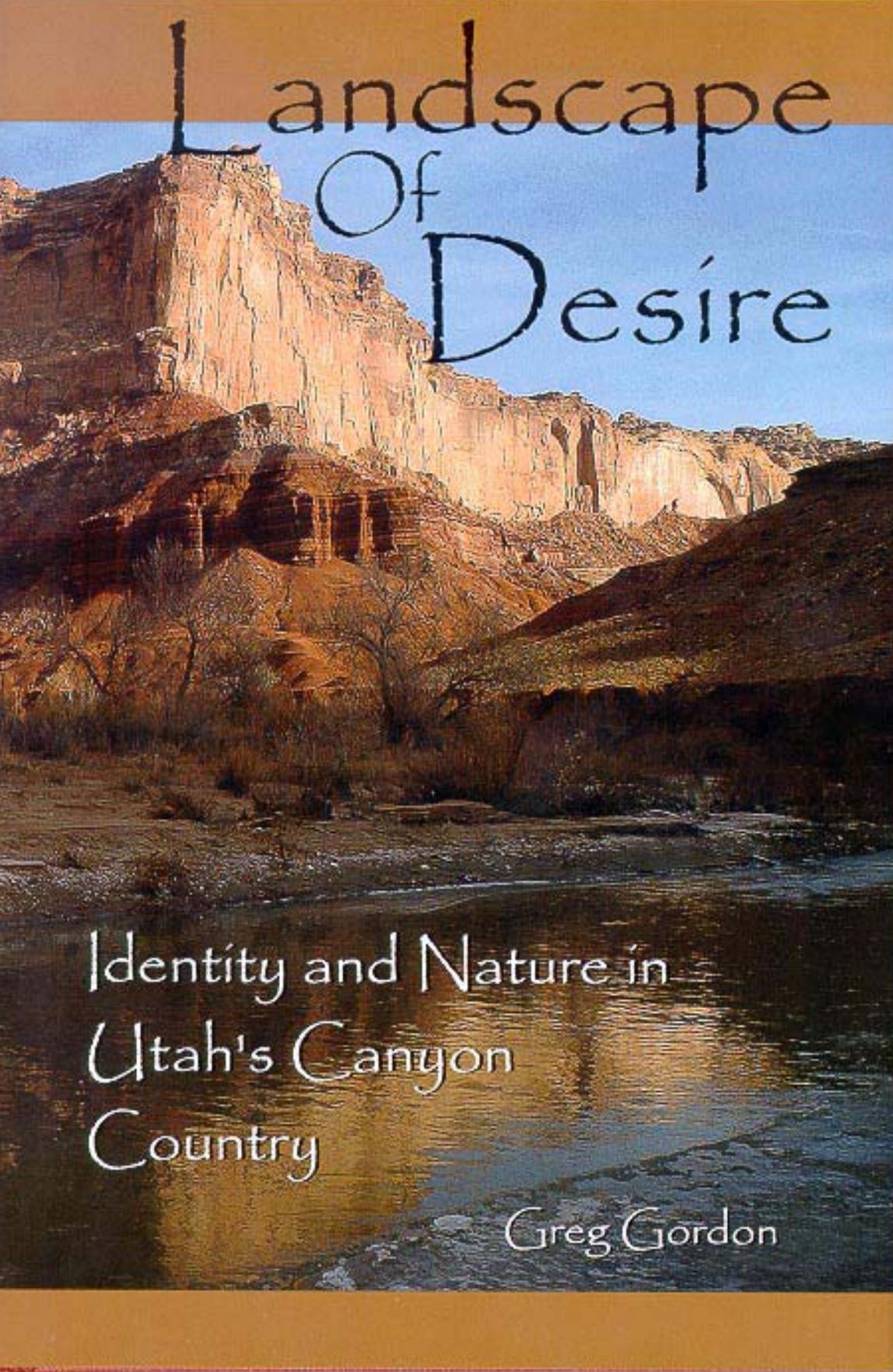
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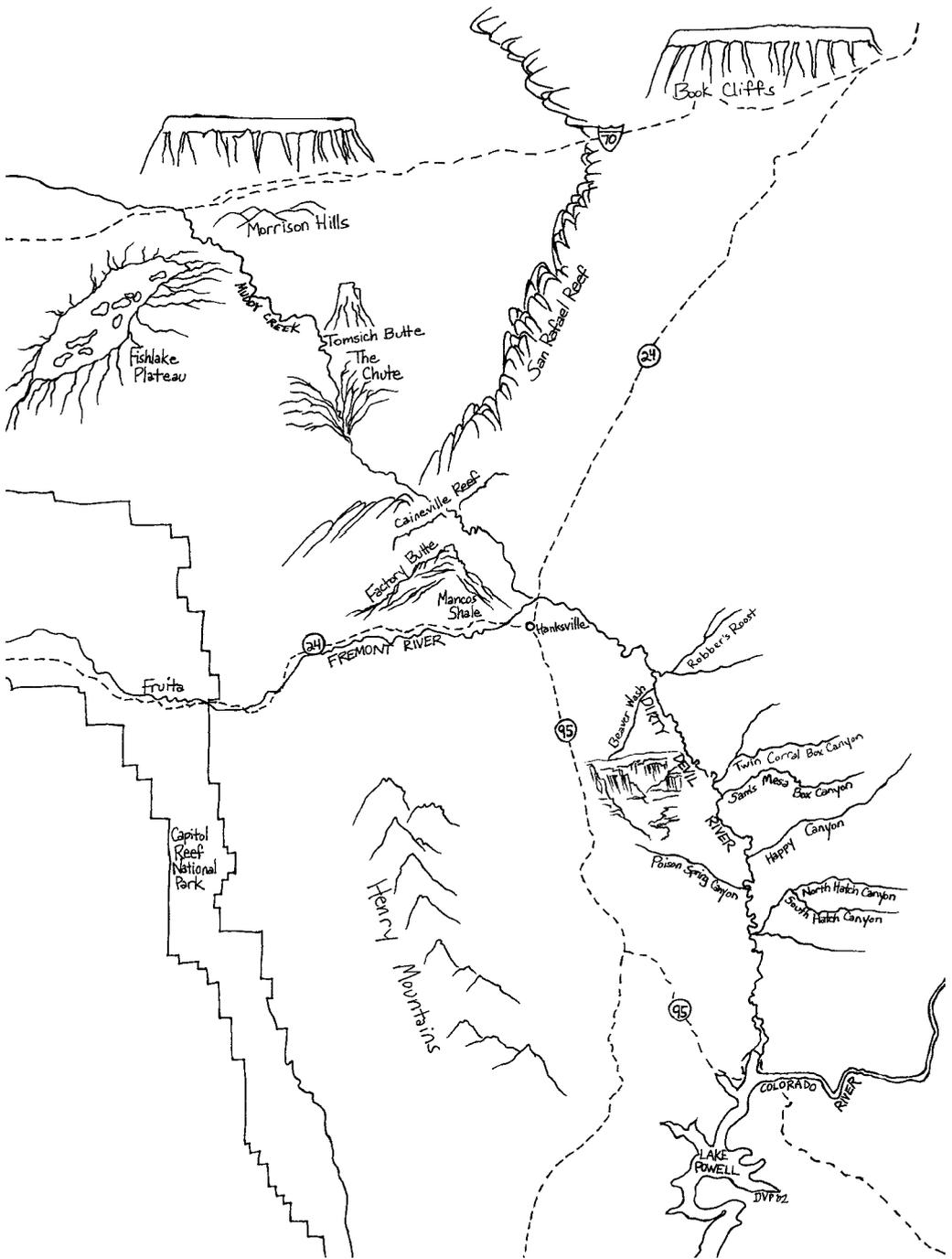
The background of the cover is a photograph of a desert canyon. In the foreground, a river flows through the canyon, its surface reflecting the sky and the surrounding landscape. The middle ground shows a steep, reddish-brown cliff face with several ancient rock art figures, including a large, prominent one. To the right, a building with a thatched roof is partially visible. The sky is a clear, pale blue. The title text is overlaid on the top half of the image.

Landscape Of Desire

Identity and Nature in
Utah's Canyon
Country

Greg Gordon

L a n d s c a p e
o f
D e s i r e



L a n d s c a p e
o f
D e s i r e

*Identity and Nature in Utah's
Canyon Country*

Greg Gordon

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*For my students,
who have taught me much*

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I would also like to thank the following individuals for their contributions toward making this book a reality: Robin Sherman, Leslie Ryan, Ed Grumbine, Ed Lueders, Hope Sieck, Ann Whitesides, The Missoula Writing Group, and of course, all my students without whom it would not be possible. I would also like to thank John Alley and Brooke Bigelow of Utah State University Press.

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preface

THE RIM

Was somebody asking to see the soul? See your own shape and countenance, persons, substances, beasts, the trees, the running rivers, the rocks and sands.

—Walt Whitman

Everyone remembers the first time. It attains a degree of mythological importance out of proportion to the actual event. I was eleven or twelve, in the midst of those buoyant days before adolescence, when my father convinced his wife, two bratty kids, *and* his parents to undertake a camping trip to southeast Utah, places he had known in his youth. In Arches National Park, my brother and I crawled through arches, ran around in the Fiery Furnace, followed the crowds out to Delicate Arch, went on an interminably long jeep ride, and played cards in my grandparents' RV.

Somehow I'd gotten my hands on a copy of *The Journey Home* by Edward Abbey and was reading it during the trip. (The following year I read *The Monkey Wrench Gang* and was warped forever.) At the canyon rim at Dead Horse Point I stood on the cusp. Half of me ran around the slickrock chasing lizards, picking up rocks, and crawling under overhangs. The other half gazed into the void. For the first time, I saw a world much greater than my own, one beyond human contrivance, one that stretched back into the ancient past and continued into a future far beyond human imagination. Yet I was a part of it all. Existence was no longer the vacuum experience of growing up in Denver. The world was infinite, and its origins were so far back in time as to be beyond the horizon of knowledge. Time flowed up the canyon layer by layer, through my feet and out the top of my head and kept right on going. I was a connected part of the geology of the earth, just like a dinosaur fossil or a layer of volcanic ash. A whole country spread out before me beckoning; the possibilities were endless.

As it had for thousands of others, the canyon country held my imagination captive, demanding tribute. I returned as soon as I could drive. By the time I was in college, my pilgrimages increased in frequency, and the year after I graduated I took a job as a park ranger in Canyonlands National Park. This landscape on the edge of perpetual collapse added dimensions of depth

and time, perceptions which had been lacking in my daily life. The canyon country reached out, grabbed my soul, and refused to let go. I didn't resist. However, the price of love is eternal yearning.

When I moved to Montana to attend graduate school, I found I needed the desert's clarity more than ever. The cold, grey Missoula winter seemed to drain the vitality out of everyone. The weather suggested hibernation, and I burrowed myself in smoky bars and dim coffeehouses, twisting the threads of my consciousness into a tight self-absorbed ball. Eventually, the March winds began to melt the snow revealing geologic depositions of dogshit. I began to feel a slight tug pulling me southward, a tug that grew as I cut through Idaho and became undeniable as I entered the Utah sunshine.

Instead of the direct route from the interstate, I always took the old road that followed the Colorado River into Moab, Utah, the starting point for most of my journeys. The River Road, as it was known, began at Cisco, a ghost town of collapsing buildings and rusting machinery where the ceaseless winds had impaled generations of tumbleweeds against the barbed wire fence surrounding the town.

From Cisco, the road traveled across open flats and dropped toward the river. A rickety wooden bridge spanned the Colorado. This was my favorite part of the drive. The bridge could only hold one car at a time, so I had to stop before crossing to make sure no one was coming the other way. I couldn't help thinking what might happen if the bridge collapsed into the murky river swirling below. One year as I drove toward the bridge with the same delighted anticipation that an eleven-year-old has for old bridges, I braked suddenly. The old bridge was gone, replaced by a new two-lane overpass.

I loved that old bridge. I depended upon it to bring me from the world of the interstate to the world of rock and river. It slowed me down, with the corresponding drop in heartbeat and anxiety.

When we've pinned our soul to a place, we resent imposed changes. They invalidate our memories, which cease to be living things and become consigned to the realm of ghosts. Such irreversible changes hurl us against our will from past to present tense. Even as the wild landscape disappears, we become enamored of it and seek it out to infuse the empty spaces in our souls that we are busy paving over.

This annual spring pilgrimage to the slickrock country never failed to stretch and pull me like taffy. As a snake sheds its skin every year, I found I needed to shed those winter layers. Although I was motivated by the physical need to shed caffeine and clothing, I was always surprised by the psychic shedding that occurred, often unintentionally. The demons of my consciousness shriveled up and flaked off, and I was left with a distilled essence of self.

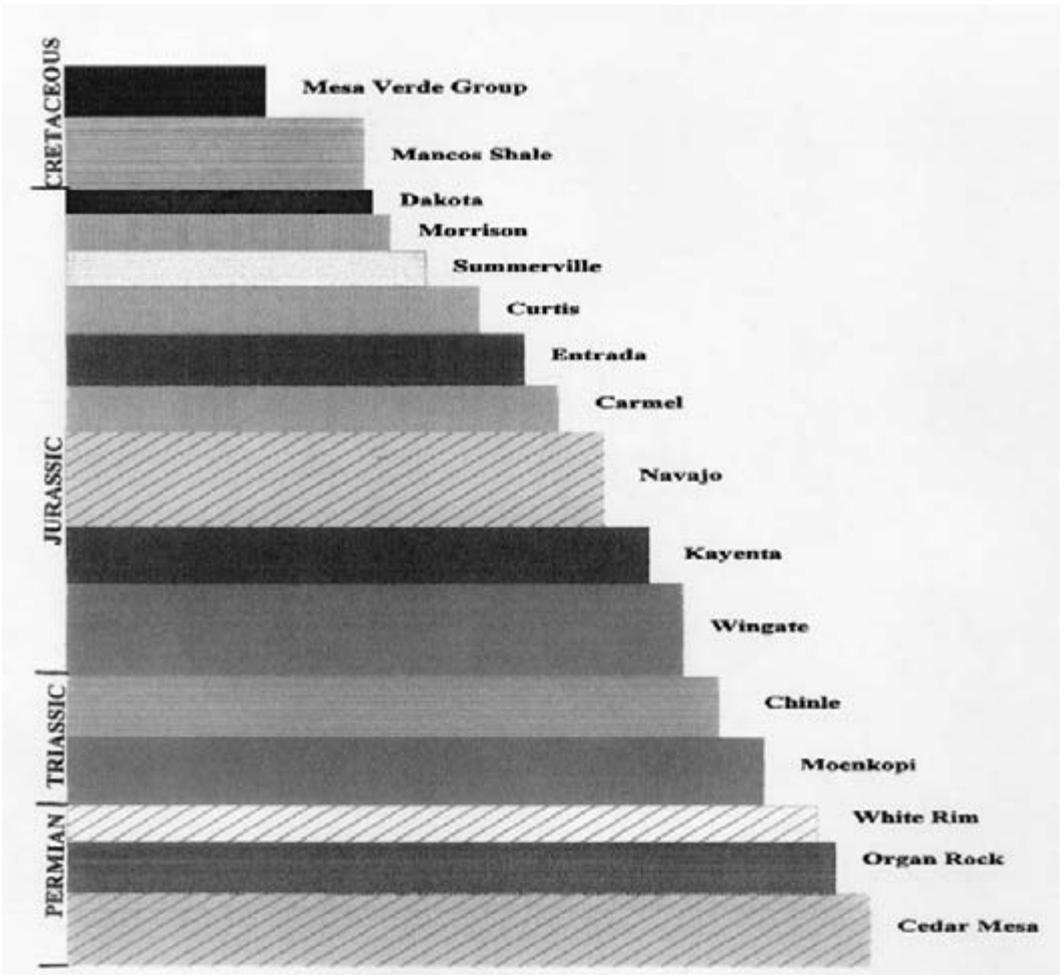
For the past ten years I've shared this experience, leading university students on a two-month field studies program. I've witnessed how extended time spent living in a small group in the wilderness engenders a fundamental shift in the way we regard ourselves and our place in nature. Perhaps it's Thoreau's fault that we equate wilderness with solitude. Nevertheless, wilderness has traditionally been a solo male journey, a quest, a search for self-identity. For better or worse, we are humans, not bears, and I've found that more than anything else the wilderness teaches us how to live in community, as citizens of the biotic community as well as a human community that we actively create. It turns out that we need each other.

The danger of intimacy is that the sacred becomes mundane. While I'm able to impart a degree of familiarity to the Colorado Plateau, the students yank me from complacency with each new plant or arrowhead we discover. I never fail to learn something new about myself and grow in unexpected ways. It is through them that I can experience everyday beauty with the exuberance of a first time lover.

AUTHOR'S NOTE

John Muir was probably the first to confront the conservationist's conundrum so eloquently articulated by Aldo Leopold half a century ago: "But all conservation of wildness is self-defeating, for to cherish we must see and fondle, and when enough have seen and fondled, there is no wilderness left to cherish." Muir knew the only way to save the Sierra Nevada was to publicize its grandeur, yet he suffered as his beloved Yosemite Valley became overrun by curiosity seekers. For years I have struggled with the dilemma of writing about a place I love, a place known only to a few hearty souls. (If you are one of those who are as chagrined as I every time a new guide book appears on the shelves, forgive me). The unfortunate reality is that the San Rafael Swell suffers more immediate and more consequential threats than "discovery." Be assured, however, that this is no guidebook. In fact, for those who have intimate knowledge of these places, you will find that certain canyons have been omitted and other locations renamed or moved, especially with regard to archeological sites. Do not attempt to recreate this journey based upon this text or its map, for you will find time and space have been deliberately distorted. Instead instigate your own journey. Buy a guide book or map to the region if you must. Better yet, simply wander off aimlessly into the desert, follow your heart up intriguing canyons or across desolate mesas, bereft of guide and map. The desert Southwest is filled with secret places, most of which are imminently threatened by development. Find that place which restores your spirit, whether it be the San Rafael, the Book Cliffs, Cedar Mesa, a redwood forest, or your local roadless area; draw your line in the sand and persevere.

The frontispiece map by Deb Van Poolen is strictly representational and not drawn to scale. It is included with Leopold's dictum in mind and exists only to serve the reader in navigating through the text, not the landscape itself.



Stratigraphic sequence of the San Rafael/Dirty Devil

MANCOS SHALE

Formed by silt slowly settling on the floor of an immense inland sea that covered most of the interior West from the Gulf of Mexico to the Arctic Ocean and east to the Great Lakes, these deep waters, low in available oxygen, prevented organic matter from oxidizing and thus created the black and grey of shale and siltstone.

Perhaps no portion of the earth's surface is more irredeemably sterile, more hopelessly lost to human habitation.

—Captain John Macomb, Corps of Topographical Engineers,
trying to find the junction of the Green and Grand River
in 1859.

Just north of Moab, Utah, the River Road meets Highway 191. A line of RVs and pickup trucks towing chrome-studded Jeeps funneling into Moab creates a long wait before we can turn left onto the highway. Entering Moab I feel a constriction around my heart. Another multi-story chain motel has appeared during my absence, bringing the total to thirty-three in this town of seven thousand souls.

With the discovery of uranium fifty years ago, Moab was transformed from a sleepy Mormon outpost to “The Richest Town in the U.S.A.” with twenty millionaires for every 250 citizens. By the 1960s, the uranium boom went bust and Moab, like Aspen, Taos, and Telluride spiraled into the post mining-town depression. Like these towns, Moab clawed its way out of economic doldrums by soliciting the tourist dollar. In the 1980s mountain bikers discovered Moab. (Or was it the other way around?) Suddenly it seemed like the old uranium days had returned. Only this time, people were buying bike tires instead of jeep tires, shifters instead of shovels, and odometers instead of Geiger counters.

Driving into Moab, you are barraged with billboards enticing you on raft trips or jeep tours. You can rent a mountain bike for the world famous Slickrock Trail or go rock climbing. And of course there's recreational shopping. You can buy T-shirts portraying lizards you will never see, books about places that don't exist, and just about anything from earrings to lawn ornaments adorned with Kokopelli, a mythological figure sacred to the Puebloan

peoples. Everyone seems like they are on vacation. A teenage girl break dances in the parking lot of the Ramada Inn while her dad fiddles with the mountain bikes on the roof of their SUV. A young couple sits on the curb drinking the milk from a coconut. A playground for the hip and idle, Moab seems like a town designed by *Outside* magazine, shamelessly advocating the outdoors as a playground and portraying nature as a commodity.

Moab's annual Jeep Safari transforms "mountain bike Mecca" overnight. The squadrons of spandex and lycra thighs pumping up and down Main Street from smoothie shop to brew pub are replaced by Jeeps. Traffic slows to a virtual stop as Jeeps are unloaded and paraded up and down Main Street. Many bumper stickers proclaim, "It's a Jeep thing. You wouldn't understand." There are Jeeps jacked up on monster tires, Jeeps painted blue camouflage (or a black and white camo that reminds me of a Holstein), and even a '58 Chevy station wagon on a Jeep chassis.

The Jeep invasion swells the valley to more than twenty thousand, and not a parking spot, campsite, nor hotel room remains vacant. The locals grow cranky. The parking lot of City Market overflows with hundreds of Jeepsters outfitting their expeditions for the day with all the essentials: chicken, burgers, chips, pop, beer, and charcoal. The four-wheel-drive trucks, Humvees, Jeeps, and SUVs queue up at each gas station and into the streets. Parked diagonally at the corner for all to see is a Mercedes family personal urban assault vehicle, sort of a cross between a Humvee and a camper. These big hunks of machine share three things in common: 1. They serve no utilitarian purpose and exist solely for recreation; 2. They are all spotless, no mud or dirt anywhere; and 3. As Michelle, my assistant, points out, they are driven only by white males although a woman is often perched in the passenger seat.

Needing refuge, I seek my favorite funky diner at the far end of town. A place where service is excellent, just slow, where you can talk to the cook through a portal to the kitchen, where the waitress casually fills you in on the town gossip, where the breakfast is huge, the coffee strong, and the smoothies divine, and where they play whatever music they want. Grateful Dead and Indigo Girls seem to be favorites. Posters of Elvis, Marilyn Monroe, and James Dean adorn the walls, and the bathrooms are out back. Confusion flows over me as I pull into the parking lot. The Star Diner is gone, replaced by Burger King.

Bereaved, I refuse to eat anywhere else. Surly, deprived of breakfast and caffeine, I pull into the youth hostel to meet eight university students from around the country who have enrolled in a field studies program through the Sierra Institute, an extension of the University of California at Santa Cruz. The program consists of three courses: Natural History of the Colorado Plateau, the Art of Nature Writing, and Wilderness Education. As program

leader I'm responsible not only for lectures and instruction, but also for logistics, safety, and general well being, which often encompasses roles as guidance counselor, friend, wilderness guide, confidant, and grumpy old man. Michelle greets the students enthusiastically while I stomp around impatiently, waiting to load the truck so we can escape Moab as quickly as possible.

Instead of heading into the nearby scenic redrock country, we drive northwest toward Green River. To the north of Green River rise the Book Cliffs, a foreboding rampart towering three thousand feet above the desert plain. In erosional retreat, these cliffs form the northern perimeter of the canyon country stretching from Price, Utah, east to Grand Junction, Colorado.

Upstream, the Green River cuts a deep gorge, creating Desolation and Gray canyons, while the canyons of Labyrinth and Cataract form an impassable barrier downstream. Thus, settlers, fur trappers, gold miners, and explorers were funneled into this valley, fording the Green River at Gunnison Crossing. The San Rafael Reef, a shark tooth ridge of upended sandstone, forced the route sharply to the north. Not an actual marine reef, the San Rafael Reef was christened by the early pioneers because this fifty-six mile, two thousand foot high pleat proved a significant impediment to east-west travel. By the 1830s, mule trains were bringing coffee, cloth, livestock, and beaver pelts from Santa Fe to California along this trade route that became known as the Old Spanish Trail.

Crossing such remote and inhospitable terrain, the Old Spanish Trail was also used by rustlers and slave traders. Although Mexico had outlawed slavery in 1812, an illegal slave trade flourished as Indians from the Southwest were sold in California. Fetching up to \$200 each, young girls were the most desired for their value as domestic servants in the booming gold rush cities. In the opposite direction, cattle and horse rustlers stole horses in California and brought them to New Mexico. Ute chief Wakara (Walker) played both games; a preeminent rustler, he also traded women and children captured in raids from other tribes to the slave runners for axes, guns, blankets, and metal pots.

The newly arrived Mormon settlers found slavery reprehensible and interfered with Wakara's participation in the slave trade, prompting the outbreak of Walker's War in 1853. However, by this time the slave trade was already fading. In 1870 a mail route was established along the trail and then abandoned thirteen years later when rail service between Colorado and California was established.

Instead of following the logical route of the Old Spanish Trail, the engineers must have found the prospect of blasting a highway straight through the San Rafael Reef too appealing to pass up. Begun in 1970, it took twenty

years to complete this stretch of interstate which opened up much of the formerly inaccessible San Rafael Swell, a vast uninhabited country of nine hundred square miles. Interstate 70 now slices through the Reef revealing successive layers of geologic history. Deposited horizontally, the formations have been tilted on end, so that one drives through the entire Jurassic period in a few minutes.

Gunnison Crossing eventually became the town of Green River, and the old way station can now claim distinction as the world's largest truck stop. Rather than a single entity, here is an entire town dedicated to refueling gas tanks, eating banana cream pie, fixing flat tires, towing SUVs stuck in the desert, and spending one night between here and somewhere else. Green River has two exits, one to get off the interstate, the other to get back on. To the east, only one gas station lies between here and Colorado, ninety miles away. A small sign on the west side of town reads, "Next Services 110 miles."

About halfway through this 110 miles of "nothingness," we turn off Interstate 70 at an unnamed "Ranch Exit." A dirt road off a dirt road leads to Muddy Creek, the only reliable source of water in the southern half of the vast and seldom visited San Rafael Swell. It looks more like an irrigation ditch loaded with cow manure than a creek.

Composed of grey Mancos Shale, the Coal Cliffs loom above us. A cold wind whips the cumulus clouds across the sky like a time release film. Through the low clouds we can see snow in the highlands of the Fishlake Plateau. As we step out of the van after the long ride, everyone replaces their shorts with long underwear and pants and quickly throws fleece over their T-shirts. We park near a derelict trailer, once a cowboy camp of sorts. It sags to one side, the windows blown out. Bits of refuse, old fencing, lumber, and a car chassis lay scattered about. It's one of those rounded post-war style trailers that conjures up visions of Appalachia.

Banjo, my faithful golden retriever, doesn't seem bothered by the unscenic scenery. She bounces around in circles and rolls in a cowpie.

Yet I know what the students must be thinking, so casting aside the stoic wilderness guide persona, I take their side.

"Good God, Abbey!" I invoke the patron saint Ed, and quote the first line of his gospel, *Desert Solitaire* (one of our textbooks), "This is the most beautiful place on Earth."

"Are you out of your friggin' mind, Abbey? You expect us to spend the next three weeks out *here*? Where's those red rocks, that famous slickrock you make such a big deal about, and where's those sandstone arches and waterfall grottos? There's *nothin'* here fer Crissakes! This is the most god-forsaken, uninspiring, and not to mention UGLY place I've ever seen!" The students smile quizzically as I rant.

“You call this good-for-nothing shithole a wilderness? GOOD GOD there’s not even a cactus to hide behind out here. Nothin’ but cows and cow-shit!” I kick a nearby patty.

“The desert’s fried your pickled brain, Ed. A guy would have to be crazy, certifiable NUTS to hike out across that for twenty-one days!” I wave toward the south, a desolate plain bound by low, grey hills.

By now everyone is laughing enough that I can pull out the maps and show them we are indeed headed clear through the San Rafael Swell, from I-70 to the tiny town of Hanksville. A person could easily hike through this county in less than half the time, but our purpose isn’t to pass through an area as quickly as possible, but rather to come to know a place, to linger and saunter as Thoreau would have us do. “For every walk is a sort of crusade,” he wrote, “We should go forth on the shortest walk, perchance, in the spirit of adventure, never to return, prepared to send back our embalmed hearts only as relics to our desolate kingdoms.”

“It’s a big chunk of country, nearly all roadless. I’ve never been here before, should be interesting,” I say, closing the map case.

At least it would be an adventure and an educational experience, which is precisely the point. By combining academic studies with experiencing a place on a physical level, students develop a personal awareness of the environment. Concepts such as evolution, ecosystem processes, geology, and the human’s role in nature cease to be abstractions. For many students, this program has completely changed the course of their academic careers and subsequent lives.

We quickly set up camp as snow and darkness begin to fall.

“Find a spot, set up your tents, and try to stay warm,” I say.

Michelle moves from tent to tent helping the students figure out how to set up their tents (many have never camped before, much less in the snow) while I fire up the cook stove for hot water. Most crawl into their tents as soon as possible. One of the older students, Jonathan, and I stand around the stove sipping cups of soup and glancing at the sky.

“Still snowing,” I say.

“Yep,” replies Jonathan who apparently isn’t much for lengthy conversation.

“Hellava way to start a program,” I say.

“Yep,” replies Jonathan.

“Sure hope it clears up tomorrow.”

“Yep,” says Jonathan. We finish our soup and head to bed.

It does indeed clear the next day, turning the grey dirt into gumbo that sticks to the bottom of our boots like wet concrete. We dry and warm ourselves in the sun while Michelle explains the basics behind minimum impact

camping and safety procedures. By the time everyone figures out how to pack their packs, it's well after lunch. Packed long before anyone else, I notice Jonathan sitting against his pack, already halfway through *Desert Solitaire*. It turns out that two years ago he hiked the entire Pacific Crest Trail.

We shoulder our heavy packs and navigate through futile attempts at alfalfa fields. We aim toward the interstate, sighting our course along the creek by the low greasewood growing on the banks, the only green, albeit dusty and pale, in a grey landscape. Overgrazing has created a severe cutbank along the torpid creek, and we claw at shadscale and tamarisk, hoisting ourselves up and down the banks. We trudge slowly in a perpendicular line, unwavering as a missile, so as to intercept the highway. I wonder if anyone notices a line of backpackers threading their way through a maze of barbed wire, old tires, and car parts to the highway, passing beneath it and heading south into a landscape as desolate as the moon?

We could have parked on the other side of the highway and begun our hike farther downstream, but I wanted us to walk under the interstate, having spent so much of our lives traveling over it. This ribbon of asphalt superimposed over the landscape defines our movement and which places are important and which are not. It gets us from here to there with little concern as to what lies between. We build our highways with near total disregard of the land and its inhabitants.

I also wanted to experience how animals move through the landscape. Driving along Interstate 70 from Grand Junction, Colorado, to Moab, I was overwhelmed by the hundreds of ground squirrel carcasses littering the pavement. Are we simply oblivious to the lives of animals in our rush across the desert?

The Humane Society estimates more than one million animals are killed every day on U.S. highways. This includes not only large and small mammals such as deer, bear, raccoons, hares, and rodents, but also reptiles, amphibians, birds, and untold invertebrates. Over half a million deer alone are killed every year by traffic. Roadkill is the leading cause of mortality for most large mammals and several endangered species, such as desert tortoise, Houston toad, brown pelican, ocelot, northern long-eared bat (whose only known breeding location is bisected by the Transcanada), American crocodile, and key deer (of which 80% of all known deaths are attributed to traffic). Highways act as wildlife mortality sinks. For example snakes are attracted to the road to sunbathe and get run over; then ravens and jays come to feed off carcasses and in turn are killed. From salamanders to grizzlies, highways prove lethal barriers to wildlife movement, preventing amphibians from reaching their breeding grounds and bears from finding

mates. Many animals avoid highways altogether. Elk spurn areas up to half a mile from a road. Small mammals find many roads too wide to cross. A study of a four-lane highway in the Mojave Desert discovered that rodents hardly ever crossed the road. This is of a special portent to the Colorado Plateau which is home to more than thirty species of rodents.

Interstate 70 severs the San Rafael bighorn sheep population in half. As traffic flow increases in speed and volume, the highway becomes less permeable resulting in decreased gene flow between isolated populations. Furthermore, a decreased ability to recolonize results in a drop in overall ecological resilience. If populations remain isolated long enough they become susceptible to disease and inbreeding. Extinction results. Thus highways are a double jeopardy for wildlife, for not only do they fragment the available habitat into smaller islands, they simultaneously kill off the remaining populations.

Muddy Creek passes unhindered beneath the interstate. If an animal knew about this passage, it could safely pass from one side to the other. Riparian corridors serve as valuable wildlife habitat; indeed 80% of deer kill zones are associated with major drainages. If properly designed, this could serve as a wildlife underpass, an idea now being incorporated into highways from Florida (which has installed underpasses for crocodiles and panthers) to Canada. The Texas highway department is considering a plan that installs tunnels under the highway for the endangered Houston toad. Near Park City, Utah, fenced right-of-ways funnel deer to painted cross walks that have reduced mortality 40%. However, these mitigation measures are expensive and the results are mixed. In Florida, deer and racoons frequently use the underpasses but black bears do not. In Canada, elk, deer, and coyotes use the overpasses, but grizzlies and wolves won't.

Roads greatly impact carnivores that occur naturally in low densities. Habitat loss and fragmentation, direct mortality, displacement and avoidance, and human developments associated with roads all contribute to their declining numbers.

As we hike, I think about Simon Ortiz's poem, "For our brothers: Blue Jay, Gold Finch, Flicker, Squirrel, who perished lately in this most unnecessary war, saw them lying off the side of a state road in southwest Colorado":

They all loved life.
And suddenly,
it just stopped for them. Abruptly,
the sudden sound of a speeding
machine,
and that was it.

I don't have to ask who killed you.
 I know, and I am angry and sorry
 and wonder what I shall do.

This, for now, is as much as I can do,
 knowing your names, telling about you.
 Squirrel. Flicker. Gold Finch. Blue Jay.
 Our brothers.

This particular highway also defines a boundary in my own mind. Although much of the Colorado Plateau lies north of I-70, for me, the vast area between I-70 and the Arizona line embodies Utah's redrock wilderness. I-70 represents civilization, and I had always looked to the south: Canyonlands, Zion, the Escalante as the real wilderness. By starting north of the interstate and walking beneath it, I wanted to defy the validity of that line. I also hoped that this would somehow frame the students' concept of wilderness on an experiential level.

Does anything significant change when we pass under the interstate? We are hardly in the land of Oz, but nothing civilized lies between us and Hanksville, eighty-five river miles downstream, no pavement, no houses, nothing but a couple of dirt roads, a muddy creek to follow, and over half a million acres of wilderness. At Hanksville, Muddy Creek joins the Fremont River and creates the Dirty Devil River. After a short resupply, we will follow the Dirty Devil its entire length, another eighty-five river miles to where it converges with the Colorado River beneath the surface of Lake Powell.

Interstate 70 to Lake Powell. Icons of the modernization of the West? The Interstate serves as a transportation corridor, emblematic of speed, efficiency, and globalization, carrying lettuce from California to the Midwest, orange juice from Florida to San Francisco, cocaine from L.A. to Denver. Created by a massive dam across the Colorado River, 180-mile long Lake Powell flooded what was once the very heart of the Colorado Plateau—Glen Canyon.

But what lies between I-70 and Lake Powell? Twenty years before the damming of the river, Harold Ickes, FDR's Secretary of Interior, proposed the world's largest preserve, a four and a half million acre national monument that would reach from Lee's Ferry in Arizona, west to Kanab, Utah, north to Green River and east to Moab. Only one dirt road crossed this region, the most remote in the contiguous U.S. However, FDR's Federal Reserve Chairman, Marriner Eccles, was from Utah and was vehemently opposed to the monument. Then the bombing of Pearl Harbor shifted attention elsewhere.

Even earlier, Bob Marshall, co-founder of the Wilderness Society, identified two million acres of roadless land in the San Rafael alone in 1935. While I-70 now sliced it in half, I wondered how much remained. Although industrialization has shredded and fragmented one of our last remaining wildernesses, could we still thread together a patchwork traveling by foot across this remote region? Is it still possible to set off into the unknown for weeks, simply following a creek? Would we find the soul of the Colorado Plateau here, damaged but still intact? Would we find our own souls?

The Wilderness Act defines wilderness as an “untrammeled” area. Most people misinterpret this as “untrampled.” *Untrammeled* refers to a trammel line, which is what fishermen use to surround a school of fish with nets. Thus, untrammeled would pertain to an area whose boundaries are flexible and porous, not surrounded by civilization. I wondered to what degree Interstate 70 and Lake Powell act as ecological trammel lines for the San Rafael/Dirty Devil region. Could they also act as psychological trammels, reining in our own wildness?

Unlike the slickrock country around Moab, so breathtaking with its vivid colors, strange rocks, and cliff dwellings, this is a grey-streaked country, always too cold and windy or too searingly hot. Instead of picturesque junipers and waterfalls, this is a land of salt bush flats and little to no water. What water exists is foul, laced with heavy metals, salt, and giardia (as we later discovered). The intriguing Anasazi and their kivas and haunting rock art are replaced by barren bentonite hills inhabited by ghosts of a different kind, the specters of greed.

We pass an abandoned mine and a road bed scarred into the desert crust. This is a place where you damn the land and hope to get rich quick and get the hell out, an area so desolate that it has never seen a permanent settlement. Scour the earth for uranium (or magnesium as in the case of this mine), or coal, or oil and gas, or fill it with cows, scrape every available resource off, and then fill in the gaps with toxic waste. This unlovely land has been consigned to satisfy the motorized recreation needs of off-road vehicles. We take everything it has to offer and leave feeling not quite satiated. It is the landscape of desire.

“I wonder what this place would look like without cows,” says Stacy as we leave the interstate behind.

“Hard to tell,” I answer. The cows have so thoroughly transformed the vegetation that it is impossible to tell what plant life this strange world might support. Cottonwoods too large to be trampled, tamarisk, rabbitbrush, greasewood, tumbleweed, and cactus are the only survivors.

We stop to examine a rabbitbrush heavily pruned by bovine shears. This indicates the severity of the overgrazing since cattle prefer nearly anything to rabbitbrush, which consequently flourishes in disturbed areas.

“What are these cottonball things?” asks Stacy indicating the white fuzzy growths along the thin stems of the rabbitbrush.

“Let’s take a look. Anybody have a pocketknife?”

David quickly produces a knife and we slice open the grape-sized nodule. Inside a small cavity squirms a tiny worm.

“This is a gall,” I say holding up the nodule. “And this is the larva of a fruit fly. The flies lay their eggs just under the surface of the stem and they act as an irritant to the plant, which responds by creating this gall to encase the egg. Fortunately, for the fruit fly, the gall provides a secure place from predators and a steady food supply.”

“Does it hurt the plant?” asks Stacy.

“I’m sure it doesn’t help; it is parasitic. For some reason rabbitbrush and sagebrush seem to have a lot of galls on them.”

We find several cows along the creek and a cow skeleton in the greasewood thickets. The students become quite excited over the discovery. Scott ties the skull to his pack. I wonder if he will carry it the entire way. As we thread through the thickets land-mined with cow pies, Allison asks me, “When do we get to the wilderness?”

MORRISON

Formed by swamps and vast river deltas that were heavily populated by dinosaurs, the Morrison contained copious decaying organic matter. Volcanic ash of unknown origin covered these fluvial deposits and created a high pH environment which led to an abundance of dinosaur fossils, as silica replaced bone. The Morrison, along with the Dakota above it, is one of the most widespread formations, found from central New Mexico throughout Colorado and Utah, all of Wyoming, most of Montana and east into the Dakotas.

What avail is it to win prescribed amounts of information about geography and history, to win ability to read and write, if in the process the individual loses his own soul; loses his appreciation of things worthwhile, of the values to which these things are relative; if he loses desire to apply what he has learned and, above all loses the ability to extract meaning from his future experiences as they occur?

—John Dewey

We set up camp at a bend in the creek where a few old cottonwoods stand like sentries against the emptiness. In this bleak country we seek harbor near the trees; we need something larger than ourselves to provide a sense of scale.

We break into groups of three to cook dinner. Each group's meal looks remarkably like the next—a steaming pot of starch. Our stoves have two settings—high and off. Further limiting creativity is the need to fill three people to bursting with one pot of food. Most dishes consist of three steps: 1. boil water, 2. add food, and 3. eat. In three weeks on the trail one can weary of dried beans and rice, mashed potatoes, and macaroni and cheese. The monotonous consistency of “camp slop” can be offset by the addition of a food repair kit consisting of lightweight luxuries such as curry powder, dried green chiles and jalapenos, dried vegetables (carrots, tomatoes, green and red peppers), Parmesan cheese, garlic salt, pepper, Italian seasoning, and cinnamon. So with unabashed self-interest at stake (the students will be feeding me as well), I prepare lavish meals at the beginning of a course in the hopes they will follow suit. “One-pot wonders,” I call them.

Tonight I am preparing a simple but elegant meal with discrete fanfare. I begin by sauteeing fresh chopped garlic, onion, carrots, sun-dried tomatoes,

and pine nuts in olive oil. The aroma pervades the camp and the other cook groups enviously glance my way. With a flourish, I add basil and oregano. When lightly browned, I scrape this into a plastic bowl and set it aside in full view of the rest of camp. Then I boil a pot of water and add multi-colored pasta spirals. While the pasta is cooking, I add some of the hot water to the bowl mixing in dried milk and pesto. After draining the pasta carefully into a sump hole dug for our waste water, I pour the pesto mixture over the pasta. I sprinkle Parmesan cheese and salt just before ladling out portions. I glance over at the faces of the mashed potato eaters as my cook group exudes ecstatic proclamations over the meal.

After dinner we kick the dried cow pies out of the way so that we may sit in a circle on the sand between the creek and the tangled greasewood. Emily chooses a trail name for herself. On our first day out she slipped on the slick mud at one of the creek crossings and slid into the water, soaking her pack. Laughing uncontrollably, she managed to slip out of her pack and rolled around on the bank coating herself with grey mud. "I decided that my trail name is Mud," she announces.

Several years ago, my students suggested the use of trail names, and I've done it ever since. I've found that choosing a new name allows people to reinvent themselves. Most folks come into this program not knowing anyone and with limited experience in the back country. Wilderness quickly strips distractions away, and for some, it is the first time in their lives that they are forced to see who they really are. Many of the things that define us—parents, friends, social roles—are removed, and we are left with ourselves and a small group of other humans in a strange land. We get the opportunity to do some psychic exploration. Who am I? Who am I in relation to others? In relation to the environment? These are fundamental questions that we don't have the chance to ask when we are surrounded by a culture that views nature as increasingly irrelevant.

Six weeks in the wilderness engenders a redefinition and exploration of one's role in a group. If we are indeed products of our actions, experiences, and environment, here we are suddenly presented with a clean slate. We have no past actions upon which others can judge us, our experiences have yet to be defined, and the environment is new and unknown. Snakes shed their skin every year, birds molt, and occasionally we need to shed our old selves and create new ways of being. This redefining is particularly apt at the college age, which is one of profound transformation.

In many ways this program serves as a metamorphosis from adolescence to adulthood. If nothing else, students learn to take responsibility for their actions as well as take responsibility for their role in the group. The naming process also creates group identity and cohesion. Everyone calls each other by

their new names, and this is the context in which we experience each other. Most choose names of natural elements they feel some affinity toward, others pick names that they feel are suiting or names that embody a quality. Some names are surprisingly appropriate, and some students never go back to their given name after the course is over. Other names don't quite fit and eventually fall away.

Stacy becomes Sage because of her interest in and affiliation toward plants. Yucca decides his blond dreadlocks resemble the desert plant. Seeker is keenly aware of his search, a search for something although he isn't sure what. Patience wants to be reminded to be patient. David, who wears a plastic figurine of Yoda around his neck, renames himself Bobofet after the *Star Wars* character. Allison becomes Seaweed because she wants to learn to go with the flow, bob in the tide and not stress about being on time. Michelle names herself Metta after the Buddhist concept of loving kindness. And Jonathan transforms into Huckleberry.

"Why Huckleberry?" asks Patience.

"Well," he answers in his characteristic drawl, "Huckleberry had a little problem with the law." He pauses to make sure everyone is listening.

"It seems there was this timber sale over in Idaho called Cove-Mallard. The largest timber sale in history. Right in the heart of one of the largest roadless areas in the lower forty-eight. So, to protest, Huckleberry and some of his friends built a tripod . . ."

"What's a tripod?" asks Patience.

Jonathan (a.k.a. Huckleberry) sketches in the sand. "A tripod is three long poles lashed together and you sit at the top. If someone tries to cut down one of the poles, you come crashing to the ground. You put this in the middle of a logging road to block the road until they can figure out a way to get you down."

"How *do* they get you down?" asks Patience, rocking forward on her knees intently interested.

"They make all sorts of threats, like jail. Then when that doesn't work, they say they won't arrest you if you come down. When that doesn't work, they fire up the bulldozers and drive right at you trying to scare you off. When that doesn't work, they start cutting away at the tripod."

"Don't you fall off?"

"Naw, you're locked in pretty good. They finally figured out that if they just cut off a couple feet off each leg they lower it bit by bit until the cops can arrest you and haul you off."

"Were you arrested?"

"Well, this Huckleberry character was. 'Course they didn't much like it when they asked him his name and he told them 'Huckleberry.' He went into

hiding for a couple years. So in the spirit of fighting for the remaining wild places, I think it's about time for Huckleberry to reappear."

After breakfast the next morning, we venture out for a day hike and exploration. Away from the creek, the familiarity of cottonwoods yields to an alien landscape like some *Star Trek* movie set. Rainbow hills of reds, purples, and greens indicate we've entered the Morrison Formation, a welcome relief from the oppressive grey of the Mancos Shale we hiked through yesterday. However, like the Mancos Shale, these rainbow hills are quite barren and composed of bentonite clay, which swells when it gets wet and forms a slick and impervious barrier. It then dries, leaving a few inches of crumbly clay like spilled granola. Both formations are also laden with selenium, a toxic material that further inhibits plant growth.

The Morrison is the only formation on the Colorado Plateau that contains significant dinosaur fossils, especially in Dinosaur National Park and the Cleveland-Lloyd quarry in the northwest part of the San Rafael Swell, where *Allosaurus*, *Apatosaurus*, and *Stegosaurus* skeletons have been uncovered. The swamps also begat large deposits of uranium and other minerals. The road scars and old mines attest to the boom of the 1950s.

The weak layers of clay erode easily, undermining the harder capstone that collapses, leaving sandstone blocks frozen seemingly beyond the angle of repose until they, too, turn to dust. These sandstones and conglomerates are evidence of Jurassic stream channels that once meandered across the lowlands. Conglomerate boulders composed of rounded river rocks cemented together litter the gully. They erode into weird shapes, rocks with saucer depressions and thumb-like protrusions, and look like they might get up and move around when we aren't looking.

"Dude, this is like walking around on a planet or something," proclaims Bobofet.

Bobofet and Yucca scamper up the loose granular rock and slide back down. As a group we look up at the skid marks their boots have left and compare it to the motorcycle tracks nearby.

Part of our purpose here is to document the motorbike and ATV (all terrain vehicle) abuse of the land for the Southern Utah Wilderness Alliance (SUWA). We take photos of the tracks we encounter and plot them on a map in the hope that this information will persuade Congress to protect the area. Besides the noise, the ORVs (off-road vehicles) have a significant ecological impact, displacing wildlife, running over what little vegetation there is, and, perhaps worst of all, destroying the fragile desert crust that so much of the ecosystem depends upon.

But looking up at the boot skids, we have to assess our own impact. It is easy to be unconscious of what we do. The area has already been trampled

by cattle, crisscrossed by ORV tracks, littered with old mines, laced with road scars. What difference does it make if a few campers leave their mark?

The students debate the question and come up with their own minimum impact standards. When I first began leading trips, I laid down the law of minimum impact, detailing the rules. Of course, then I was responsible for enforcing them. Along with enforcement came the sticky question of what to do when the rules were violated. Over the years I discovered that if I allowed the students to set the standard (and they invariably came up with pretty strict rules), then they were the ones responsible for maintaining them. We decided that sliding down the loose rock creates a visible impact, if nothing else, and therefore we shouldn't do it.

"But why does it matter?" Yucca asks, pointing out how impacted the area already is.

"I regard minimum impact as a practice, like meditation or yoga," I reply. "You just keep doing it. It's the act itself that's important. It becomes a part of a daily ritual. Even if no one else knows it, even if it doesn't make any real difference if you drop some oatmeal on the ground or trample a cactus. It's how you live your life from day to day. It's easy to be a minimum-impact purist in a pristine place, the real challenge is doing it in a place that's so damaged that you wouldn't notice the difference. It's about the self, knowing that you are being true to your principles. And of course it isn't always easy; we all lapse. That's why I see it as a practice."

What harm? Nothing but our own realization of our clumsy attempt to inhabit a place.

Someone finds a flower, a rare forb in this overgrazed place, and so we investigate. Examining the clusters of drooping white flowers indicates that this is one of one hundred and forty-seven species of Fabaceae found on the Colorado Plateau.

"An unusual shape for a flower. Check it out. Anyone recognize it?" I inquire.

Most shake their heads.

"Looks like a sweet pea. Almost," ventures Sage tentatively.

"Yep. A member of the pea family just like clover, alfalfa, lupine. All Fabaceae have a few things in common. First is the flower. It has a banner, wings, and keel." I pull back on the yellow keel revealing the pistil and stamens. "Why might a flower evolve such a structure?"

"For pollination," says Sage.

"Okay, what about pollination?"

"So it can get pollinated?" says Seeker.

"Does this look like it would be easy to pollinate?"

They shake their heads.

“To keep it from getting pollinated by the wrong insect?” asks Patience.

“Why should a flower care which insect pollinates it?”

Blank looks.

“It’s a selective strategy. Pollen is a precious commodity. You can’t just have any old Tom, Dick, or Harry insect come poking his nose into your parts. You want a specialized pollinator, one that will visit only your species and not go dropping your pollen on a sunflower somewhere. What might be a problem with being selective about your pollinator?”

“That insect might be scarce like the yucca moth in *Desert Solitaire*,” says Seeker.

“So your fate is tied to the fate of that insect, and if that insect hits hard times, gets diminished by pesticides, you suffer. Conversely, if the plant population drops below a threshold, that insect can no longer sustain itself and its population drops and on and on into a downward spiral, known as an extinction vortex.”

“Why else might you want to make it difficult to get your pollen?” prompts Metta.

“So the wind won’t blow it away,” says Sage.

“Yeah, or . . . ?”

“So when an insect lands it’s gotta really get in there and drops pollen from other plants,” offers Mud.

“Exactly. Fabaceae also share leaf shape, the leaves are compound, composed of leaflets, either palmate compound like a clover and lupine, or pinnately compound like this, where the leaflets branch off in a series.”

By the time we finish, a couple of students have already looked up the flower and decided it is a stinking milkvetch, *Astragalus prolongus*.

“Well, there’s lots of milkvetch around here. In fact there’s quite a few endemic *Astragalus*,” I counter.

“It says it has a foul odor from growing in saline and selenium soils,” insists Seeker.

“Well this is the right place for that. We can test it.”

We all bend down and smell the flower.

“That’s not so bad,” says Sage

“I don’t think it smells bad at all,” says Mud.

“Yeeecch!” A few moments later the sweet smell turns rancid.

“I guess that would be a stinking milkvetch,” says Metta.

Continuing up the draw, we end our hike at the top of a butte overlooking the entire San Rafael Swell, a blister on the earth’s surface, a hundred miles long and forty miles wide. The geologic formations lie exposed in concentric circles like ripples in a pond, with the oldest rocks in the center exposed by uplift and erosion. To the east the surface rises upward

to meet the upended layers of the San Rafael Reef, forming a seemingly impenetrable wall of sandstone battlements. Beyond the reef it appears that the world simply drops away. But if you kept going east you would find the rocks becoming younger until you reached the Mancos Shale once again. We visually follow the course of Muddy Creek south but lose sight of it near Lone Tree Wedge, a long mesa that looks like it is slowly melting into the formation below. Across the creek, shark fins of black basalt testify to relatively recent volcanic activity.

Following Muddy Creek downstream, the rock will get successively older. Then as we approach the reef we will go forward in time emerging onto the Mancos Shale. A one-hundred-and-ninety-million-year journey back in time and then forward again, encompassing the entire Mesozoic Era. From the vantage point on this butte we stand witness to the last two hundred and twenty-five million years of Earth's history: from the Permian sandstone at the top of the San Rafael Swell formed in the age of fishes through the Triassic, Jurassic, and Cretaceous (the age of dinosaurs), to the age of mastodons and giant sloths in the Tertiary (marked by the Henry Mountains), and the erosional conditions of the Quaternary.

To the south the sharp, snow-covered Henry Mountains rise above a vast desert laced with broken canyons. To the north, we can pick out the only sign of civilization, I-70 slicing through the charcoal grey mesas of Mancos Shale. The deeply furrowed lower slopes are the remnants of an inland sea that in fits of indecision repeatedly retreated and advanced, creating lagoons and swamps along its western margin. Beaches and sand bars formed the hard sandstone of the Mesa Verde group, which caps the Mancos Shale. As the sea finally retreated for good and deposited the top layer of sandstone, the Cretaceous came to a screeching halt when the earth was struck by a giant asteroid, ending the age of dinosaurs.

The decomposing plant material eventually became coal, oil, and gas. Numerous coal mines infest the formation, from the large operation outside Price to defunct mines near Durango, Colorado. A flurry of seismic exploration for oil and gas deposits worries conservationists as the U.S. government has already approved nearly a thousand gas wells and over four hundred miles of new roads north of Green River.

To the west rises a long scarp of high plateaus dotted with patches of snow. An unbelievably vast country and so much sky that the world seems infinite.

The students prepare for their first class by pulling notebooks out of their packs. They look at me expectantly.

"So, what do you want to learn about?" I ask, borrowing a page from philosopher/educator John Dewey.

They stare at me for a moment. I wait. The story goes that Dewey would walk into a classroom, prop his feet up on a desk, and wait. The entire hour would tick by. The next class he would do the same and keep it up until someone asked him, “Well, are you going to teach us anything?”

“What do you want to learn?” Dewey would reply.

By this point his students were on the edge of exasperation and pelted him with their pent-up frustration. Dewey’s point was that, “The inert, stupid quality of current customs perverts learning into a willingness to follow where others point the way, into conformity, constriction, surrender of skepticism and experiment. . . . We think of the insolent coercions, the insinuating briberies, the pedagogic solemnities by which the freshness of youth can be faded and its vivid curiosities dulled. Education becomes the art of taking advantage of the helplessness of the young.” The first modern proponent of experiential learning, Dewey turned the education establishment on its head in the early twentieth century with his radical approaches to learner-based education. He insisted, “It is not the subject *per se* that is educative or that is conducive to growth,” but rather the experience one has.

However, Dewey campaigned against permissiveness and empty activities in experiential education. “The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative,” he wrote. Those experiences that have “the effect of arresting or distorting the growth of further experience,” and lead to lack of sensitivity, boredom, or conditioning (i.e., traditional education) or that may be enjoyable yet are disconnected, (playtime or unstructured activities) Dewey labeled as “mis-educative.” Dewey advocated education as a form of personal growth rather than the production of an efficient and well-trained work force, which seems to be the unstated purpose of the modern educational system.

Despite politicians’ emphasis on standardized testing, most educators have come to appreciate the value of Dewey’s approach—people learn best by doing and having control over what they are learning. He wrote, “The pupil must learn what has meaning, what enlarges his horizon, instead of mere trivialities.” Perhaps due to the infusion of his ideas into the educational system, college students now are more forthcoming than they were in Dewey’s time.

“I’d like to do a lot of writing,” states Patience.

“Can we learn about the geology?” asks Mud.

“And ethnobotany,” adds Sage.

“I’d like to know more about the environmental issues. Where’d all these cows come from?” says Seeker.

“Can we do, like, some spiritual stuff?” asks Seaweed.

Yucca cringes.

“Birds,” says Huckleberry.

“Can we do solos?” inquires Patience.

“Oooh, yeah.”

“I find that I learn best through discussions, you know, about literature and philosophy,” says Patience.

“Not philosophy!” counters Yucca.

Patience looks crushed.

“Well, we don’t all have to talk philosophy. Maybe in the evenings or something. I know I’d be interested,” adds Metta, attempting a conciliation.

Most of what they brainstorm is already part of the curriculum, but this discussion gives me an idea of how much interest there is and how much time to spend in each subject area. More important, this process provides the students with a sense of ownership over the program. I set up the framework, allowing for flexibility, and the students appreciate having a structure. Providing a say in what and how they are learning increases their interest and motivation far beyond anything I could do. Indeed, sometimes my biggest challenge is to keep my mouth shut and stay out of the way. I see the teacher’s role as one of facilitator to help guide the students’ own learning and place it within a meaningful context.

With this in mind, I present them with their first assignment, writing up their personal and academic goals for the next six weeks, which we will revisit on occasion along with the course content and direction. We may find more interest in geology than philosophy as the course progresses.

Leaving the students to their own explorations, assignments, or lounging, I follow the butte south and wander back down a dry wash, eventually ending up back at Muddy Creek. The water is the color of weak coffee with lots of milk, sort of an opaque, thin sludge. Take bentonite clay, add water, and you get a surface slick as oil; put a creek through it and you get a viscous clay. You get a peculiar quicksand that, lacking sand, is amazingly quick and tenaciously sticky. Both Banjo and I found ourselves mired and surprised on our first stream crossing the previous day. Standing beside the creek in mild confusion trying to figure out where I am, I notice a large black rock beside the water, one of the basalt boulders washed down from Fishlake Plateau.

“Is that an animal?” I question myself. “No, it’s just an algae-covered boulder.”

But as I pass, the smell demands a second look. The algae turns out to be thousands of flies coating the decaying flesh of a cow, pulled by thirst to her death in a deep zone of quicksand.

I decide not to inform the students of my discovery, knowing what a dead cow in their drinking water will lead to among people who are already

apprehensive about this water. There is no other water source for several days' walk in any direction, and I can only hope that our hike tomorrow will take us far enough downstream that the effects of a rotting carcass will be diluted. Water filters are useless here, clogging quickly on the silt. We treat the water liberally with iodine, which kills the microorganisms but leaves a rather unpleasant taste. When I see upturned noses and expressions of disgust at the quality of the water, I feel like a frustrated parent cajoling his offspring into eating her vegetables. I want to say, "This is a desert, for crying out loud. Do you have any idea how lucky you are just to have any water to drink?" Instead I suggest heavy doses of lemonade or Tang, which turns our water from brown to yellow or orange.

Around the bend from the cow I stumble upon a ramshackle cabin, hastily built of juniper and cottonwood logs. The plank roof is mostly caved in. The builder chinked the logs with river mud to keep out the winter cold and incessant wind. A few scattered pieces of iron implements lie about, too far rusted to be identifiable. Besides rodents, a woodstove and a hand-built table are the only occupants of the cabin.

Who lived here? As early as 1870, ranchers west of the San Rafael began looking for winter pasture in the Swell when snow could provide water. Could this have been a line camp for a vast ranch? Maybe it was Chris Peterson's cabin, who sometime before 1900 brought 300 head of cattle down Muddy Creek hoping to start his own spread out where no one would notice. Could it have belonged to sheep rancher Henry Jenson, who was found dead in 1890 just north of here? Blood in the snow showed he had crawled half a mile after being shot, presumably in a dispute over grazing rights. Perhaps it was built by some poor homesteader who arrived too late and found all the best land to the north and west already taken. Homesteading continued into World War II in the Swell. Perhaps this was an outlaw cabin? Butch Cassidy and the Wild Bunch were known to frequent the area. Was it someone seeking a fresh start or an escape from the world?

Nevertheless, it must have been hard, living out here, trying to eke out an existence off a few cows, drinking this water every day. The sound of the wind enough to drive anyone crazy. Perhaps it *was* a crazy fellow who found immeasurable solace in the intricate solitude of this place, where Kit Carson said, "not even a wolf could make a living." Someone who grew to love the heat and cold and wind but finally abandoned the place in frustration and despair after his dreams wandered off in search of greener pastures.

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SUMMERVILLE

A deep maroon formation that occurs in thin shaley layers. Ripple marks in the mudstone indicate it was formed by tidal mud flats and tidal channels deposited along the shore of a desert sea.

The rancher (with a few honorable exceptions) is a man who strings barbed wire all over the range; drills wells and bulldozes stock ponds; drives off elk and antelope and bighorn sheep; poisons coyotes and prairie dogs; shoots eagles, bears, and cougars on sight; supplants the native grasses with tumbleweed, snakeweed, povertyweed, cowshit, anthills, mud, dust, and flies. And then leans back and grins at the TV cameras and talks about how much he loves the American West.

—Ed Abbey

The next day while the students finish their oatmeal and morning duties, I draw a grid in the sand about fifteen feet by twenty feet. I divide it into one foot squares and collect some sticks to lay across the grid. I ask the students to gather a pile of small stones. This gets them moving around and sparks their interest. We leave the grid and stones for the time, and we begin a short review of life in the 1860s.

The Colorado gold rush was in full swing and California had been a state for twelve years when Congress passed the General Homestead Act of 1862, which gave one hundred and sixty acres of unclaimed land to any adult white male if he agreed to live there and make improvements. However, redistribution of land required the removal of the indigenous occupants. The Indians were armed and causing trouble. The U.S. had succeeded in wresting the Southwest from Mexico, yet the Mexicans were still a force to be reckoned with. The Canadian border was in dispute, with the British laying claim to much of the Northwest. What better way to claim a region, subdue the natives, and keep out foreigners than to fill it with settlers?

A less cynical view holds that the Homestead Act was the promise of the Jeffersonian ideal of a farmer democracy. Thomas Jefferson believed that “westward expansion would keep Americans in possession of property, agrarian, independent, and responsible,” stated historian Patricia Limerick. She continued: “‘Power always follows property,’ John Adams said bluntly; property, widely distributed among the people would hold the line against

pernicious concentrations of power.” Whatever the intent, thousands of young men, second or third sons with no assets, recent immigrants, and Civil War veterans, flowed west in a steady stream. Land speculation quickly became the real gold rush.

Horace Greeley implored young men to go west and seek their fortune. Railroads shamelessly promoted empty lands, loaded customers by the score, and dropped them off at stations in the middle of nowhere. Throughout the U.S. as well as Europe, railroads sought settlers both to sell some of their land grants to and as customers for freight. They promised immigrants fertile land, access to markets, amenities of nearby towns, and the security of private property. The Homestead Act made people think all they needed was a piece of land in order to make a living.

“So we’ve got all these people living in the East and all this ‘empty’ land sitting over here,” I wave toward the grid.

“Would anybody like some free land?”

Blank faces.

“Doesn’t anybody want any free land?”

“Heck, I do,” says Bobofet, raising his hand.

“Okay, well line up for free land,” I say, picking up the pile of stones and handing each of the students one. “Go and claim your land.”

They run over to the grid and each claims a square.

“Anyone else?”

A moment’s pause and then a few run over for more stones. Soon they claim several squares running back and forth as the others catch on. Patience steadfastly clings to her single square and refuses to take part in the frenzy.

“Didn’t I see you here before?” I ask Bobofet.

“Uh, that was my brother,” he replies and hurries back with another stone.

“You look awfully familiar,” I say to Sage, next in the newly formed line.

“Yeah, but my, uh, Dad sent me over; this is for him,” she improvises.

While the year 1878 saw two and a half million entries under the Homestead Act, by 1900 only four hundred thousand families had actually succeeded in homesteading and retaining their land. Those who survived had staked their homesteads along creeks, or filed dozens of false claims under dead uncles, or paid drunks to file claims and amassed thousands of acres. Wallace Stegner estimated that ninety-five percent of the title claims were fraudulent. Anaconda Copper, for example, gained control of 663,552 acres of federal timber lands through the Homestead Act. One land baron acquired more than a million acres of California’s Central Valley through loopholes and corruption.

Soon all the squares are occupied by stones. I drag my boot along the eastern edge of the grid. "This is the hundredth meridian. East of here more than twenty inches of rain falls per year; west of this line is less than twenty inches. It's nearly impossible to grow crops without irrigation on less than twenty inches of rain."

Zebulon Pike's 1820 report of the Great American desert between the Missouri and the Rockies was readily dismissed by boosters such as Colorado's territorial governor, William Gilpin, who insisted the climate was so mild that housing was unnecessary, agriculture effortless as land was amply irrigated by underground waters. Even scientists chimed in, proclaiming "rain follows the plow," that by stirring up the soil the farmer creates dust particles that water adheres to and causes rain in arid regions. Coincidentally, the 1870s were abnormally wet years, but then the drought came and within ten years, two-thirds of the homesteaders had given up and returned home.

"So what happens to all you homesteaders?"

"Isn't this a river?" asks Patience, pointing to the line of sticks.

"Yep, and if you're over here away from the river . . ." I put my hand on Seaweed's shoulder, "you go back east."

"And if all you have is one hundred and sixty acres, you find that just isn't enough to make a living on, and so you go back east." I wave at Patience.

One by one I eliminate seventy percent of the students.

"So what are you going to do with these abandoned homesteads?" I ask.

"More rocks!" Bobofet demands, claiming those nearby squares.

Soon those remaining have consolidated their holdings.

The Act made no provisions for abandoned claims to revert to the federal government; instead the land went to banks and the open market for speculation. "In the end, the Homestead Act stimulated the monopolizing of land that its advocates had intended to prevent," wrote Wallace Stegner.

What was envisioned as the most ambitious land redistribution attempt in world history became a fraudulent land grab, solidifying land in the hands of a few wealthy individuals and corporations.

"A hundred and sixty acres of arid range land could not provide forage for enough stock to support a family. Hence two kinds of land fraud, on a large scale by wealthy or corporate stockgrowers to acquire big ranges, on a small scale by poor individuals trying to acquire the self-supporting homesteads that they could not get legally. . . . [T]o irrigate so large a tract would usually cost more than an individual owner could afford, and the farming made possible by irrigation would mostly be so intensive that so big a farm could not be worked by a single family," wrote Bernard DeVoto.

The reality was that while one hundred and sixty acres was more than adequate for a subsistence farm in the East, cattle ranching was the only

viable agriculture in the arid West and one hundred and sixty acres was simply too little.

Coincident with the land rush was the cattle rush. By 1870 there were more than five million head of cattle, peaking in 1884 at thirty-five to forty million. The range became so depleted that cattle starved to death and the terrible winter of 1886–87 killed more than ten million cows. Many rangelands still haven't recovered.

"Now the river. Who got here first?" I ask.

Bobofet raises his hand.

"Okay, so according to western water law, you can claim as much water out of this river as you need, and you have to use it or lose it. So let's say you claim fifty percent of the average flow, and then the next person who shows up is Mud and she claims thirty percent, and the next person is Sage and she claims twenty percent. Although she is upstream, she has to let seventy percent go downstream because your water rights precede hers in time. This is called "prior appropriation." Now let's say there's a dry year and the river only has fifty percent of its normal flow, what happens?"

"We split it proportionately," Sage ventures.

"You'd think, but prior appropriation says that Bobofet gets his full fifty percent before anyone else gets any."

"What about the fish?" Sage asks.

"That's an interesting question. We now have what's called "instream flow," which means that the river itself has water rights. Unfortunately, those are usually junior to other uses, and so in a dry year the instream flow may not receive anything."

"Does that mean the river dries up?" asks Mud.

"In a dry year, yes. By the time the Colorado reaches the Gulf of California, it is little more than a trickle."

After the lesson, we pack up and hike downstream. We decide to camp at the mouth of a small side canyon. The Summerville formation comprises the upstream wall. Spiderwebbed with gypsum, it looks like chocolate layer cake. Gypsum, formed by mineral-laden sea water, flowed through the cracks in the mud and evaporated, bequeathing a soft crystalline rock. Usually opaque, gypsum can sometimes be quite clear, resembling a quartz crystal, other times we find gypsum that has been stained by a trace mineral, such as iron, leaving it pink. Given time and slope, gypsum flows like thick syrup and distorts the layered rocks so that the chocolate cake looks like someone sat on it. The wind and water have carved the soft rock into strange shapes.

A flaky, pale green rock, the beginning of the Curtis formation, erodes out from the base of the cliff. Glauconite, an iron-potassium silicate mineral,

gives the Curtis its green hue and forms only in shallow marine environments. Marine fossils also indicate that this formation was a shallow sea that once flooded the region and relinquished to the mud flats of the Summerville. On the opposite cliff, the Curtis sits at the top and under it lies another red sandstone, the Entrada formation. I can only speculate that this little canyon follows a fault line, and possibly during the uplift one section rose higher than its neighbor.

After setting up camp, a few of us grab our sleeping pads and walk off to find a place to do yoga just as a cowboy rides up. He's as surprised to see us as we are to see him, probably more so. Not many folks camp along this section of Muddy Creek.

"What are you all doin'?" he asks, not in a confrontational way but out of bewilderment.

"You all are walkin'? Man, I don't walk unless I have to," he says when we tell him.

Brian says he's worked as a cowboy in Colorado, Wyoming, and New Mexico, as well as Utah. Today he's coming through to mop up the few remaining strays that they missed last week when they had to pull the cows off this range and bring them up to the mountains for calving and branding.

Brian says three permittees jointly hold this 190,000 acre allotment. To put that in perspective, 190,000 acres are roughly 300 square miles. (For comparison Capitol Reef National Park encompasses 242,000 acres.) Federal grazing allotments range from 40 acres to more than a million, with the average at 8,500 acres.

This is public land we are hiking through, owned by every citizen of the U.S. and managed by the BLM (Bureau of Land Management), sometimes jokingly referred to as the Bureau of Large Mistakes or the Bureau of Livestock and Mining since the historical emphasis of the BLM has been to provide and manage rangeland. The BLM is also the federal agency responsible for issuing mineral leases under all federal lands regardless of the surface occupant.

The BLM was cobbled out of the U.S. Grazing Service and General Land Office in 1946 and put in charge of all the land that wasn't claimed under the Homestead Act, allocated to individual states or the U.S. Forest Service, or parceled into Indian reservations. Twelve years earlier, the Taylor Grazing Act enabled the federal government to issue grazing leases and put an end to the open range era, when ranchers simply turned out their cows in the spring and gathered them up in the fall. Concerned over nomadic sheepherders, cattlemen supported the Taylor Grazing Act, which created allotments similar to those that the Forest Service had in effect since 1905. The act also stipulated that only those with nearby base properties were eligible

for leases, renewed every ten years. In effect the allotments soon became property rights worth thousands of dollars and bought and sold with a ranch, rather than privileges. This stipulation was reversed under a Supreme Court ruling in the spring of 2000, which stated that a base property owner had no inherent right to renewing his lease.

This may force ranchers to better manage their allotments out of fear of losing them because of abusive overgrazing. It also worries many small ranchers who depend on their lease as bank collateral and would go out of business should they lose it to someone else.

The BLM charges a fee for each AUM or Animal Unit Month (one cow and her calf, one horse, or five sheep or goats). The fee varies based upon a complex formula but it is currently around \$1.65. In other words a rancher must pay \$1.65 for each cow and calf per month. Proponents of grazing reform have criticized the fee as ridiculously low, in essence a subsidy for public land ranchers. States charge about \$5 to \$8 per AUM to graze on state owned land while private land goes for \$9 to \$12 per AUM. However, the BLM land is the least desirable because it typically has less forage and water, which some argue is a case for eliminating public land grazing altogether.

On private land in Iowa you need only one acre per year to feed a cow, while in southern Utah it takes well more than two hundred acres of federal land. Yet more acres in the eleven western states are devoted to livestock grazing than any other land use.

Economics is often the driving force of land use. Ranchers argue that raising fees will put them out of business and hurt rural communities. They maintain that corporate ranches will take over or developers will buy and subdivide the land. Cattle prices have dropped significantly due to corporate control of the beef industry, and ranchers now receive about the same price per pound they did in 1960. Low beef prices combined with rising land prices as well as changes in generations are driving small ranchers out. Indeed, forty percent of federal leases go to only three percent of permittees, and less than fifteen percent of the original grazing permits remain with the family to whom they were issued. Like everything else, the beef industry has gone corporate, and the family ranch is following the family farm into history. Why should ranchers work their tails off, never knowing if they will make it through the year, when they can sell the ranch for several million and retire to Hawaii?

Ultimately, the land suffers. In debt, many ranchers squeeze as many cows as possible onto an allotment year after year. The impact exacerbates the land's decline, leading to less grass, poorer range conditions, and failed, unregenerative ecosystems. Ultimately the land supports fewer cattle. The

BLM itself recognizes that more than seventy percent of its rangelands are in unsatisfactory condition, and it may take three hundred years under optimum management for overgrazed land to recover. More than twenty years ago, the BLM admitted that one hundred and thirty-five million acres of one hundred and seventy million acres were in fair condition or worse and recommended a sharp reduction in cattle numbers, but little has changed.

Under pressure from the livestock industry, Congress has deliberately kept the BLM short of staff and funds. Perhaps the agency has suffered from an insecurity complex as a result. More so than any other federal agency, the BLM is susceptible to local politics. Most of the staff of BLM district offices are from the community or have ties to the area and are thus more inclined to favor ranchers over wildlife or other land uses. Admittedly it would be difficult for a range manager to tell his neighbor or high school buddy that he had to cut back on his stock's grazing, knowing that he would suffer financial repercussions. Instead of regions, the BLM is divided into state offices, and politicians can exert undue influence on BLM managers. With this structure and history, the BLM is the most recalcitrant of any land use agency.

Three different ranches run their cows on the allotment we are crossing, which may explain why it is so hammered. The tragedy of the commons. Is it the fault of the ranchers for putting too many cows here, or the fault of the BLM for allowing it, or the fault of Congress for refusing to reform an unviable system?

As ranchers seek to cut costs, employees are the first to go. Corporate ranches now hire managers, not cowboys. Brian is one of the last. He wears Wranglers and a very worn and shapeless black hat, with a cord that descends into a long horsetail braid. No sunglasses. He has a plain blue button-down cowboy shirt with a pen and can of chew in the breast pocket. Silver designs are embedded into his worn boots. A lariat dangles from the saddle horn and a six-shooter from his hip. He is dressed for work.

His weatherbeaten face sports a moustache that droops down to his chin. He pulls a silver pocket watch from his vest, looks at it, and puts it back. I expect him to say he should be going, but he doesn't and answers thoughtfully and slowly as we pelt him with questions.

Brian says he's been doing this all his life. "It sure ain't for the money. Maybe I'm just too stupid to do anything else."

"So why do you do it?" asks Patience.

"Peace," he replies without hesitation.

"Never seen anyone down here before," he says in a quiet tone that suggests he views us as harbingers of a future fraught with uncertainty and as inevitable as a new Walmart on the edge of town. Just as he gazes across the

cultural divide at the tenuous future, we stare back with romantic longing at the solid and defined past that never was.

Self-proclaimed social philosophers would call this a meeting between the Old West and the New West. However, the history of the West is far too complex to be divided into such simplistic temporal designations. On the surface, Brian would surely serve as much as a symbol of the Old West as I would the New. Yet when you start looking, you find the differences dissolve, and the divide between the Old West and New crumbles. When does one start and the other begin?

My family has inhabited the Colorado Plateau for more than seventy years and maintains a deep connection that spans generations, from crossing the desert for the California gold fields in 1850 to mountain biking in Moab. Yet for the one hundred and fifty years spent in the West, we never farmed, mined, nor ranched. My mother came from a family of western doctors. My father's people were Jewish merchants, who since 1900 supplied western clothing to those coveting that mystique. Even in the 1880s people longed for the good old days, and by 1910 Buffalo Bill's Wild West Show mythologized an Old West that lay in the nostalgic past.

The stated purpose of the Lewis and Clark expedition was to expand possibilities of commerce. The fur trapping that followed was not a romantic activity but a form of economic extraction. Yellowstone became a tourist destination twenty years after the Civil War. Many ranches in the late nineteenth century started as dude ranches catering to those who longed for the Old West. The Interior West has always been a source of economic extraction whether that industry is mining, logging, or tourism. Did the California gold rush differ fundamentally from the uranium boom? Do today's corporate ranches differ from the cattle barons of the past? The New West is as much a fanciful idealization of the complexity of real people and their relationship to the land as the idea of the Old West. If the Old/New West is useless as a temporal distinction, does it have any value as a cultural one?

Where do you place the third generation rancher who produces organic beef, drives a Subaru, and keeps track of her stock on a laptop? Where do you place the retired logger who appeals timber sales? Where do you place the Native American lawyer who lives in a condo in Salt Lake City?

The implication that there is something "new" about the West severs our responsibility by isolating us from historical context. What is happening in the West is an extension of Manifest Destiny, which itself is an expression of European colonialism. Conditions are constantly changing, perhaps now more than ever. But changes don't occur without antecedents. Consigning antecedents to the Old West, not only trivializes them but implies that things have fundamentally changed. When the indigenous

hunter-gatherers were overrun by genocidal technocrats, things fundamentally changed. However, the difference between nineteenth century land speculation and ranchettes is not a fundamental shift. The difference between corporate domination by Anaconda Copper is not fundamentally different than corporate domination by ConAgra. I fail to see any difference between exploiting Chinese laborers to build railroads and exploiting Mexican workers to make hotel beds in Vail.

We construct and inhabit our mythologies out of a need for psychic comfort. We become uncomfortable when we slice through our delusions; it's far easier to hold on to false views. Brian and I avoid controversial subjects and instead focus our discussion on the place. Ultimately it is the land itself that binds us together. I wonder, if we could step out of our respective uniforms, how close our views might actually be.

After talking with Brian, I had to reconsider the virulence of the letter to the BLM about grazing that I'd been composing in my head as I dodged -cowpies. I thought about Brian, his way of life; he wasn't out here to abuse the land. I thought about how authenticity carries a dignity and value of its own. Two different avenues found us both in the same place for the same reasons.

"Peace." The way he said it echoed in my head.

Later, I walk up canyon for an evening stroll and encounter two wild horses standing in the shade of a red-stained cliff. They shake their heads and stomp at me, their long untamed forelocks dangling defiantly over their faces.

ENTRADA

A massive brick red sandstone/siltstone formed from offshore beach dunes, this soft sandstone is easily undercut and erodes into arches in Arches National Park, while in the San Rafael the siltstone erodes into hoodoos and goblins.

The notion of a species-wide fixation at the state of early adolescence fits with the kind of boisterous, arrogant pursuit of individual self-assertion that characterizes the consumerist, exploitative model of economic growth, where the short-term profit of entrepreneurs and corporate shareholders seems to be not only the dominant value, but the only value under consideration.

—Ralph Metzner

I begin the day in a funk. Seaweed, who for some unfathomable reason thinks everyone wants to hear the complete works of Joan Baez first thing in the morning, sings with a dreamy look on her face and gazes into the distance while everyone else stands around waiting for her to finish packing so we can leave. I wonder if always being the last to get ready is a subtle form of control. It seems that when someone lacks control over her own life, she often feels a need to control others.

“Let’s hack, dude,” says Bobofet pulling out his hackysack to kill time.

We pass quickly through the greenish Curtis formation and enter the deep red of the Entrada. For the first time it feels like we are in a canyon. We hike past sheer walls and cottonwood benches. One meander after another, the creek slinks away downstream. Stepping out of the creek, a thin, grey film coats our legs. The mud and water dry our skin, and the willows and tamarisk whip across our chapped thighs causing us to curse and scratch.

The sound of the wind toying with the cottonwood leaves and the slow conversation of sandstone are suffocated by an impromptu Phish concert. My mood worsens as Bobofet and Yucca belt out Pink Floyd lyrics as we hike. Old episodes of the *Brady Bunch at the Grand Canyon* come to life transposed with characters from *Star Wars*. Then the food invasion begins—“thebestburritoInSantaCruz butdude I wassofuckedup . . .” The landscape recedes and becomes mere scenery. Conversation focuses on everything we

came here to escape. I think back to our first evening when I asked the students why they were here.

“I just needed to get out of Santa Cruz,” said Patience.

“A change in routine. I go to school, come home, do a bong, go to work, drink all weekend, then start all over on Monday,” said Yucca.

Bobofet nodded understandingly to Yucca. “At home, TV becomes important. You fit your schedule around your TV shows.”

“I’ve been studying environmental issues in college for three years, but I’ve never spent any time in the wilderness, and I thought I should,” said Mud.

“I just knew there had to be another way, an education that doesn’t revolve around lectures and tests. I felt I wasn’t really learning anything in school,” Seeker added.

“Everyone that comes off Sierra Institute, you see them on the street and they just glow, their eyes shine, they seem so alive and I don’t know, focused or something,” said Sage.

“I just wanted to be outside, in the wilderness, not be constrained by someone else’s time schedule,” said Patience.

“I was dealing with a lot of personal stuff my first year and needed to get away from things,” added Seaweed. “I’ve been on anti-depressants for four years, and I want to get off them. I’ve spent my whole life focusing on other people, and I need to gain a sense of who I am.”

All the women echoed her sentiment, saying they wanted to gain a sense of self and not be so wrapped up in others.

Sage added, “I wanted to do this to prove to myself I could.”

“I’m tired of always trying to mold my personality around ideas and beliefs I think are important; instead I’d like to try and find ideas and beliefs that fit my personality,” said Patience.

“I want to explore how humans fit into the environment,” said Huckleberry.

“Babylon, dude,” said Seeker. “Society’s fucked up. I had to get out.”

I drop farther back, knowing I can’t say, “I thought you guys came here to get away from all that crap.” I retreat into my head and try to figure out why the shift to TV talk irks me so. While it’s easy to vilify TV, my antipathy extends toward the omnipresent gushing of all forms of pop culture that occurs on hiking trips. When I complain to Metta, she points out that this is what people who don’t know each other have in common; *everyone* has seen reruns of *Three’s Company*.

I wonder how our talk, our tone of voice, that with which we fill our heads affects our outlook and our actions? I try to shut my mind to the drivel, and I find that it’s not so much the inane content, but what it engenders—a

corresponding increase in volume as if modern culture requires us to raise our voices to drown, silence, and suppress the wilderness.

I pause at a creek crossing, watching the students clamor up the opposite bank. I see our little clan as a microcosm. For the most part, Americans are in denial over the ecological crisis. We are too self-absorbed in our day-dream-reality to acknowledge global warming and the loss of biodiversity. Restaurants, sports, the stock market, and of course, television receive more attention. These students are the future, and I can't help feeling a sense of frustration and despair when I witness their priorities.

All morning Yucca continues his verbal assault on the wilderness. He runs all over the place, yelling loudly and singing at the top of his lungs. Deprived of distractions, he has to create his own. Metta says, "We have no distractions except our own lunacy."

I wonder how many of our distractions are based on fear. Is it a fear of this strange and foreign place that compels us to cloak ourselves in the familiar? Or is it a fear of quiet, which might lead to introspection.

As usual, Metta turns my complaint into a challenge, "We should try speaking with our whole spirit, with all our being."

"But language is primarily a mental act, and I find that only when I'm physically engaged am I able to act with my whole being," I counter.

"Try being physically engaged while you're speaking," she suggests.

"But it's not a matter of life and death. Something like skiing or rock climbing demands your total attention. Let's say you were captured by guerillas in some third world country and had to talk them out of killing you, then you'd be speaking with that total concentration, but could we be carrying on a conversation with that intensity?"

"It would be emotionally exhausting," she admits. "But then maybe we'd have a lot fewer meaningless conversations about pop culture."

"I guess that's why those conversations bother me so much—people invest their concentration into those areas, although trivial, they are far from meaningless. We impart so much meaning into those superficial conversations," I say.

"I see it as verbal vomit. People come out here and just have to get it out of their system. This is such an intense environment that people need to cushion themselves, otherwise the intensity is overwhelming," says Metta.

Every course I struggle with how to get people to quit talking about TV and movies and pay attention to what's going on around them. I can't help thinking that by inhabiting superficiality we avoid exposing ourselves. At the end of a program, students often say, "I wish we hadn't talked about TV so much." I've tried the authoritarian approach, which only means the students change their conversation when I'm around. I've tried offering suggestions,

and then we spend the rest of the course trying to decide what counts as “pop culture.” At what point do I raise the subject so as not to arouse resentment? I know the longer I wait the better, yet how long can I tolerate it? This year I promised myself I wouldn’t say anything and see what happened. And now, I just have to bite my lip.

“Patience,” I tell myself, and she turns around.

The canyon walls peel back at Lone Tree Crossing, where we encounter a wide dirt road coming in from the east, crossing Muddy Creek and continuing west toward Mussentuchit Flats, an intriguing name that immediately sparks my interest. Exploring Mussentuchit Flats is even more compelling than wanting to drink from Poison Spring.

I think that would be a lovely name if this were to become a wilderness area, “Mussentuchit Wilderness.” Of course that would draw hordes of curiosity seekers. Sometimes I think it’s better just to leave places alone and unadvertised. In its first two years of existence Escalante-Grand Staircase National Monument recorded eight hundred thousand visits to a place previously unknown. Some of this attention will doubtless result in better management, but I can’t help feeling that with it comes increased tourism and a different sort of exploitation. We live in a profane world, a world where even wilderness is reduced to commodity. After all, the Wilderness Act was written to meet the recreational needs of a growing population, giving only a passing nod to ecological importance. A recent Forest Service document declared, “Wilderness is for people . . . The preservation goals established for such areas are designed to provide values and benefits to society. Wilderness is not set aside for the sake of its flora and fauna, but for the people.”

Perhaps what we need is a system of ecological reserves, places that are managed for their ecological integrity and not for tourism. It would say something about our maturity as a culture and as a species if we could recognize the inherent value of setting aside a place, letting it be, and simply observing.

We pass four more dead cows mired in the mud at Lone Tree Crossing. The stench is unbearable. Brian said Lone Tree Crossing was where their allotment ended, thus crossing the road brings us into another grazing allotment. We notice little difference at first as we enter a wide expanse of greasewood. A thin white crust coats the bare dirt and graphically marks the path of motorbikes.

“What’s all this white stuff on the ground,” Patience asks.

“Taste it,” I suggest, still grumpy.

She looks at me quizzically.

“No really, taste it.”

“Tastes salty.”

The sporadic rainwater that flows down this wash pulls calcium carbonate and other soluble minerals out of the highly alkaline soil, leaving behind a gleaming white residue called caliche. This is the same white deposit that coats the bottom of tea kettles when hard water is used.

At one end of the flats a steel pipe protrudes out of the ground. These holes were drilled for natural gas in the 1980s. Apparently they turned up empty and were abandoned.

We enter a low canyon and a new formation, the Carmel, the thickest and oldest of the San Rafael geological group, which also includes the Entrada, Curtis, and Summerville. We soon begin to encounter more plant life than before. While still overgrazed, this allotment is in noticeably better condition than the previous one.

Upon reaching camp the prattle resumes in full force.

“Dude, let’s hack,” says Bobofet.

“Maybe, I’ll go down to the river and do some reading, dude,” says Yucca testing the group’s mood.

“Did you see that show about . . .”

“Dude, shut up!” Seeker says, fed up with the banter.

I wander upstream for a dip in the creek. With the afternoon free, I begin thinking about all that I need to do. Surprisingly little. Gone is the future, its concerns and demands. I realize the amount of stuff I have at home is obscene. When it’s removed, we soon discover we don’t need antiperspirant, dishwashers, and fabric softeners. Even the van is a cache of obligations, responsibilities, schedules, and commitments.

I’m a bit surprised at our evening meeting when Huckleberry says he’s frustrated with all the pop culture chatter. I know it’s too early in the course to bring it up, and it will backfire, but it’s interesting to hear where everyone is with it.

Seeker draws some connections, “The way I see it is that if we are always talking about pop culture then we give it voice and importance, and the machine becomes more powerful and dominates the power of our thoughts. If we’re going to save the world, we have to be conscious of where we are devoting our energy and power.”

“But you guys wouldn’t even be here if it wasn’t for your lives back home,” counters Seaweed. “We’re not endorsing pop culture, it’s not like we’re saying, ‘Ooh, Britteny Spears, she’s so cool’—we’re critiquing it.”

“Could we just not talk about TV all the time?” Huckleberry asks.

“I don’t know anything else,” says Bobofet rather forlornly.

“We’re a product of pop culture, why should we deny that?” asks Patience. “I think it’s interesting to see how pervasive pop culture is,” says Mud.

“I’m reminded that this is a process a lot like meditation,” Metta mentions. “When we meditate it takes a long time for our minds to quiet down and focus. All sorts of bullshit comes bubbling to the surface before we can start tackling real issues. Maybe we just have to get the pop culture out of our system. Given that we’ve spent our entire lives immersed in it, it may take awhile.”

“Can we still talk about music?” asks Yucca.

In the evening I lie awake staring up at the stars. There’s the Big Dipper, Leo, Gemini. I notice one star grow bigger and brighter, then it disappears. Did I just witness a natural phenomenon or was this a piece of space junk? We’ve even invaded the sky, I think, watching the satellites pass overhead. I recall the recent proposal to launch an advertising satellite, a giant sky dwelling billboard. Brighter than even the moon, it would continuously broadcast a series of ads and symbols such as the Nike swosh and “Drink Coke.” As a concession to the opposition from environmentalists, the satellite’s proponents suggested rotating in the recycling symbol as a public service. One can imagine the impact this would have on indigenous cultures—shamans, kachinas, demigods, all replaced by a pantheon of corporate deities. Thankfully, this proposal has been shelved (for the time being) as advertisers realized it would generate negative publicity.

We all recognize that something is fundamentally wrong with our culture, yet we resent anyone telling us that our particular habits, our lifestyles, contribute to the problem. I think back to my days in college when I railed against the machine like Huckleberry and Seeker. I think back to all those fiery radicals I knew at the university. They are all married now; most have children, houses, new cars, careers, and mortgages. What happened to us? How easily we acquiesced and bought into the whole thing. Yet based on conversations with old friends, I sense that we still know in our hearts that it’s all wrong.

I think back to last week when I visited my grandmother, she kept asking, “Don’t you want ice cubes in your water?”

I kept refusing, somehow thinking that this would maintain my independence from the corporate industrial complex that threatened to take over our lives and bodies with each purchase that subtracted from our humanity. I had to take a stand against every damn plastic bag that would seize us and insure our domestication. I wouldn’t sell out. What slippery slope into Armageddon awaited should I capitulate to a simple luxury? Surely on the eve of Passover, she would understand.

“Let me put some ice cubes in your water,” she insisted.

“No, Grandma it’s fine,” I snapped.

“Do you have TV dinners?” she asked, concerned about my bachelor lifestyle.

“I don’t have a TV,” I replied a bit haughtily.

She stared at me, perplexed.

Metta reminds me that “consumer” derives from the Latin *consumo*, “to spend everything, to destroy utterly, to destroy by fire.”

CARMEL

A grey mudstone and siltstone formed by mudflats and flood plains. Unlike the rock above and below it, the stratum of Carmel is wavy, indicating a widespread tilting during its formation.

A modern naturalist is no longer someone who goes no further than a stamp collector, mastering nomenclature and field marks. She or he knows a local flora as pieces of an inscrutable mystery, increasingly deep, a unity of organisms Western culture has been trying to elevate itself above. The modern naturalist, in fact, has now become a kind of emissary, working to reestablish good relations with all the biological components humanity has excluded from its moral universe.

—Barry Lopez

In the morning I awake to the songs of a half dozen yellow-rumped warblers in a nearby cottonwood. The birds dart about gleaning insects off the leaves. That they are feeding in a small flock indicates they just arrived and have not yet staked out territories.

“Perfect,” I think. All the students have to do is see one of these little guys close up, and they’ll be hooked for life. These birds aren’t skittish, and you can easily see them since the cottonwoods haven’t fully leafed out yet. Quite beautiful—blue with white racing stripes and flashes of brilliant yellow so they can keep track of each other in the monotonous green of the foliage—they would be easy to identify in the bird book.

I wake everyone up early, imploring them to be quiet and grab their binoculars. One by one they focus their sleepy eyes to the dashes of color in this sepia landscape and let out audible gasps. We follow the warblers until they fly off. Then a large bird flashing red undulates across the flats. It alights in a cottonwood snag and gives a raucous laugh, which is answered by a harsh cackle. It swoops down to join another bird. The flickers follow each other from tree to tree in what resembles a game of tag, eventually returning to the dead cottonwood. One of the woodpeckers disappears into a hole in the trunk followed by its partner moments later. They emerge, fly skyward, then join bodies for an instant in a tenuous embrace. Their wings

stop beating. In a slow spiral they fall to the earth, pulling apart before hitting the ground and landing softly next to each other.

The female flicker will soon lay five to eight eggs in the nest in the hole. The two birds will take turns incubating the eggs for a couple weeks and then begin feeding their hungry offspring. Flickers subsist primarily on ants, which appear in plentiful supply around here. A month later the young will have fledged. A taxonomically confusing creature, my old bird book lists two species, the red-shafted flicker and the yellow-shafted flicker. Both are now considered hybrids of the Northern Flicker.

Leaving the mating flickers to their own devices, we continue toward the rocks in pursuit of the composer of a bizarre and complex song emanating from a congregation of boulders.

“There he is!” exclaims Seeker, pointing at a bold, little bird perched atop a tilted boulder belting out songs like an operatic diva. We identify it as a rock wren and then watch as he finishes his performance and joins another rock wren we hadn’t noticed foraging among the exposed roots of a sickly looking ephedra.

Highly adapted to arid environments, ephedra has reduced its leaves to tiny vestiges and instead photosynthesizes through hundreds of green stems that point skyward like Don King’s hair or an upended broom. Also called Mormon Tea, this member of the joint fir family is a gymnosperm (that is, it produces pollen and cones but no flowers), and is thus related to conifers. Ephedra contains pseudoephedrine and was used by the Native Americans to treat colds, bronchitis, asthma, and allergies as well as urinary tract disorders since it is also a diuretic. The early settlers drank a tea made from the stems, perhaps for its medicinal quality, but possibly because it provided a bit of stimulant to the caffeine-deprived Mormons. I drink it quite often and can attest to most of the above qualities. Many people don’t like the taste, but I find using only three or four stems makes it weaker and quite palatable. The students ask if we can make some ephedra tea this evening, but I point out that there’s only one plant here. It doesn’t look too healthy, and I hate to rob this struggling plant of any of its stems.

The Colorado Plateau hosts two species of ephedra, *Ephedra viridis* which has two remnant leaves at each joint and *E. torreyana* which has three leaves and is more olive green.

Farther on we flush a pair of mourning doves and spy a couple of white-crowned sparrows scratching around in the brush. An ash-throated flycatcher flies overhead, perches on a far rock, and lets out a series of phew-chews in defiance of a circling kestrel.

Returning to camp, we encounter a downy woodpecker busy working the furrowed bark of a cottonwood for insects, too absorbed in his task to

take any note of us. While most birds are confined to eating insects on the surface or in the air, woodpeckers have devised a repertoire of adaptations to find food hidden beneath the bark. Stiff tail feathers and toes that point forward and backward allow them to walk straight up tree trunks. Woodpeckers have evolved powerful neck muscles, a battering ram of a beak, and a skull that makes motorcycle helmets look like tissue paper. But it is their tongue that is truly marvelous. Long and cylindrical, the woodpecker's tongue is encased in a muscular sheath that can be pushed out to considerable length to dislodge grubs or ants from crevasses. To snatch up wriggling critters, its tongue terminates in a hard point with barbs on the sides. Twice as long as its beak, a bird has to have a place to put such a tongue, so the upper end curls around the back of the skull and between the eyes, looping clear to the nostrils in some species.

The downy woodpecker hops along a thick branch listening intently for the sounds of insect larvae moving or chewing under the bark. Then with great accuracy, he punches a hole through the bark like an awl going through leather and, using his fabulous tongue, snatches up a surprised grub.

So much for a lifeless desert. All told we encounter nine species of birds this morning.

"Why did we see so many birds *here*?" Sage asks.

I shrug my shoulders. "Maybe because there's a lot of insects."

"I bet all the cowshit brings a lot of flies," adds Yucca.

"And dung beetles," I add. "Life is where you find it."

When we look up the birds, we find that my bird book from 1964 lists two species of yellow-rumped warbler: *Dendroica auduboni* (Audubon's warbler) and *Dendroica coronata* (myrtle warbler), while the student's newer books just cite *D. coronata*.

"What happened? Did Audubon's warbler go extinct?" asks Patience.

"Not exactly. Audubon's warbler was downgraded to a subspecies when it was discovered that its range overlapped with the myrtle in southern Alberta where they hybridize."

"Is it the birds that have changed or is it our perception of them? What constitutes a species versus a subspecies?" I ask.

After some discussion we agree that a species is a population that is geographically and reproductively isolated. If no hybridization occurs, it is easy to separate populations into two species.

"Ten percent of North American bird species hybridize with other species. Why then are Audubon's and myrtle warblers now considered one species? Technically, a subspecies occurs when seventy-five percent of the individuals in a population are distinguishable from other populations of the same species."

“That seems totally arbitrary—seventy-five percent. And who decides what is ‘distinguishable?’” Huckleberry points out.

“It is rather arbitrary. Even Harvard biologist E. O. Wilson says, ‘It follows that subspecies are recognized according to whatever traits taxonomists choose to study. It also follows that the greater the number of traits, the larger the number of the subspecies that must be recognized.’ This explains why we divide birds into subspecies but not lichens or viruses. We can play this game too and put taxonomists into two groups, lumpers and splitters. Splitters divide organisms into species on the slightest variation and lumpers combine all varieties into one, although I’m sure there’s a whole spectrum of taxonomists too. Before the advent of DNA analysis, splitters predominated. Now DNA reveals that even populations are genetically distinct, and so many taxonomists have become lumpers. On the other hand DNA often provides evidence that what once was considered one species can now be separated into many.”

Divided into two populations, west and east, during the Pleistocene ice ages, the yellow-rumped warblers evolved distinctive traits. Audubon’s has a yellow throat and the myrtle has a white throat. They also have a slight variation in song. Geographical variation is inevitable in separate populations as the birds respond to pressures of natural selection in different habitats. However, geographical variation isn’t necessarily genetic. Studies of red-winged blackbird eggs transplanted from one population to another showed that the fostered chicks resembled their foster parents. Blackbirds transplanted from Colorado to Minnesota developed longer wings and toes than their biological parents in response to their environment. How then do we know what “distinguishable” characteristics are valid when determining a subspecies?

With the retreat of the ice age seventy-five hundred years ago, the two populations of yellow-rumped warblers reunited in southern Alberta. Now genes from the Audubon’s extend eastward well past the eighty-mile zone of hybridization, and genes from the myrtle are found far to the west. Will this state continue indefinitely or will a new hybrid population emerge? Had the two populations remained isolated, eventually they would have become genetically incompatible. However, because of the short time they were separated, and perhaps because of their large and diverse populations, they didn’t quite burn that bridge.

E. O. Wilson tells us that, “The origin of species is therefore simply the evolution of some difference—any difference at all—that prevents the production of fertile hybrids between populations under natural conditions.” He then enumerates mechanisms that prevent hybridization, such as pheromones, temporal distribution (occupying the same habitat but at different times of day, especially during mating), bird song, and habitat or range.

To further complicate matters, biologists recognize superspecies—two species that diverged so recently that they could be considered one species but have different ranges, such as yellow-rumped warblers and Grace’s warblers. While incomplete reproductive isolation leads to hybridization and can fuse populations, incomplete ecological isolation (they occupy the same niche) increases competition. Problems result when their respective ranges overlap. Either one species has to back down and adapt different behavior that allows it to coexist, or it risks being driven to extinction. (Do we not see this in human cultures as well?)

The closer we look, the more genetic variation we find both within and between populations. This has enormous repercussions, both on our thought process and public policy. With rapidly changing climatic conditions, the conservation of species necessitates a diverse gene pool composed of many different populations. In the unlikely scenario that Audubon’s warbler becomes endangered, need we worry since it is the same species as myrtle warbler?

Darwin implored us to get over the immutability of species. While we’ve accepted evolution in theory, we still cling to the notion that species are fixed in time. We think of species as objects rather than as processes. Evolution didn’t stop once we classified everything and put organisms into tidy little boxes and labeled them *Dendroica coronata*.

We take a short hike up a side canyon. The canyon cuts through the Carmel formation, revealing thick, undulating layers of clear, crystalline rock.

“Is this all quartz?” Mud asks, stopping next to a rock outcrop.

“Quartz is harder than steel,” I reply. “If you can scratch it with your fingernail, it’s gypsum.”

Bobofet easily breaks off a piece. With his thumbnail he carves a groove in the soft rock. “Gypsum,” he proclaims confidently.

“How did it end up in here in this sandstone?” asks Patience.

“Yeah, and what’s up with all this lava?” asks Seeker, pointing to a basalt boulder sitting in the streambed.

“Let’s head up here and see if we can answer that,” I reply.

We scramble out of the canyon and find ourselves on a mesa that stretches to the horizon. The canyon to which we have grown so accustomed is just a minor incision in the earth’s skin. No one speaks as our eyes take in a landscape so vast that it appears incomprehensible.

Breaking the silence, Seaweed asks, “Is that the Colorado Plateau?” She indicates a distant mesa.

“All of this is the Colorado Plateau.” I swing my arm in a wide circle. “Everything from northern Utah to northern Arizona, from northwest New Mexico to western Utah.”

"You know, this is the first time I think I've been able to grasp what you're talking about when you keep saying 'the Colorado Plateau.' I mean you can see how it's one huge plateau," says Sage.

"But it's not exactly flat," insists Seaweed.

"But it is one coherent block," I say. "It's really one of the most remarkable series of coincidences in Earth's history. Although a few pages are missing here and there, nowhere else on earth does such a complete text exist of the past two billion years. Despite earthquakes, volcanos, uplifts and upwarps, orogenies, and even laccolithic intrusions, the Colorado Plateau has survived as a coherent block since the Precambrian."

"Sooo?" Patience raises her eyebrows asking the question she can't quite formulate.

"Why doesn't everyone find a place to lie down and get comfortable," I suggest. "This may take awhile."

I ask the students to imagine that we are watching a time lapse passage of the formation of the Colorado Plateau. Think of the earth as a living creature, moving and buckling, throwing up mountains here and there, causing the seas to rise and fall. The landmass of Pangea begins to break up as tectonic plates form and are slowly carried about by the convection currents of magma like Arctic ice floes in a spring thaw.

Our story begins at the bottom of the Grand Canyon with the Vishnu Schist when blue-green algae are the most complex life on earth. Prior to its reincarnation as metamorphic rock, this schist begins millions of years earlier as sand and mud deposits at the edge of the sea. As the tectonic plates crash into each other, this pre-schist sand and mud are folded into a rising mountain. Heated by an ascending blob of magma, the rock transforms into schist, which is then thrust up to become part of another mountain range that is eventually worn to a level plain by erosion. The roots of this ancient mountain chain composed of schist and granite form the foundation for all the sedimentary deposits that would become the Colorado Plateau. In one of the earth's shiftings, about 1.8 billion years ago, major faults, or stress fractures, form in the Precambrian "basement rocks" that will forever dictate the structure of the Colorado Plateau. The Colorado and Green rivers now follow these faults.

Well, time passes, and the ocean buries our now flat mountain chain of schist. Sand, mud, and calcium carbonate from the first multi-celled sea creatures form a thick layer of sandstone, shale, and limestone. The sea retreats, exposing these rocks to erosion. Before they can be weathered flat like the mountains, the sea returns, ushering in the Cambrian Period, when life explodes into myriad forms such as jellyfish, trilobites, and shellfish.

We are now standing on the sandy shore of a great sea. As the sea migrates, it deposits a large expanse of sand, followed by offshore mud

deposits, which harden into sandstone and shale. As the sea spreads eastward, flooding the area where we are standing, limestone accumulates in the deepening waters. Limestone forms most readily in warm tropical seas, indicating that our region is near the equator during this time and slowly migrating north. Vertebrates evolve and the age of fishes begins, ushering in the Devonian Period.

Large shells from brachiopods, such as clams, are broken down by organisms that digest the shells and excrete fine-grained calcium carbonate. Horn coral and crinoids (animals attached to the sea floor by segmented stalks with broccoli-like heads with which they gather food) also contribute their corpses. Composed of shells and fossils, limestone continues to accumulate through the Devonian and Mississippian Periods. By the close of the Mississippian, the sea retreats, and plants move on to the barren landmass behind us and fill thousands of niches.

Weathering of the limestone from rain and ground water creates caverns and pockmarks the surface, producing a red laterite soil indicative of a moist, subtropical climate. The red soil gets reworked by the incoming sea into a mudstone and is distributed across the region.

During the Pennsylvanian Period, this relatively uniform surface that is becoming the Colorado Plateau begins to crack up along previously existing fractures, creating a series of basins and ranges. Right in front of us, the earth begins to sag, which depresses the previous strata some twenty thousand feet. This two hundred-mile long depression, known as the Paradox Basin becomes a giant evaporation tank, much like the Great Salt Lake.

Fresh seawater continually pours in through a shallow channel into the basin and becomes highly concentrated by the intense evaporation from the desert climate. The brine settles to the bottom, eventually filling the Paradox Basin with six thousand feet of salt and gypsum. Fluctuating sea levels bring intermittent layers of organic debris that compress into thin layers of black shale. Around the margins of this basin, calcareous algae form a porous limestone that traps petroleum migrating in from the black shales. (These limestone traps along the southern edge of the Paradox Basin have produced millions of barrels of oil. Exploration continues throughout the Colorado Plateau to find more.)

Standing on the shore we watch amphibians creep out of the muck and into swamps of fern and horsetail, which later become coal and oil deposits. Suddenly we are knocked off our feet in a tremendous collision of North and South America resulting in massive earthquakes. Behind us, to the east, a huge range of mountains, the Ancestral Rockies, soars skyward out of the coastal plain. As a result of the Uncompadre Uplift, compressional forces within the earth create this chain of fault-block mountains, not unlike the

present day Tetons. The twelve thousand feet of sand and pebbles that wash down from these mountains into the Paradox Basin suggest that these mountains were higher than the Himalayas.

This overburden from the Ancestral Rockies covers the Paradox Basin and compresses the salt, which acts like toothpaste. Over the next one hundred and fifty million years, the salt squirts out along fault lines moving away from the Paradox Basin, filling cracks, distorting the overlying strata, and intruding into shales and mudstones like magma. Ground water dissolves the salt and leaves the less-soluble gypsum behind. The reduced volume of salt causes the surface to collapse and creates long valleys such as Moab Valley and Paradox Valley.

The sea returns and deposits some fifteen hundred feet of limestone before retreating at the close of the Pennsylvanian Period. In front of us, to the west, rises a gentle uplift in the region of the San Rafael. But much of this soon erodes before the red beds of the Permian arrive.

Looking behind, we see the Ancestral Rockies shed layer after layer of iron-impregnated sand and rock that quickly oxidize in the desert climate. This trace of iron produces the red rock that is so characteristic of the Colorado Plateau. West of the mountains, the land slopes gently away toward the sea. White sand from the northwest blows in and settles as beach dunes and sand bars along the coast. Red swollen rivers heavily laden with quartz, feldspar, and silt rush down from the Uncompadgre Uplift and wash over the white sand beaches, creating a striped effect of alternating red and white sandstones that become the Cedar Mesa Sandstone. The Permian rivers slow quickly as they tumble out of the mountains and onto the broad coastal plain. They drop their coarse particles, carrying only the fine-grained sand and mud across to the coast. Salt domes interfere with the rivers, and they drop their loads on the lee side, creating a formation of varying thickness.

Before us, a long narrow bay intrudes into the coastal plain across the San Rafael and creates marine deposits called the Elephant Canyon formation. As the Permian draws to a close, a tongue of red-brown siltstone (Organ Rock Shale) from the Uncompadgre covers the Cedar Mesa. Not to be outdone, the White Rim Sandstone, composed of dunes and sand bars, plasters the Organ Rock Shale. To the south and west, the sea deposits the Kaibab limestone.

By the dawn of the Triassic, the sea has retreated far to the south. Covered in giant conifers, the Ancestral Rockies are now worn down to Appalachian sized hills. Erosion further depletes them and deposits a thick layer of mud and silt across a tidal flats that bake in the equatorial sun for ten million years. The drying mud leaves impressions of cracks, worm burrows, and the first dinosaur tracks in what becomes the Moenkopi formation.

Rainfall increases, and the climate grows temperate. Swamps like the bayous of Louisiana appear in the lowlands. Rivers and streams meander across the Moenkopi depositing a layer of conglomerate. Logs, branches, and leaves drift down the rivers and catch on gravel bars accumulating organic debris that later causes the precipitation of uranium from within the ground water. Volcanic ash from unknown origin settles upon the swamp turning many of the trees into petrified wood buried in the Chinle formation.

The rain finally stops, and a red desert of windblown sand covers everything. Tiny particles of feldspar and silica graced with iron snatched from the mountains pile up millennium after millennium. Rivers begin to flow once again, wearing down the Ancestral Rockies and spreading the remains atop the red desert. Called Wingate, this windblown sandstone is topped by its companion, the Kayenta, formed by river deposits.

By the Jurassic Period, the Colorado Plateau has drifted north to the same latitude as the present-day Sahara. Not coincidentally, the largest desert the planet has ever known (stretching from Arizona to Wyoming) moves in from the west. These millions of tons of white sand create the Navajo formation.

The San Rafael group, composed mostly from marine or shore environments, contains the final remains of the Ancestral Rockies. The mudstones and siltstones of the Carmel denote coastal tidal flats. The Entrada sandstone forms as the sea advances and jettisons sand and silt. By this time the environment has changed significantly, and a sea covers the area depositing the Curtis formation. As it retreats, it relinquishes dark, red mudflats that become the Summerville, the last of the red beds. Lakes and streams leave behind the Morrison. The sea returns slowly, creating the Dakota formation composed of sand bars and lagoons. Then the sea deepens, spreads across the land and bequeaths thousands of feet of silt and shale that become the Mancos Shale. This is capped by the Mesa Verde formation composed of sand bars, lagoons, and dunes as the sea retreats for the final time. The Cretaceous closes with the extinction of the dinosaurs when a giant asteroid strikes the earth and envelopes the globe in a cloud of dust.

Patience opens her eyes and sits up. "Why is it always either desert or ocean that was here?" she asks.

"There were a couple swamps in there some place," Mud counters.

"Well, that's a good question. In what sort of environment does deposition take place?"

"Yeah, all rivers run to the ocean," says Bobofet.

"Right, if a river runs through an area on its way to the ocean, then it's an erosional environment, like the Ancestral Rockies. Where the water runs into a basin, whether it be marine or terrestrial, it's a depositional environment. So

depositional environments are either marine or arid. If it's humid, the rock gets stripped away and carried someplace else."

"How could this place *always* be a desert or an ocean?" asks Patience insistently.

"It wasn't, but that's what remains in the rocks. During the times of humid climate, the region was an erosional environment and nothing was deposited. Those gaps in the geological record are called 'unconformities.' The biggest unconformity was during the Ordovician and Silurian periods. For one hundred million years there was no deposition, suggesting the entire region was above sea level or whatever sediments that did accumulate were stripped away by erosion. In other words, two entire chapters are ripped out of our text. There were several other unconformities that indicate brief erosional environments."

"So is this now a depositional or erosional environment?" prompts Metta.

We look around. The aridity is undeniable, yet so is the erosion taking place. We debate for a few minutes.

"Where is the sediment being deposited," I ask.

"Lake Powell," says Patience matter-of-factly.

"Well, okay, but where should it be going?"

"The Gulf of California."

"So is this erosional or depositional?"

"Erosional."

"Look at all these gullies and dry washes, where are they dropping their sediment?"

"Uh, it looks like here."

"Could it be both?"

"To the east, the Rockies are clearly an erosional environment. To the west lies the world's largest interior basin. The Great Basin, which has no outlet to the sea, stretches from Arizona and California, encompasses all of Nevada, western Utah, and southern Oregon and Idaho. All the rivers flow in and none flow out. The mountains of Nevada are just the tops of mountains buried in thousands of feet of sediment. Topographically, that may be what the Colorado Plateau was once like."

"Time to move. Let's head out along this ridge and see what's there," I suggest.

Before us rises a pimple of basalt. We scramble up to the top.

"So, where did all these black rocks come from?" asks Seeker.

"Well, they're all rounded, so they were obviously moved here by glaciers," responds Huckleberry.

"Or washed down from somewhere," adds Sage.

"Any idea of when this might have happened?" I ask.

“They could have been part of that volcano you talked about,” suggests Mud.

“Could this be the remains of a layer that’s gone, and this is all that’s left?” inquires Seeker.

“Possibly, but we find it on the surface of many different formations,” I answer.

“So, it must have happened after all this was already formed,” reasons Huckleberry.

“Before or after this was uplifted?” I ask.

“What about this thing we’re standing on? Isn’t this basalt too?” asks Mud.

We look at the black knob and notice that a dyke extends out from us in a straight line for several miles.

“Well it cuts through several layers, so it must have come after the uplift. Or could it have happened at the same time?” says Huckleberry.

“I thought you said this was mostly a depositional environment, which means that everything is sedimentary,” counters Patience.

“Isn’t a volcano depositing something?”

“So if this was all depositional, how did it get to be a plateau? Did that volcano lift everything up with it?” asks Seeker.

“Glad you asked.” I produce four different colored balls of clay and flatten them out, so that one color rests on another. “Say this represents the Colorado Plateau and all its accumulated sediments. As the Cretaceous sea drains away, a few large freshwater lakes fill the basins, creating the colorful deposits of Bryce and Cedar Breaks. By now the Colorado Plateau is composed of thousands of feet of sediment and has drifted north to near its present location. Geologists describe two possible models for what happens next. The first is called the thermal thinning model. It supposes a hot plume from deep within the earth’s mantle rising and thinning the lithosphere (the layer of not so molten rock that the crust rides upon), resulting in the uplift of the Colorado Plateau.” I push my fist into the layers of clay, bulging the middle.

“The second theory, the delamination model, is currently more accepted, but is also more complicated and requires dabbling in plate tectonics.” I restore the layers of clay and grab a nearby piece of sandstone.

“About the end of the Jurassic, when the Morrison was being formed, the North American plate began moving west, sliding over the denser Pacific plate, as it continues to do today.” I slide the sandstone under the layers of clay. “At that time the edge of the continent was somewhere near the Nevada/California line. Caught between these two massive plates, was the ancient Farallon plate.” I insert a small piece of rock between the sandstone and the clay.

“Composed of oceanic basalt, it was denser than the continental plate and slid under the North American plate. While subducting, the Farallon plate fused to the underside of the North American plate beneath the Colorado Plateau.” I embed the small rock into the underside of the clay.

“Then about the time the Cretaceous sea had retreated for the last time, leaving behind the Mancos Shale, this fragment of the Farallon plate delaminated and sank into the lithosphere.” I pull the rock from the clay allowing it to fall to the ground. “The void was quickly filled by hot magma that thermally expanded as it rose to the bottom of the crust and pushed this block of rock two kilometers into the air.” Again, I shove my fist into the clay. “This would explain the Colorado Plateau’s rather definitive boundaries.

“One of the consequences of such force was the San Rafael Reef. Take a stack of magazines, allow each magazine to represent a geologic formation and gently squeeze the stack from the sides.” I squeeze the clay from all sides. “It will bow upward, and if you take a knife and cut through your stack, it will alleviate the pressure, but along that knife cut the bottom magazines will slide up toward the top and be sticking out.” I place the clay on the ground and slice along the ridge.

“When this happens to rocks, the rim of the uplift is called a monocline. The San Rafael Reef is one of three great monoclines on the Colorado Plateau, along with Capitol Reef and Comb Ridge. Geologists speculate that deep basement faults along these monoclines allowed the rock layers to slide up and through the overlying formations.”

I wave toward the west. “That’s the remains of a shield volcano that produced all this basalt during the Tertiary, when mastodons, camels, and giant sloths roamed the Colorado Plateau. “Magma bulged the earth and oozed out creating Fish Lake and Aquarius and Thousand Lake Plateaus.

“While the rocks around us were formed millions of years ago, this landscape is largely a product of the last ice age. Changes in the earth’s relationship to the sun may have triggered the Pleistocene ice ages, bringing cooler and more humid conditions to the Colorado Plateau. The wetter climate caused massive runoff, distributed basalt boulders across the desert, and carved these canyons.” Seeker leans over and sticks small rocks into the clay and gouges canyons with his fingers.

“Erosion began to scrape off layer after layer carrying the sand, remnants of the Uncompadgre Uplift, down the rivers and back to the sea once again,” I conclude, stripping off the top layer of clay.

“So, I guess, well, what I just don’t get, is, so what’s a million years,” Bobofet sputters.

“Ah, yes, that’s a good question. Okay everyone stand up. Huckleberry you stand here. Four and half billion years ago, the earth was created. Now

ERA	PERIOD	AGE (million years)	EVENTS
CENOZOIC	QUATERNARY	2–present	Pleistocene ice ages, erosion of Colorado Plateau, extinction of large mammals, human-caused climate change.
	TERTIARY	65–2	Age of mammals, widespread volcanism and uplifts, rise of Henry, La Sal, and Abajo mountains.
MESOZOIC	CRETACEOUS	144-65	Extinction of the dinosaurs, uplift of the Colorado Plateau, widespread inland sea, formation of Mancos Shale and Mesa Verde group.
	JURASSIC	208-144	Height of dinosaurs, desert conditions across Utah, formation of Glen Canyon group and San Rafael group.
	TRIASSIC	245-208	Dinosaurs evolve, mud and silt from Uncompahgre Uplift, ash spewing volcanos, swamps.
PALEOZOIC	PERMIAN	286-245	Reptiles and conifers evolve. Rise of Ancestral Rockies, and subsequent erosion.
	PENNSYLVANIAN	330-286	Age of amphibians. Salt and gypsum deposits in eastern Utah.
	MISSISSIPPIAN	360-330	Tropical seas produce limestone deposits.
	DEVONIAN	408-360	Age of fishes. Deep seas, limestone.
	SILURIAN	438-408	Vascular plants evolve, coral reefs, widespread unconformity suggests erosional environment.
	ORDOVICIAN	505-438	Trilobites and brachiopods widespread, continued unconformity across Colorado Plateau.
	CAMBRIAN	570-505	Life explodes into myriad forms, sandstones, shales and limestones deposited.
PRECAMBRIAN		4,500-570	Life begins, breakup of Pangea, Vishnu Schist.

Geological periods and major events in Southern Utah.

Bobofet walk twenty-one feet that way. Okay Sage you're the beginning of life 3.5 billion years ago. Now Bobofet, walk sixty-five feet, and Seeker you stand there, that's 400 million years ago when life first appeared on land. Another foot, another 40 million years go by and the first insects appear. Take three and a half feet and dinosaurs appear. A foot and a half gives us flowering plants, and another foot and a half and the dinosaurs are gone. One more foot and a half brings us to the arrival of *Homo sapiens*. Now go .075 inches and you have the advent of agriculture."

In this manner, using the students as markers, we construct a time line from the earth's beginning to present time, so we can visualize spatially what a million years might look like. At this scale one inch equals 4 million years. All the geologic formations that we will travel through were deposited from the Permian to the Cretaceous (essentially the same time as the age of the dinosaurs). This shows up as eight feet along our time line. Just a sliver of Earth's history.

WINGATE

A fine-grained sandstone created from a vast desert of red sand. Emblematic of canyon country, the Wingate forms sheer orange cliffs when the iron-laden sandstone is exposed to oxidation.

As we come to know a place well, we often develop an affiliation for it, a sense of what makes it unique and magnificent. But we realize too, that the natural history of that place changes according to global ecological patterns. Out of regard for a particular species, or an interesting habitat, we realize that we have a more enduring interest—the resilience of the ecological and human community.

—Mitchell Thomashow

With the students now leading the hikes, I can drop back and enjoy the scenery. We soon enter the cream-colored Navajo sandstone, which affords dramatic contrast from the grey of the Carmel. Now we are hiking through a real canyon, and the walls tower above us as we descend downstream.

Metta and I have been desperately keeping our eyes open for flowers, trying to find something we can use to demonstrate the plant key. The cows have pretty much eliminated all forbs, leaving only tamarisk, willow, cottonwood, rabbitbrush, cactus, and an occasional ephedra. We find one or two sickly looking primroses and a few globemallow, pathetic for April. Large piles of horse droppings in unlikely places suggest quite a few wild horses roam the area.

Patience, who is leading today's hike, decides to pitch camp at the wide mouth of a canyon. A sand dune piled up against one side of the canyon wall should serve as a warning, but we are all too tired to pay much heed. All night gusts of wind blast through our camp covering everything in a fine sand. Sand fills our eyes, ears, hair, and food. The wind continues for the next two days as clouds rip across the sky. The wind howls up the canyon picking up sand and dropping it in dunes at each bend.

We decide to go on a small exploration the next day. Seaweed says she's not feeling well and elects to stay in camp. We practice tai chi in the early morning sunshine at the mouth of our canyon while we wait for the stragglers to get ready.

"Hey . . ." shouts Seeker. Before he can finish, a large bighorn ram runs right by us and into the canyon. Spooked by those at the entrance, the ram dashes into the canyon to avoid us and runs right into two more humans. Unexpectedly trapped, he panics and bolts up the sand dune hoping to find a route up the cliff face. But not even a bighorn can find purchase on the sheer cliff.

No one moves. No one speaks. We can see Sage and Mud standing in the wash two hundred yards away and the ram between us. Stymied, the bighorn jumps straight up fifteen feet into the air and lands on top of a boulder, where he pauses to consider his options. Suddenly he spies an opening and escapes up canyon.

"Did you see that?" Seeker exclaims. "He just popped straight up into the air!"

"How old do you think he was?" Patience asks.

"Judging by the full curl, he was at least ten years old. Unlike antlers that drop off every year, the horns of bighorn sheep continue to grow, adding a new ring of horn at the end," I say.

"Sort of like tree rings?" asks Seeker.

"Do you think we scared him?" asks Sage, when she arrives wide eyed. "Are we keeping him from reaching the creek?"

"Bighorns can go without water for three days, and when green vegetation is available they don't even need water," I reply.

"He's probably not used to seeing humans," says Seeker.

"They don't hunt them, do they?" asks Mud.

"Uh, yeah, the state issues a few once in a lifetime hunting permits each year."

"Well, how many bighorns are there?" asks Huckleberry indignantly.

"In the San Rafael, about three hundred and twenty-six bighorns live north of the interstate and about three hundred and fifteen live south of the highway."

"Three hundred and fifteen in this whole area? That doesn't seem like very many to sustain hunting pressure," says Huckleberry.

I nod. "And if the population drops below fifty, they're history."

"Why is that?" asks Mud.

"A female bighorn will have one or two offspring, which only have a thirty percent chance of survival. They are extremely susceptible to disease and inbreeding. Any time their habitat gets so fragmented that fewer than fifty animals comprise a population, that population goes extinct."

Another relict from the Pleistocene inhabits the Swell, the pronghorn antelope. To bolster their numbers a series of population augmentations in the 1980s released more animals so that they now number about three

hundred. Thirty antelope hunting permits are granted each year for the San Rafael.

Just downstream from our camp we encounter the Merry-go-round, an abandoned meander that was once a horseshoe bend in the river. At some point in the not too distant past, Muddy Creek broke through the perpendicular wall, straightened its course and left the meander high and dry. Reaching the Merry-go-round, we behold brilliant orange cliffs with their big fallen blocks all askew—undoubtedly the Wingate formation.

A vast mat of prickly pear cactus covers the ground. Prickly pears have evolved some wonderful adaptations, photosynthesizing through their stems, or pads, which align themselves east-west to avoid southern exposure. The leaves have become spines, and they shade the pads from the harsh sun as well as keep herbivores away. Purple fruit like bruised thumbs protrude from the cactus in late summer. The fruit, called “tunas,” are delicious cooked or raw, a refreshing plum on a hot day. Archaeologists have found an abundance of cactus spines in the petrified feces of the indigenous people of the area, attesting to the importance of prickly pear fruit as a food source.

Prickly pear is also an indication of overgrazing. Since livestock generally won't eat cactus, it thrives while the density of the grasses decreases. The short growing season here between cold winter and hot summer requires perennial grasses to initiate growth from their base in early spring. Grazing at this time of year inhibits flowering and seed production, eventually leading to the death of the grasses.

Grazing pressure also results in the increase of other less-palatable plants, like sagebrush and rabbitbrush. While grazing leads to a change in species density, it is the change in species composition with the proliferation of exotics that worries ecologists. Cheatgrass (*Bromus tectorum*), an introduced species, prevents the establishment of seedlings of native grasses by maturing four to six weeks earlier. It is a fine fuel and leads to range fires which in turn provide optimum conditions for more cheatgrass. Excessive grazing of cheatgrass leads to the appearance of tumble mustard (*Sisymbrium altissimum*) and more disturbance leads to domination of Russian thistle or tumbleweed (*Salsola australis*).

We top a small rise and gaze down at the Merry-go-round. In the shade of the cliff graze four wild horses, a bachelor band of young stallions, each awaiting his chance to be a dominant stallion with his own harem of mares. The breeze blows toward us, and we watch them undetected. The horses graze placidly among the greasewood until someone speaks, and two of the horses raise their heads and cock their ears in our direction. Smaller and

stockier than domestic horses, they sport solid brown coats with black manes. It appears a tranquil scene of the American West.

However, few animals generate such controversy and evoke such emotional responses as wild horses. Escaped from the horses stolen in California and brought across the Old Spanish Trail, wild horses have survived in the harsh conditions of the San Rafael Swell since the early 1800s, when an estimated two million wild horses roamed the West.

The Swasey family, who ran cattle in the Swell for many years, rounded up and sold wild horses. They tried to breed them with Percheron stallions, but the wild mares killed one of the giant horses and severely maimed the other. Unlike domestic horses, wild horses will strike out with their front hooves to inflict injury. During the Depression the demand for horses dropped, and they were declared a nuisance. The Grazing Service demanded they be exterminated, and, in 1939, ranchers killed eleven hundred and forty horses in the Swell. Often they were sent to slaughterhouses. Other times the carcasses were left to rot.

Public outcry against the slaughter of wild horses led to the passage of The Wild and Free Horses and Burros Act of 1971, which protected wild horses while allowing for their control. The act stipulated that wild horses are "living symbols of the historic and pioneer spirit of the west." The Act makes the killing of wild horses illegal. Thus, the BLM rounds them up every few years and disposes of them through the adopt-a-horse program, where one can acquire a horse for \$150. Making the horses into food is also illegal, however many horses are adopted and sent to slaughterhouses in Canada.

In a case of legislated science, the law recognizes that wild horses are "an integral part of the natural system of public lands." Just how integral is open to debate. Ranchers maintain that horses are a nuisance; they are hard on the range and compete with cattle and wildlife for scarce feed and water. The BLM states, "Thus, in an unmanaged state, the horses could (and did) have a very negative impact on the ecology of many areas." Yet the agency also says, "in managed numbers the horse herds can actually be beneficial. They graze on non-native grasses and some horses actually dig water holes which the other animals can use." And unlike cattle, wild horses tend to disperse their grazing over a wide area and generally stay out of the sensitive riparian areas.

Wild horse advocates maintain since more than seventy percent of the West is open to grazing, including two hundred and fifty million acres of federal lands (an area the size of California, Oregon, Washington, and most of Nevada), that some of those federal lands should be reserved for the benefit of wild horses instead of cows.

The BLM's management objective is to hold wild horse herds at fifty individuals by rounding them up every two to five years. However, conservation

biology suggests that to avoid inbreeding and maintain a viable population, a *breeding* population of fifty is necessary, which means having populations of one hundred and fifty to two hundred animals. In 1998, an estimated two hundred and eighty-eight wild horses and one hundred and fourteen burros roamed the San Rafael Swell.

The most recent wild horse roundup in the San Rafael was in 1995 near I-70. Roundups are expensive because they use helicopters, which also places significant stress on the animals. Bachelor herds, mares, and stallions are indistinguishable from the air; thus the roundup is an indiscriminate catchall, rather than a selection of the herd's least valuable animals. For example, the dominant stallion may be culled from the herd with the resulting genetic loss. The lead mare may also be taken, causing social upheaval since she is the animal who keeps the herd on the move, knows where the water sources are, and holds the memory of the landscape.

"What's the ecological role of the wild horse?" I ask the students as we watch the horses slowly go around the Merry-go-round.

"It seems they would have quite an impact on the grasses. This place is pretty heavily overgrazed. I suppose they would compete with the bighorns," says Sage.

"We've seen a lot of horseshit, so there must be quite a few of them," adds Patience.

"It seems that the real problem is the cows," says Seeker.

"Depends on your perspective. If you're a rancher, the problem is the horses. If you are a biologist, wild horses are an exotic species that impacts native wildlife."

"And if you believe in animal rights, they have a right to exist on their own," adds Mud, a bit heatedly.

"Has anyone studied the impact of horses?" asks Huckleberry.

"Not to my knowledge. How do you determine whether the range is impacted by horses or by cattle? How do you calibrate the carrying capacity of the range for wild horses when there are so many other factors?"

"We wouldn't be so interested if it was a wild cow," points out Sage.

"Do they even belong here?" chimes in Bobofet. "I mean, it's like a desert, dude."

"It's not their fault they're stuck out here. I'm sure they'd be much happier on the Great Plains, except that we've turned it into cornfields and shopping malls. It's just like blaming *campesinos* for cutting down the rain-forest; it's not their fault they're forced to survive in marginal conditions," responds Mud.

"Unlike the Great Plains, however, the Colorado Plateau has historically only supported a low density of large herbivores, such as bighorn and

pronghorns. Not even bison were present here after the last ice age. Palaeontologists tell us that these desert grasslands are an artifact of ten thousand years without grazing pressure. The question we should ask is, can this region support widespread grazing of any kind?" I say.

"Maybe we should eat wild horses. That would be more sustainable than cows," says Yucca.

Several of the other students cringe.

"So are you saying the BLM shouldn't round them up?" Seeker asks Mud.

"I don't know. It seems that we are always trying to manage everything. What would happen if we just left them alone?" she responds.

"They'd eat all the grass," says Bobofet.

"You'd let them die of starvation?" asks Seeker incredulously.

"How do you know? I mean with the cows here you really can't tell."

"What about mountain lions?" asks Patience.

"Mountain lions kill a few. Drought, thirst, starvation, and harsh winters probably kill more. Their carcasses probably help the recently released California Condors survive," I say.

"They're condors here?" asks Sage.

"Farther to the south. They released them in Grand Staircase and Grand Canyon."

"Are condors native to Utah?" asks Bobofet.

"They disappeared from the Southwest during the Pleistocene with their food sources, like mammoths, camels, mountain goats, and native horses. They returned briefly when Europeans introduced grazing animals."

"Horses evolved in North America," states Mud excitedly. "So they were also here during the Pleistocene."

"Well, horses evolved about fifty-five million years ago during the Tertiary when the Henry Mountains were being formed, and they once roamed across the Colorado Plateau. During the Pleistocene they evolved into the modern horse before crossing the Bering Land Bridge into Asia and passing the first wave of Paleo-Indians coming the other way. Paleontologists think the horse died out in North America about ten thousand years ago, or maybe was driven to extinction by humans."

"So then wild horses are native; they've just been reintroduced, like the condor," maintains Mud.

I scratch my head for a moment. "Uh, yeah, except that these 'wild' horses are really the descendants of domestic horses."

"Aren't they the same *species*?" Mud pursues.

"You know, if they're descendants of escaped Spanish horses, they've been out here hundreds of years, wouldn't that make them wild?" inquires Patience.

We like our boundaries well defined, sharp as a line in the sand between sun and shade. The deeper we probe, the more blurred the boundaries become. We are forced to examine our notions of what belongs here. What is native? What is wild? Perhaps we are asking the wrong questions. Maybe we should loosen our boundaries and ask: What is it that we desire? The first step in determining our role in the ecological community is understanding ourselves and our own motivations. Then we can ask, how do we reconcile our desires with the needs and constraints of the landscape? Are they mutually compatible?

Returning to camp, we notice Seaweed still wrapped up in her sleeping bag.

“Are you alright?” Metta inquires.

“Yeah, I don’t know, it’s weird, sometimes this thing just comes over me, and I just get overwhelmed. Before, I could blame it on other people or what was going on around me. But it’s so beautiful out here and everyone’s so great, I don’t know what’s caused it and that really bothers me,” Seaweed says.

Metta and I exchange glances.

“I’m really bad at explaining things,” Seaweed says curling herself into a fetal position.

“Sometimes we can take lessons from the creatures around us. Insects wrap themselves in an insulated cocoon so they are protected during their metamorphosis, and then they emerge as beautiful butterflies,” Metta suggests, kneeling and placing her hand on Seaweed’s shoulder. “The important thing is to remember to emerge.”

Assured that Seaweed suffers from no immediate physical malady, I return downstream to explore an intriguing side canyon. Admittedly, this landscape is an abrupt change of reality for someone who has spent her entire life on pavement. It takes me awhile to adjust to this place, as well. The dry air burns my lungs, my skin flakes off in sandstone sheets, the intense sunlight hurts my eyes, and the tortured landscape haunts my dreams.

Although Muddy Creek is rife with tamarisk, they haven’t reached up this side canyon yet, except for a few here and there, providing a loom for flood debris. Huge boulders squat in the dry creek bed like dominoes placed on end by giants. Small faults, seismic line straight, cut through the sandstone. Pressurized liquid quartz once squirted through the fissures and crystallized in thin sheets that now protrude from the cracks like white razors. Blue-grey gnatcatchers *queek* and flit from branch to branch, ignoring my approach, flicking their insubordinate tails.

Around a few bends in the canyon, I stop and gawk at a pockmarked Wingate cliff. Called “tafoni” these holes in the rocks are created by the wind whipping sand grains around, sandblasting apartments for lizards. I

long to curl up and nap inside one of these holes like some rock-dwelling woodchuck. A short side canyon pulls me into an amphitheater of orange rock decorated with eerie shapes. It looks like the wind has been torturing the cliff. It's almost too much to look at, and I have to avert my eyes from the faces melting out from the rock.

How could wind, the random movement of air, sculpt such a bizarre display out of rock? Any rational explanation falls short of the wonder in these creations, which are nothing less than artistic. The power and force of creation are so apparent and undeniable. This landscape defies human imagination; you couldn't dream a place like this. It all seems so wondrous and magical and complex. How could the forces of nature compose such arbitrary patterns? Isn't nature orderly, progressing and evolving from A to B? How are these rocks formed with such linear precision just to have the pattern broken into jumbled chaos the minute you try to grasp the mechanism? It's enough to make you want to believe in God. Or deny his existence.

Wrenching my attention away from the cliff, I settle down under a huge, old juniper. It takes me a minute to discern whether it is alive or not. Although the main trunk is bare except for its shaggy bark, one small branch off to the side sports a mop of green.

"Junipers are the only trees that commit suicide," a park ranger once told me, "cutting off the xylem to one section so another part can go on living in times of scarcity of water." Adaptation to aridity. It seems the juniper forms the landscape as much as the land twists the juniper into convoluted spirals. I can't imagine the Colorado Plateau without gnarled juniper trunks concealing long-legged wood nymphs and gnome noses.

Looking closer I see that this juniper suffered a lightening strike years ago that split the trunk into many segments. Undaunted, the tree keeps growing, shedding shaggy bark, and providing bitter blue-grey seeds as a winter staple for birds, coyotes, and foxes. The animals return the favor by removing the hard casing surrounding the seed as it passes through their digestive tracts. Why would the juniper (and many other plants) evolve a seed that only germinates when passed through an animal? Besides the obvious advantage of being deposited in a pile of fertilizer, it may have to do with aridity. Animals, especially birds, may travel many miles before depositing a load of juniper seeds. This dispersal over a wide range allows young junipers to grow near adequate water and prevents seedlings from depleting the water table near the parent tree.

Many other plants have evolved seed casings as an adaptation to aridity. Some even have two coats around each seed. One coat washes away at the first rain, another on the next rain. This adaptation increases the probability of sufficient water for the plant and prevents an isolated rainstorm from initiating

sprouting. Other seeds have hard casings that must be ground away by vigorous washing and tumbling down a gully. Again this insures there will be plenty of water, keeping the seed from being fooled into sprouting because of a light sprinkle.

The juniper also provides for humans. We flavor gin with the berries, while various Indian tribes ground dried berries into a meal. The Zuni make a tea from the leaves to relax the womb muscles during delivery, while the Paiutes used the tea to treat syphilis. Other tribes treated colds, fevers, pneumonia, and arthritis with juniper leaf tea. The Anasazi probably used the shredded bark as swaddling for their infants.

Abbey says, "If he knew enough, a man could write an entire book on a juniper, not just junipers in general, but this juniper." *If he knew enough.* Perhaps after five hundred years of being rooted on a sandstone ledge overlooking a labyrinth abyss, a person might know enough.

What we do know is that botanists have placed the Utah Juniper (*Juniperus osteosperma*) in the Cypress family. This and other junipers range throughout the Rocky Mountains from Mexico to Canada, displaying a penchant for dry, rocky places. In the Southwest, the juniper grows exceedingly slowly, achieving a one-foot height after eight years and after only three hundred years growing to a fourteen-inch diameter. One juniper near Logan, Utah, stands forty-four feet tall, is six and a half feet thick, and is estimated to be fifteen hundred years old. Surely, after one and a half millennia, the boundaries between life and death become a little blurred.

Some art, perhaps the greatest, exists entirely without human thought, knowledge or appreciation. In some remote pothole in some unnamed canyon grows, lives, and dies the most exquisite juniper—art that no human could produce or conceive.

Is it the aesthetics, the Escher-like turns in the trunk, the gnarled finger grasping skyward, the peeling bark, or delicate weathering of the wood like pages in an ancient manuscript slowly released, that renders the juniper so inspiring? Or is it the precarious balance this tree holds between life and death, a balance between vigorous tenacity and yielding to outward forces. Is the juniper not emblematic of our own nature? Ancient and renewed each spring. Reaching for the stars yet rooted in rock. Uncertain directions and twisted paths.

At the end of this unnamed canyon, a pair of old cottonwoods, limbs twisted into sharp angles, stands as guardians to a spring-fed pool. Seeking sun and support, one of the trees snakes over the top of a boulder. A Say's phoebe calls from the top of the cottonwood, while a hairy woodpecker works the tree's bark.

A steady drip from the rock waters the moss, columbine, and maiden-hair fern that cling to the sandstone. The rock weeps, feeding algae and leaving behind a bubbled crust of salt. At this rate the dripping of the spring will take all afternoon to fill my water bottle, but the canyon ends here, and there is nowhere to go but back.

The water line drops daily, and the lack of tadpoles indicates the pool's ephemeral nature. Housed in their little tubes of sand grains and bits of cottonwood bark cemented together, caddisfly larvae creep about the sandy bottom of the pool, searching the black organic debris for food. Water boatmen glide through the water with their oar shaped legs. Silver cottonwood leaves float on the pool's surface. Like braille, the tracks of cougar and bighorn, predator and prey, appear in bas-relief in the mud.

Banjo stands motionless in the shallows transfixed by the water striders skimming the surface and their saucer-footed shadows that mirror them on the bottom. She watches their jerky movements, moving nothing but her head. Is she waiting? Thinking? Analyzing? Plotting? Or just watching? Shadows pass across the canyon walls, and the air grows cool. Day slides into night. Empires rise and fall. Continents collide, mountains rise and wash into the seas. And a dog stands in a pool in the desert.

CHINLE

A surreal formation of pastel purples, reds, and yellows that forms a low-angled slope under the Wingate, Chinle was sired by meandering streams and swamps that accumulated organic matter and then were buried by volcanic ash. The Chinle hosts uranium mines and petrified wood.

The mineral lands of the public domain, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and occupation by all citizens of the United States.

—1866 Mining Law

Last week Metta and Seeker dropped the truck off at Tomsich Butte and then rejoined us with the van at Interstate 70. Excitement pervades the air as we break camp. Today is the day of our resupply. We will hike to the truck and pick up another bag of food that will carry us for another ten days, while the drivers spend the afternoon on a lengthy car shuttle. They will drive back to the van, pick it up, and then drop it off at Hanksville and rejoin us at Tomsich Butte.

Mud, who is leading today, keeps insisting, “I can’t lead you guys. I’m a lousy leader. I have no sense of direction.”

I don’t know if it’s a self-fulfilling prophecy inspired by her lack of confidence, or a subconscious gender issue at work, or simply the magnet of reaching the truck, but Yucca and Bobofet pass right by Mud when she stops to consult the map and forge their own route. She becomes angry and indignant, but she refuses to confront them when we finally catch up.

We round a bend and suddenly the landscape opens up. We are no longer in a canyon but a vast red desert punctuated by towering orange spires of Wingate sandstone perched atop crumbling purple and red slopes.

“Dude, this is just like in *Close Encounters of the Third Kind*,” exclaims Bobofet.

Instead of aliens, however, we encounter jeep roads spurring off from Tomsich Butte. The two students who are documenting today are busy taking pictures and noting locations on the map.

Everyone bursts into laughter upon reaching the truck. Metta and Seeker had found a cow skull on the road when they dropped the vehicle off

and secured it to the front grill as a hood ornament. On our rented Dodge pickup it looks quite incongruous.

“Oh man, I can’t believe I’ve been carrying this stupid cow skull the whole time,” says Yucca dropping his pack.

Mud and Sage gaze up at Tomsich Butte. Rectangular gaping holes like missing teeth pockmark the cliff face where the sheer Wingate intersects the sloping Chinle formation. Long ladder-like chutes dribble from the holes. Carcasses of cars from the 1950s lie scattered about the base of the butte along with pieces of rusting machinery and fifty gallon drums.

“What’s up with this place?” inquires Yucca, finally looking around after diving into the bag of chips he had stashed in the truck.

“In our geology talk, do you remember that swamp that got covered in volcanic ash?”

“Where all the petrified wood is?” adds Patience.

Yucca nods, mouth now full of Gummy Bears.

“Well, that became the Chinle formation.”

“I thought the Morrison was the volcanic ash,” says Mud.

“It was as well, but that was sixty million years later.”

“Wait,” insists Patience. “Mancos Shale, Dakota, Morrison, Summerville, Entrada, Carmel, Navajo, Kayenta, Wingate, Chinle.” She ticks off the formations we’ve already passed through.

“You forgot Curtis,” says Sage.

“Which one was that?”

“That greenish layer where we met Brian,” replies Sage.

“Brian,” Patience, Seaweed, and Mud echo together in a dreamy tone.

“Aw, geez,” says Bobofet disgusted.

“The Chinle?” prompts Metta.

“Oh, right. In a part of the Chinle formation called the Shinarump conglomerate, a combination of forces created traps of decomposing organic matter which acted as a magnet for uranium in the groundwater to accumulate.”

“These are all uranium mines?” asks Sage concerned.

“Yeah, you want to go check them out?” I ask.

“Can we?” asks Yucca excitedly.

Sage and Seaweed look skeptical.

After finishing our lunch, we stroll over to a low, well-built stone structure. We swing open the heavy metal door. The inside is bare except for a few wooden crates.

“What was this place?” Patience asks.

“Looks like a bunker where they kept the explosives,” I reply.

“Doesn’t someone own it?” Mud asks.

“You do. This is a result of the 1872 Mining Law that designated hard rock mining as the highest and most preferred use of public lands. The law didn’t regulate mining so much as codify local procedures and officially open public lands to mining,” I explain.

“So I could just come out here and stake a claim?” asks Bobofet.

“But in order to keep your claim active, you have to make one hundred dollars worth of improvements or labor each year. And if you make one thousand dollars in improvements, you can purchase a deed or patent the land for five dollars an acre.”

“Five dollars an acre!” exclaims Yucca coming back out of the bunker.

I nod. “In 1872 wages were twenty cents an hour. But you don’t need to buy it; if you discover the mineral, it’s yours. Unpatented mining claims give the holder ‘the exclusive right of possession and enjoyment of all the surface within the claim,’ and you can use the land for activities that are ‘reasonably incident to mining,’ including building a home, grazing cattle, diverting water, and harvesting timber. Or building a bunker. Most of these claims are probably unpatented since mining companies are only interested in what’s under the surface.”

“Dude, we should just stake a bunch of mining claims out here and that way nobody could fuck it up,” says Bobofet.

“We could make our own wilderness area,” adds Yucca waving toward the cliffs.

“How big can a claim be?” Patience inquires.

“Twenty acres, and there’s no limit to the number of claims you can stake.”

“Dude, I’m all over it. How do we start?” asks Yucca looking around for rocks with which to stake a claim.

“There’s a catch, though. A lot of people were using the 1872 Mining Law to acquire property on federal lands for second homes and resorts, so the Supreme Court ruled that in order to hold the claim the minerals had to be marketable.”

“That law’s not still good is it? I mean you can’t homestead anymore either, right?” asks Mud.

“Good point, both the Homestead Act and the Mining Law were from the same era. Lincoln signed the Homestead Act, and Grant signed the 1872 Mining Law. Homesteading is long over, but despite years of effort to reform it, the 1872 Mining Law is still in effect.”

“So they can mine anywhere?” asks Patience indignantly.

“Pretty much, some areas like national parks, wilderness areas, and military installations have been withdrawn from mineral entry, but the rest of the public lands, about four hundred million acres worth, are open to min-

eral exploration. Once a claim is filed the miner or company has a right to mine. If the government wishes to put that land to another use, the miners must be compensated.

“The BLM estimates there are currently 1.1 million active claims on federal lands encompassing about twenty-five million acres. Nearly three million acres of federal land have been patented out over the years. To halt the siphoning off of public lands, Interior Secretary Bruce Babbitt placed a moratorium on patenting claims after Congress failed to reform the 1872 Mining Law. Shortly before Clinton left office, the BLM instituted a new set of mining regulations that would allow the agency to deny a permit on environmental grounds essentially revoking the ‘right to mine.’ George W. Bush put those new regulations on hold indefinitely.”

Uranium mining had its genesis in the Colorado gold rush of the 1860s when miners were confronted with an annoying tar-like substance they termed “pitchblende.” In a classic example of one man’s trash becoming another man’s treasure, the discarded pitchblende soon became a valuable source of orange uranium oxide used in coloring porcelain china.

After the turn of the century, Marie Curie discovered radium, which promised a cure for cancer. Soon carnotite, a yellow uranium bearing rock, became desirable. From the beginning, the San Rafael was known for uranium. The first claims in the Swell were staked at Temple Mountain in 1898, and by 1910, those claims began to produce ore. Carnotite mining thrived on the Colorado Plateau until World War I. Vanadium, a waste product of the carnotite boom, was a valuable additive to steel. Prospectors again flooded the region searching for vanadium, but the waste product of vanadium mining, uranium, triggered the biggest boom of all. Beginning with the Manhattan Project, the U.S. Army Corps of Engineers began to comb the old vanadium tailings for uranium. They soon depleted the tailings and prospectors were encouraged to search the region for uranium deposits.

In the late 1940s it looked as if uranium would take the place of petroleum as the most important resource the world had even known. Not only did uranium power nuclear weapons, it also promised clean electricity—power for ships and trains, meat preservation, and distillation of sea water. Project Plowshare would use nuclear bombs to create harbors, loosen oil shale, remove inconveniently placed mountains, and create lakes in the desert. To facilitate oil and gas extraction, Project Plowshare exploded three underground nuclear devices near Grand Junction, Colorado, between 1967 and 1973. Each detonation was larger than Hiroshima. The project was abandoned when it was discovered that the oil and gas had become radioactive.

In 1948, the Army turned over the uranium business to the newly hatched Atomic Energy Commission, which launched the first federally controlled and supported mineral rush in history. The AEC did everything but cart the ore out of the ground. They supplied prospectors with maps and information, they provided a bonus of \$10,000 to \$35,000 for a strike, they bulldozed roads into the back country, and they set up buying stations for the ore. Furthermore, the federal government was the only buyer of uranium and guaranteed a minimum price of \$3 per ton for the next ten years. By the time it was over, the AEC paid more than \$3,725,000 in discovery bonuses and built nearly a thousand miles of access roads into the backcountry.

One group of high school students in Moab sold their claims for forty thousand dollars, and a high grade deposit worth four million dollars was discovered while bulldozing a road. This was the biggest mining boom in history. Ore production doubled every eighteen months, and there were more than eight thousand workers in the mines and mills. The AEC was purchasing one hundred and fifty million dollars of ore every year. Everyone was trying to cash in; teachers, salesmen, and insurance agents quit their jobs, bought Geiger counters, and went prospecting. In 1955 Moab was so overcrowded with prospectors and families living in tents, shacks, and cars that one observer stated, "Moab's backyard strikes you as one vast trailer camp."

Using a Geiger counter, a prospector could locate a source of ore, dig a hole with a pick, shovel, and dynamite, and haul the ore out by wheelbarrow. Hundreds of these "dogholes" pockmarked the Colorado Plateau. Short of financial backing, but long on hope and backbreaking labor, most of these small operators were making less than one hundred dollars a day before expenses. Less than ten percent of the six hundred uranium mines were actually making money. But hey, one could get lucky and be the next Charlie Steen.

Charlie Steen, a hard-luck geologist from Texas, spent several years prospecting while his wife and four kids lived in a shack in the desert near Cisco. During that time, Steen wrote in a letter, "we are living according to a new theme . . . namely, 'Stop striving for the mythical illusion of security in the atomic age. You will live dangerously every day of your life, if you live at all.'"

As a professional geologist, Steen decried the use of a Geiger counter, even if he could have afforded one, choosing instead to rely upon his own knowledge. He persisted in searching areas that the AEC had labeled "barren of possibilities." Up until then most of the uranium had been found in the Morrison formation.

Steen suspected that uranium collected in deep reservoirs like petroleum and seeped upward into the Morrison. Subsequently he searched for

anticlines behind existing claims concentrating on the much older Chinle formation.

Steen discovered a lode of high-grade ore at the base of the La Sals and set off a frenzy of prospecting and mining. He soon became fabulously wealthy, built a hilltop mansion overlooking Moab, started a successful drilling company and a uranium processing mill.

My grandparents ran a dry goods store in Grand Junction at the time. My grandmother recalled when Mrs. Steen would come into Grand Junction for her shopping: "Well, she really didn't have any class or taste, just money. She'd buy the craziest things and not just one. If she saw a pair of shoes she liked, she'd buy three or four pairs exactly like it."

The Steens eventually moved to Reno, bought a ranch, and built another mansion. With his millions spread too thin and a debt to the IRS, Charlie Steen soon went bankrupt. When the roller coaster ride was over, both Charlie and his wife declared their poverty years in Cisco as the happiest of their lives.

In the end, Vernon Pick, a middle-aged electrician from Minnesota who had lost everything in a fire, fared better than Steen. Unlike Steen, Pick had no knowledge of geology whatsoever, but he read the booklets the AEC published on uranium prospecting and got an interview with the AEC mining division chief in Grand Junction. The chief told Pick, "You can go look for elephants in elephant country and you're going to find a lot of competition because everybody else is going hunting there. If you've got the stamina and guts, go hunting where nobody's found an elephant yet," and suggested the San Rafael Swell. For eight months Pick wandered around this area mostly on foot. Pick later said, "The trouble with most people is that they don't like to walk. They want to go where they can drive a car or ride a horse. To get to the places where I wanted to go . . . the places nobody else had been . . . there was no choice but walking." Finally Pick stumbled upon a rock outcrop that sent his scintillometer off the dial.

He discovered an ore body of carnotite right at the surface embedded in the Shinarump conglomerate. Pick staked his claim with three foot high rock cairns, and desperate to return to register his claim, he figured it would be faster to build a raft and float Muddy Creek back to his pickup since it was at least a four-day hike. His makeshift raft kept crashing into the canyon walls against boulders and dumped most of his gear into the creek. Pick said when he reached his truck, he found a couple of AEC geologists but kept silent about his discovery until he reached Grand Junction.

Life and other national publications picked up the story and Pick recounted his harrowing adventure, including water poisoned with rotting cow carcasses, box canyons, scorpion bites, sandstorms, flash floods, and

Muddy Creek crossings in waist-high water. "Although it had become conceivable to Pick that he might die, it was not conceivable to him that he could turn back," read the *Life* article.

However, the locals in Hanksville thought little of Pick's adventures, considering Muddy Creek was little more than a trickle by June. They claimed he was tipped off to the ore discovery by the AEC geologists, one of whom became Pick's mine manager.

Unlike Steen's Mi Vida mine outside Moab, Pick's Delta mine was remote. Hauling equipment across the San Rafael Swell was an expensive and monumental task. Ore was hauled out by mule until Pick could get a bulldozer into the area. Nevertheless, in the first year, the Delta mine produced fifteen hundred tons of uranium per month. Between 1948 and 1956 the San Rafael district produced over two hundred and forty thousand tons of ore. In 1954 Pick turned down an offer of six million dollars, but a few weeks later he was approached by Floyd Odlum, a wealthy businessman who wanted in on the uranium business in a big way. Geologists had assessed the potential uranium reserves of the Delta mine at twenty-five million dollars. Odlum offered ten million. Pick insisted on cash.

Odlum renamed his new mine the Hidden Splendor, and it produced only two million dollars before the ore body pinched out. The Hidden Splendor became known as the Hidden Blunder and by the time it closed was valued at only one hundred and sixty thousand dollars.

Just as land speculation was the real gold rush in the nineteenth century, stock market speculation was the real uranium boom. Over-the-counter penny stocks in Salt Lake City proliferated, many based on no more than unsubstantiated mining claims where no actual mining had taken place. So many investors wanted in on the action that new brokerage houses multiplied from twenty in 1953 to one hundred and twelve the following year. In 1954 the Utah Securities Commission listed eighty-one uranium firms, most of which had no more than a few stakes pounded into the ground, but no one seemed to care. The Salt Lake stock market was in a feeding frenzy. Penny stocks skyrocketed to thirty and forty cents. And on May 27, 1954 uranium stocks hit a record of seven million shares, exceeding the New York Stock Exchange. Eventually, the madness petered out as people realized they were trading worthless pieces of paper, and even the big players like Odlum lost money.

During the boom a doctor with Public Health Service named Duncan Holaday became concerned about radiation levels in uranium mines. Upon investigation, he found radiation levels several hundred times above what was considered safe though they could be easily reduced by proper ventilation. The mine companies were reluctant to spend money on safety measures

unless their only customer, the U.S. government, demanded it, which it didn't. Miners making good money were equally unconcerned. They refused to wear respirators and wouldn't take time out to string up duct work for the ventilation systems. Holaday pointed out an inadequate ventilation shaft to one miner and said, "That's supposed to be within twenty feet of the face. You're not getting any benefit from that. You have a good possibility of getting lung cancer."

"Oh, that won't happen for fifteen years or so," the miner responded.

Ten years later, widows of the miners began filing law suits. But it wasn't until 1967 that the federal government established a maximum radon exposure level and required ventilation in the mines, and by that time, it was all over.

After production of two hundred and fifty million dollars of ore, the uranium market was saturated. The AEC had seventy-one million tons of ore in reserve. The military had plenty of uranium for nuclear weapons, and nuclear energy wasn't developing as quickly as they thought. So the AEC announced that, from 1962 to 1966 it would only buy "appropriate quantities of concentrate derived from ore reserves developed prior to November 28, 1958 . . ." Thus the government-created-and-sponsored mineral rush came to a sputtering halt when the government decided it had enough reserve.

In the late sixties and early seventies, uranium demand returned, this time dominated by multi-national corporations. Nonetheless, a few prospectors in Moab and Blanding still held out hope and dusted off their old Geiger counters. But soon the nuclear power boom faded. Moab was left with the abandoned Atlas processing mill, which now leaks one hundred and ten thousand gallons of polluted water into the Colorado River daily. And residents of Grand Junction began the expensive task of replacing the foundations of homes and businesses that were built with radioactive tailings provided free by the mines.

Some people still think uranium will make a comeback, such as Calvin Black, noted pothunter and county commissioner. Black wore an amulet of uranium ore around his neck to demonstrate how harmless it was to all those sissy liberal environmentalists. He died of a lung tumor.

For some macabre reason I like poking through old mines, collapsing cabins, and rusting machinery. Perhaps it is the reminder of the ultimate futility of human endeavors—that all will eventually turn to dust—that I find vaguely satisfying. An old roadbed at an impossibly steep angle leads to a mine audit. Thunderstorms have worn numerous gullies into the loose clay of the road, rendering it passable only to foot traffic. Like a long tongue, a fifty foot long

wooden sluice descends from the mine audit to the end of the road. Sage refuses to go any farther, and Seaweed elects to stay below with her.

Armed with headlamps, we scramble up the tailings pile, a solidified greenish-yellow slurry, probably radioactive. I need to see this first link in the chain of nuclear madness. This strange yellow rock that Native Americans once used as face paint, the source of nuclear weapons and atomic energy, demonstrates man's hubris, allowing us not only to conquer other nations but nature itself. Here lie the beginnings of it all and perhaps the end as well, crumbling back into the earth.

The audit looms ahead, a hole big enough to stuff a VW into, blasted out of the Shinarump conglomerate, the basal part of the Chinle formation. I set down my pack, take a drink of water and try to steady my nerves in order to venture inside. A strange smell fills the air, not the musty odor of caves or bats, but something foul and metallic. Something lifeless and yes, why not say it? something evil. A gut-wrenching mythological fear wells up within me, a fear embodied by images of the Holocaust and Hiroshima. I can't shake the feeling that this tunnel leads straight to hell. Yet some lurid fascination pulls me in. I hope the tunnel is short, but it plunges on into the heart of the butte.

The tunnel quickly branches off into a catacomb of passageways that honeycomb the interior of the cliff. We follow the main tunnel separated from the others by massive pillars of rock, which so far have kept the mine from collapsing. However, fresh piles of rock debris fallen from the ceiling cast doubt on the tunnel's longevity. We spend our days in the back country hiking across the surface of the planet, and it feels weird and somehow wrong to walk around inside the guts of Earth, as if we are violating some ancient code.

Without a word, we collectively decide to return to the world of the living. Emerging, we behold a wondrous world of light and afternoon shadow. Dots of green cottonwood contrast a backdrop of orange cliffs. Numerous canyons fissure the dark red plateau beyond. The butte itself is pockmarked with audits all at the same level, all seeking the same thing. What is a mine but a hole punched into the earth for sheer greed? Is it any wonder that evil oozes out? Unlike gold, silver, or other minerals, however, it was not just greed that brought uranium to the surface but the desire to control the world through the fear of annihilation.

"Still, they are only wounds; they aren't absolutely mortal. Better a wounded wilderness than none at all," Wallace Stegner wrote in "Wilderness Letter," proposing that abandoned mines need not preclude wilderness consideration. Can wilderness be a source of regeneration and renewal for the land, just as it is for our souls? Do we not share an obligation to restore the

land through wilderness designation, just as those pristine areas have restored us? Wilderness restoration of the landscape from where weapons of mass destruction originated would be a vital step in nuclear disarmament and the creation of a just and sustainable world.

That evening, Metta reads us an essay she's been writing. She describes visiting her mother's family in St. George, Utah, where her grandfather would take her to the old-time candy store when she was a little girl. She tells us that from 1951 to 1962 one hundred and twenty-six nuclear tests, each comparable to the radiation released at Chernobyl, were conducted in the Nevada desert north of Las Vegas. She tells us how her family and other residents of St. George were considered "a low-use segment of the population" by the AEC, and how it was common practice to wait until the wind blew toward Utah before detonation so as to avoid contaminating Las Vegas or Los Angeles residents.

It was tacitly acknowledged that Mormons, being generally conservative, patriotic, and obedient, wouldn't raise a fuss. For the most part, they were right. Residents of southwest Utah were told there was no danger from the tests and were even encouraged to watch the mushroom clouds when they exploded over the desert at dawn.

"We can afford to sacrifice a few thousand people out there in the interest of national security," Eisenhower allegedly stated, beginning a thirty-year government cover-up to protect nuclear testing at any cost, including the loss of American lives.

When these "downwinders" complained of peeling skin, nausea, diarrhea, hair and fingernail loss, the public health officials said it was neurosis, and doctors dismissed the symptoms of radiation sickness as menopause or "housewife's syndrome."

After grazing on plants dusted with fallout, sheep in the area developed radiation burns, aborted calves, and lost their wool. The AEC asserted that sheep deaths were due to "mismanagement, malnutrition and perhaps poisonous plants on the range."

These traditional Mormon families abstained from tobacco, alcohol, and other intoxicants and lead healthy outdoor lives farming and ranching. The effects of nuclear fallout were compounded for people who grew their own produce. Locally produced milk, meat, and wool were consumed and shipped around the county while the AEC recorded absurdly high levels of radiation and waited for the winds to blow toward Utah before the next nuclear test. Soon after nuclear testing began, women in southwest Utah exhibited a high rate of miscarriages, and children born to them had increased birth defects. Previously cancer was so rare that when children began developing leukemia, local doctors didn't recognize it. By the 1960s it

was clear that the testing was having adverse effects on the human population, yet the government continued to deny and conceal evidence, insisting that there was no danger. Scientists who spoke out about the dangers of radiation lost their jobs and their research grants, and some were even threatened with arrest as traitors.

Unusual cancers appeared in such proliferation that the area became known as cancer alley. Virtually every family in southwest Utah has lost at least one member to cancer. Some reported fourteen cancer fatalities on two blocks in St. George.

Victims of the nuclear testing attempted to seek compensation from the U.S. government. The government conveniently lost or destroyed documents and evidence, and it became clear that officials were attempting to delay and obfuscate the issue until the victims died off. Eventually, a federal district court, in a four hundred and eight-nine page decision, ruled in favor of the victims. However the appellate court ruled that sovereign immunity protected the U.S. from lawsuits. Finally just a few years ago, Congress established a fund to compensate the victims and their families of the atomic tests. In exchange for agreeing to drop all future claims against the U.S. government, each claimant could receive up to forty thousand dollars. A sum quickly consumed by medical bills.

Metta tells us about how her grandfather died of lymphoma and how her grandmother, mother, and aunts all battle breast cancer.

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MOENKOPI

A thick formation composed of thin sheets of mud turned to stone.
With a little rain the ancient mud revitalizes and oozes down the
cliff forming drip castles and mud stalagmites.

*A person with a clear heart and open mind can experience the wilderness
anywhere on earth. It is a quality of one's own consciousness.*

—Gary Snyder

The hike to our next campsite takes us past a sign posted by the BLM.

“Wilderness Study Area. No motorized vehicles,” it reads, with red slashes through a jeep, ATV, and motorbike.

“What’s up with this?” asks Seeker angrily, pointing at the motorbike tracks that run right past the sign.

This image—a sign posted by the federal government containing the inflammatory word “wilderness” and the ORV tracks in flagrant disregard—underscores the deep rift in values that runs through southern Utah over how to best manage these lands.

Despite the ORV intrusions, the land behind the sign is recognized as having wilderness potential by the BLM and is managed as such. Although the agency recognizes the ORV problem and specifically recommends “that all vehicles should be confined to designated roads and trails . . . to prevent erosion and scarring due to overland vehicular traffic,” it neglects to take any enforcement action.

With the passage of the Federal Land Management Policy Act in 1976, Congress mandated the BLM to conduct a wilderness inventory of its lands, much the same way the Forest Service was required to do under the Wilderness Act. And much like the Forest Service inventory, the BLM inventory was fraught with problems. Although the agency was supposed to inventory all the areas that qualified, thousands of acres were omitted for political reasons or potential resource conflicts.

One glaring example was Mancos Mesa, a large (108,700 acres) roadless area in San Juan County. Janet Ross, director of the Four Corners Outdoor School, was one of those who did the wilderness evaluation. She reported that she and two other BLM employees were dropped off at various points

on Mancos Mesa by helicopter. They were supposed to take a look around and then get picked up and fly to a new area. Janet was dropped off first. When the helicopter came back for her, they spent two hours flying around trying to find the other two employees. Then they had to return to Blanding to refuel. When they finally found the others, who had spent the whole time zipped up in their flight suits because the gnats were so bad, they had run out of time. On the basis of this survey, the BLM dropped all but 46,000 acres from wilderness consideration, stating Mancos Mesa lacked outstanding opportunity for solitude.

Out of 22 million acres of BLM land in Utah, the agency pronounced only 3.2 million acres worthy of inventory. Out of that they recommended 1.9 million acres be designated as wilderness. This paltry figure enraged Utah conservation groups who then conducted their own inventory and found 5.7 million acres of lands deserving wilderness designation, including Mancos Mesa and several units along Muddy Creek and the San Rafael Swell. In 1989 the citizen groups introduced their own wilderness bill into the U.S. Congress, and the battle began in earnest. Local and national conservation groups supported the designation of 5.7 million acres of BLM land in Utah as wilderness, while most of the state and local politicians were opposed. Currently, wilderness has wide support in Salt Lake City and along the urban Wasatch Front but faces fierce opposition in rural Utah.

Because the original BLM inventory was so flawed, in 1996 Interior Secretary Bruce Babbitt ordered the BLM to undertake a new study. Simultaneously, the Utah Wilderness Coalition (UWC) also decided to update their original inventory. Oddly enough, the BLM's new inventory unearthed 5.6 million acres of de facto wilderness. The UWC, on the other hand, extended their search to include the West Desert and turned up more than nine million acres of roadless lands. While Congress currently deliberates the fate of these lands, they remain in bureaucratic limbo. The areas that the BLM recommends as wilderness (a yet unknown portion of the 5.6 million acres inventoried) will become Wilderness Study Areas, managed as wilderness, until Congress makes a decision. The areas that the BLM deems unworthy will continue to be open for multiple-use, including mining and petroleum exploration, activities which would preclude future wilderness consideration.

Up to this point our journey has taken us through areas left out of the BLM recommendation, but included in the UWC proposal. Out of the 750,000 acres of wild lands in the San Rafael, the original BLM inventory omitted nearly half a million acres from wilderness consideration. In the Muddy Creek unit, the second largest tract of undeveloped BLM land in Utah, the BLM only recommended 56,000 acres.

However, as far back as 1935, the Utah State Planning board recommended a 360,000 acre national park here. In 1973, the BLM itself suggested designating 630,000 acres of the Swell as a National Conservation Area, recommending that all vehicles be confined to designated roads and trails and closing any undesignated trails. Even the Emery County Development Council proposed a 210,000 acre national park in the 1980s. But by 1985 the mood had changed and the county backed off the proposal, stating instead that, "Restrictive park, monument, or wilderness management has to be viewed by the Commission as preemptive of local abilities and prerogatives to manage the lands for sustained yield, for preservation of the resource and for multiple beneficial use."

Southern Utah is home to six national parks, two national monuments, and Glen Canyon National Recreation Area, all providing much needed boosts to the local economy. Wilderness, however, is seen in an entirely different way. According to the local mentality, wilderness is suitable only to backpackers, who as one county commissioner put it, "come into town with a set of clothes and a ten-dollar bill and don't change either." While many object to wilderness on economic grounds because it prevents resource extraction, in southern Utah, the wilderness debate is intensified because it's couched in a cultural and religious context.

"I just don't get why people here are so opposed to this becoming wilderness," says Seeker.

"Perhaps the schism is between rural and urban values. The people that live out here want to continue the lifestyle that was shaped by the land, while the urban population wants to preserve the land that shaped the culture," I say.

"I think it's more complicated than that," says Metta.

"They don't want to become another Moab?" offers Mud.

"Maybe wilderness symbolizes the shift from a resource-based economy to a service-based one. In the cities that's already happened. But out here . . ." Huckleberry waves his hand at the emptiness.

"Yeah, I'd rather be a cowboy than a burgermeister," says Yucca.

"Like Brian," Patience, Seaweed, and Mud sigh dreamily.

"I thought you could still graze cows in a wilderness," says Patience.

"Yeah, but it's the *idea* of wilderness, the notion that the federal government is going to come in and impose restrictions." I indicate the sign.

"Guns or knives, Butch!" Bobofet proclaims waving his pocketknife.

Everyone stares at him.

"You know, from *Butch Cassidy and the Sundance Kid*. The scene where Harvey Logan tries to take on Butch Cassidy and says, 'guns or knives, Butch,' and Butch kicks him in the nuts. I saw it six times before coming out here," he says somewhat sheepishly.

“Was Robert Redford Butch or Sundance?” asks Patience. Metta and I exchange glances. “I guess that means class is over,” she says. “Guess so.”

The notion of wilderness still circulates through my mind as I hike. A few years ago I had a Japanese graduate student who tried to translate “wilderness” into Japanese. The closest she could come was something like “transparent nature” because in Japan all of nature is infused with culture. All natural areas have people living in them or have a cultural element that often surpasses the natural element in the Japanese perception of place. This is why the Japanese are so enamored with the West; here they can experience nature in its pure state unburdened of culture. Have we actively created this notion of wilderness separate from ourselves by failing to acknowledge the dynamic interplay between humans and the landscape? Why do we insist on wilderness “as a place where man is a visitor who does not remain” while having sterile suburbs of strip malls and exotic grasses?

Perhaps what we need is an “infusion of arbor vitae in our tea.” While preserving wilderness on one hand, we could create working and dwelling places where wild nature is encouraged. Imagine wildlife friendly towns. Native fish in the rivers instead of car tires. Native grasses and forbs interspersed with community vegetable gardens instead of mowed parks and flower gardens sprayed with herbicides. Rooftop gardens. Paths and trails between neighborhoods where one encounters deer and woodpeckers instead of traffic.

Grazing and introduced species, such as African mustard, Russian thistle, and tamarisk have totally changed the vegetative communities along Muddy Creek. Numerous old road scars and mine audits appear throughout the area. Perhaps we need to rethink our idea of wilderness in the postmodern era when we’ve even changed the climate. Is there truly any place where “the impact of man is substantially unnoticed?” In French “wilderness” translates simply as *aire libre* or “open air.”

More than fifty years ago Aldo Leopold called for a land ethic. Wilderness is as close as we’ve yet come—a place where we take care, assess our impacts, and redress our ills. A place where we willingly limit our numbers, where we limit our technology and our cleverness and instead “seek sympathy with intelligence.” A place that we approach with restraint rather than with indulgent desire. The challenge is not in the wilderness itself, not in survival skills, nor rappelling down cliffs, shooting rapids, nor living without TVs, hot showers, and espresso. The real challenge is how to take the lessons of the wilderness with us when we return to the unreal world.

Interestingly enough, one of the definitions for wilderness in the *Oxford English Dictionary* is, “a piece of ground in a large garden or park planted

with trees and laid out in an ornamental or fantastic style, often in the form of a maze or labyrinth.” Trying to define wilderness itself is a labyrinthine process.

To paraphrase Nietzsche, if wilderness did not exist, it would be necessary to create it. Although illusory, wilderness is a fundamental component of the human psyche. Just as science has nearly succeeded in eliminating God, although not the need of, we’ve nearly destroyed wildness but increased the need for it. As vast tracts of land become parceled, tamed, drawn, mapped, and quartered, we lose that which reminds us of who we are by everything we are not. Identity depends upon other. The world apart, flourishing with no regard to our existence, allows us to define ourselves. Without wilderness, real or imaginary, we inhabit a human vacuum.

“What’s your definition of wilderness?” I ask the students when we gather after dinner.

“A place with big animals,” says Bobofet.

“Any place can be a wilderness, even your backyard,” insists Patience.

“A place where nobody lives,” says Sage.

“A place full of tourists,” adds Yucca.

“A place where nature is allowed to evolve on its own,” says Huckleberry.

“Some ecologists are defining wilderness as a self-sustaining, self-propagating complex system,” says Metta.

“Does that mean that, like, your intestines with all their bacteria are a wilderness?” asks Patience.

“ . . . In accordance with the old meaning of ‘self-willed’ land,” Metta clarifies.

“One of the dictionary definitions is, ‘A region of a wild or desolate character, or in which one wanders or loses one’s way,’” I say.

“A refuge, a place of healing,” says Mud, adding her own definition.

“Wilderness is nothing more than a cultural construct, an artifact of western civilization,” says Seeker.

“What the fuck is this then?” asks Yucca, obviously put off by theoretical abstractions.

“The *idea* of wilderness is a cultural construct,” clarifies Seeker, glaring at Yucca.

“So, what isn’t? Even language is a cultural construct,” counters Sage.

“If anything is a cultural construct, it’s Wallyworld,” says Mud.

“Wallyworld?” I raise my eyebrows.

“Yeah, you know, the plastic world, box stores and strip malls, the burbs,” says Mud.

“You know, if wilderness is a cultural construct and so is Wallyworld, then maybe for every Walmart that gets built we could designate a wilderness area,” suggests Huckleberry.

“That would at least mitigate our aesthetic sin if nothing else,” adds Metta.

“According to Congress, a wilderness is ‘an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. . . . an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation,’” I say.

Although we each have different definitions, we all agree that Muddy Creek qualifies as a wilderness.

What do *you* think a wilderness is?” asks Patience.

“A place without maps,” I reply.

“Is there any place like that?” asks Bobofet.

“Not anymore.”

“So are you saying there’s no more wilderness?” inquires Seeker.

“Aldo Leopold said, ‘Of what avail are forty freedoms without a blank spot on the map,’” I respond, avoiding the question.

WHITE RIM

This is the oldest exposed rock in the San Rafael, formed by the sand dunes of a large barrier island in the Permian sea. To the east, the on-shore white beach sands mixed with red silt, creating the maze-like canyons and slickrock ledges of the Cedar Mesa formation. To the west, the sea produced the Kaibab Limestone, a stratified yellow rock that erodes in pillars like statues of Egyptian pharaohs. Muddy Creek cuts along the cusp where the land once met the sea. Here the White Rim Sandstone forms a deeply incised slot canyon called the Chute.

We think of them as pictures of reality, but they are actually talismans which twist our psyche in one direction or another. Maps create the situation they describe. We use them hoping for help in finding our way around unknown territory, hoping they will take us in the right direction. We are hardly aware of the fact that they are proscribing the way we think of ourselves, that they are defining large pieces of our personal identities.

—Freeman House

The next morning we walk downstream to have class under a big cottonwood. Metta leads the group in a short meditation to which Yucca takes exception. We follow with a guided meditation.

“Lie down, close your eyes and feel the earth beneath your body. Sink into the ground and let the sand cradle you,” I say to get everyone fully relaxed and in a slightly hypnotic state.

“Now, recall the very first nature memory that enters your mind, not necessarily the earliest memory, but simply the first one that pops up without rejecting it. Concentrate on that memory. Recall the smells, sights, sounds, feelings, and emotions evoked by that memory,” I suggest.

I allow several minutes to pass. “Okay, when you are ready, open your eyes and write down everything you can recall about that memory.”

When the students finish, I ask them to unpackage their writing. “Look at your memory like a medicine bundle, take out different pieces, turn them over, and examine what you wrote and why.” Thus, we use writing as a method of exploration of our personal relationship with nature. Hopefully

this will become their final essay after substantial revision. All too often college students crank out writing assignments the night before they are due. Students who are smart and good writers are rewarded by receiving good grades on papers hastily written. To negate this tendency, I require a minimum of three drafts. The first draft is peer-edited, the second receives feedback from me, and the third is the final. The difference between the first and last is profound.

“Make this the best thing you’ve ever written,” I implore.

“Oh, no pressure there,” responds Seeker.

“The difference between great writing and mediocre writing is not just in the words. Anyone can play a series of notes. Some people are masters of wordplay, but they’re just putting words on a page. It’s fast food writing, easily digestible, but not very memorable. With other writers you can sense their integrity; their words come from the heart. Authenticity permeates their writing. Great writing comes from within, a place of deep honesty and awareness. Great writing is from one soul to another,” I suggest.

Because it is about them and their experience, the students have a personal stake and interest in making it excellent. Once they get untracked, they work diligently and produce some amazing work.

After lunch we split into two groups. The women all elect to return to camp with Metta. By unspoken and perhaps unconscious agreement, the men and women often segregate themselves. I suppose there’s just too much male and female energy bouncing around. When separate, both groups mellow out.

The male students and I scramble up the Moenkopi to a wide bench where one could walk for miles. We find ourselves in another world, an enormous canyon encircled by Wingate cliffs standing like a rigid line of stoic soldiers, arms at their sides, grimacing outward, squinting into the sun. Below us Muddy Creek slices through the brick red Moenkopi and buff Cedar Mesa like a jagged knife cut. A canyon within a canyon. Broken slabs of sandstone lay strewn about like a couple of giants squabbled and broke all their dishes. We encounter a claret cup cactus in full bloom, defying its barren environment. The thick green stems of the cactus huddle together, while from the apex burst forth scarlet flowers the shape of wine goblets. We marvel at the cactus made even more stunning by its bleak surroundings. A few sparse grasses mingle with blackbrush, a member of the rose family superbly adapted to arid climates.

We spread the topo map out on the ground using rocks to keep it from blowing away. We attempt to make sense of the mass of squiggly lines that signify the landscape. Besides being the first to float the Grand Canyon, John Wesley Powell also served as chief of the U.S. Geographical Survey

and began a systematic topographical survey of the U.S., a daunting task which remains unfinished. A red grid lies superimposed over Mussentuchit Flats and the west side of Muddy Creek. Each section contains a number from one to thirty-six. A crosshatch on the map marks the physical corner of the section where the survey sunk a metal post. We notice that the land to the east of Muddy Creek is unencumbered with the red grid. With a labyrinth of convoluted canyons, it was simply too rugged to survey.

Back in 1785, the Land Ordinance divided the U.S. into six by six mile blocks called townships. Each township was further segmented into thirty-six square mile sections. Each section comprises six hundred and forty acres; each quarter section is one hundred and sixty acres, the size of a homestead. Starting in 1803, upon statehood, section sixteen was granted to the state to generate revenue for the school system. In return the state waived rights to federal lands. By the time Utah became a state, the land grant was increased to four sections: two, sixteen, thirty-two, and thirty-six. These school trust lands would become a land management nightmare in the years to come.

The state often leases its sections for grazing, mining, or natural gas wells. Although only .03 percent of the school system's budget comes from these lands, the Utah Supreme Court ruled that the state is obliged to generate maximum economic returns from its school trust lands. Court rulings held that "the BLM must grant a holder of a state oil and gas lease access to a school state parcel wholly surrounded by federal land in a WSA." This caused huge problems when Clinton created the Grand-Staircase Escalante National Monument. Eventually, the Interior Secretary Babbitt and the Governor of Utah agreed on a land swap, trading 376,739 acres of state sections within the monument, as well as national parks and national forests for fifty million dollars in cash and one hundred and forty-five thousand acres of more profitable federal sections near developed areas.

Without a map we perceive a world of rock and sky. With the map before us we see that these canyons and buttes have been named, that a jeep trail and a mine lie just a few miles away. We acquire the notion that a nearby canyon must be accessible since it has a name. No longer looking at the land, we are focused on the map. We find our location by triangulating off Tomsich Butte as if we didn't already know that we are directly over the center of the earth. We pick out a mass of tightly parallel squiggly lines representing a tight canyon that we can't see. We find a bearing for the canyon.

"Okay let's head over there and see if we can find it."

The guys look out across the flat, desolate mesa incredulously.

"You mean just walk out there and find a canyon?"

"Yep."

Here's the adventure they'd been waiting for. Random exploration, just walking off into the void.

With nothing to shoot a bearing for, we have to use each other. Yucca walks off toward the horizon while Seeker directs him to the right bearing. He signals left and Yucca shakes his head. We hear a faint, "I can't." When we reach him, we see a deeply incised canyon that doesn't show up on the map. A few more bearings and we reach the rim of another canyon.

Everyone but Yucca decides to head back. I cringe for a moment. He'd been getting on my nerves lately. But maybe it would be good to spend some time one-on-one and try to establish a connection. I ask him how he came to be named Alfonso Levy.

"I was born in Chile, but I was adopted and brought back here. My real parents were too poor to keep me. It's kinda weird when you think about it. My dad pulls in a million bucks a year. He's a plastic surgeon in Beverly Hills."

We scramble down loose blocks of rock into a canyon we hope will take us back to Muddy Creek. The contour lines indicate it might be tight, but we hope for the best.

"I think my parents got my sister and me to save their marriage. Probably some stupid shrink told them it would be a good idea. My mom's always listening to stupid shrinks. It didn't work though; they got divorced when I was seven."

"So did you live with your mom, then?"

"Yeah, she's one wacky bitch. I can't stand her."

"Why's that?"

"She's totally neurotic and overprotective. She didn't even want me to go to college. All her shrinks told her she should let me go off to college, but she just kept changing shrinks until she found one that would tell her what she wanted to hear."

"But you left."

"Yeah, what was the bitch gonna do?"

"Do you get along with your dad?"

"Okay, I guess. He works all the time and his girlfriend's wacked."

We stop at some tracks. Bighorn and wild horse. Encouraged by this we continue on.

"Do you ever think about going back to Chile? To check it out, I mean?"

"Yeah, I thought it might be interesting, but my mom told me if I went back they'd put me in the army."

We suddenly hit an eighty-foot pour off. We edge out over it on our bellies and laugh at the real life verification of what the map told us, but we refused to believe.

We retrace our steps back out of the canyon to the Moenkopi bench where we part ways. Yucca heads back to camp while I attempt another route.

Some days I want to walk forever. I don't even want to stop and eat or drink. I want to walk all the thoughts out of my head. With each step the jumbled thoughts that comprise my consciousness settle out. They line up like quartz in schist and I can examine them one at a time. Sometimes I think if I can walk long enough my thoughts will be ground to dust and blow away.

I follow the twists and turns as the canyon cuts through the Moenkopi. The walls grow higher with each bend, and the late afternoon shadows grow longer. It will be a long walk back in the dark if this doesn't work. Finally I come to the drop where the Cedar Mesa begins. Often a pour off marks the boundary between formations. As the water cuts through the soft Moenkopi, it erodes steadily, then it encounters the much harder Cedar Mesa. This pour off I can easily scramble down.

I notice a bull snake lying in a vertical crack in the sandstone. The lower half of his body is wrapped into a small pocket about halfway up the pour off. Using his tail, the snake pushes himself up the cliff, slowly sending a muscle ripple through his body. His head inches upward. Soon he can no longer use his tail but somehow clings to the rock, gripping the uneven surface of the sandstone with the scales on his belly. Ever so slowly, he pushes against one bulge in the rock, pulls against a crack, and inches higher. The snake lies exposed, stretched out along the cliff face. A perfect meal for a raven, I think. A second later a raven flies over and circles back. The snake senses something (me or the bird?) and freezes amid a difficult five-ten move. The serpent looks up and flicks out a long, black tongue. Maybe the raven sees me or isn't hungry. Nevertheless, it circles again and continues up the canyon.

The snake resumes his laborious climb. What would cause a snake to climb up this cliff? Albeit a small one, it sure looks like a barrier to snakes. I can't help being impressed by this fellow's slow determination to summit. Finally his head crests the top. As he begins moving along the ledge, a sudden gust of wind blows him from his precarious position and back down where he started. He seems somewhat defeated. As I gather my things to go, I glance back and see that he has resumed his climb.

The next morning Sage volunteers to lead our much anticipated hike through the Chute. I try to hide my apprehension. This is our longest hike thus far, and Sage has struggled physically. But I resist the temptation to suggest another leader. That would undercut the entire principle.

The previous two days had been overcast, and I'd watched the creek rise with trepidation, knowing that high water would make our journey through the Chute difficult, if not impossible. Today, however, dawns clear and warm, and the water level has dropped significantly overnight. The water has even cleared, becoming an opaque green instead of mocha. Just past camp, Muddy Creek begins to cut through the Permian Sandstone. As the creek drops, it erodes down but not out. The result is a long stretch of narrows without banks of any kind.

As we enter the Chute, we cross from mud outpost to gravel bar, weaving back and forth across the creek, working our way downstream with agonizing slowness. Salt deposits form a bathtub ring along the canyon wall and indicate the high water mark. We find virtually no plant life here, just an occasional rabbitbrush on some of the higher benches of sand. A boulder, freshly fractured in two, lies indented in the mud, peeled back like the crater of an asteroid. When did this rock fall? Yesterday, the day before, a couple of hours ago?

The hundred foot high canyon walls begin to close in, trapping us in a world of mud, water, and sandstone. A narrow ribbon of sky above reminds us that we are still on earth. Should a flash flood occur, we would be swept downstream for miles, unless we could somehow scamper up the sheer walls like lizards.

Coming around a bend, I find the students huddled in a tight circle staring at the ground. A small bat, probably a Western Pipstrelle, lies flopping around helplessly in the mud at their feet. It flaps its wings but can't lift off. I pick it up with a handkerchief and place it in a rock crevice, but it continues to flop about as if its back is broken or it's having a seizure. It slides off the rock and back into the mud. It seems that it is gasping for air, its tiny mouth opens and closes and just gets full of sand. For a moment it quiets and tucks its wings into its body in a pitiful gesture, as if it is about to curl up and die. We debate whether to let nature take its course or put it out of its misery. I hate the idea of taking its life needlessly. What if it isn't rabies? The incidence of rabies in bats is no higher than other mammals, only half a percent.

"Maybe we should just let it die in peace," says Mud.

Sage decides we need to press on. She collects the group and departs. I linger, watching the bat writhe in the mud. It certainly looks like fatal agony. Finally I make up my mind and pick up a large rock. A quick smack on the head crushes its tiny skull. I feel its life quickly depart, flowing out with what feels like a sense of relief. Yes, I actually feel something come out of the bat, through the rock and into my hands.

Life is such an intangible thing, but you can easily detect its absence. We use death as a noun, but it seems to me a verb, a process, for once something

is dead, it is lifeless, inanimate. The quality that created its existence departs, and it is no longer a being, but a mass of tissue, a rock or shoe, a toenail clipping. It all happens so quickly. It's either alive or it's not. A human body weighs three ounces less than when it was alive. Some speculate that these three ounces constitute the soul—physical evidence that the soul has mass.

Why did I wait until the students were out of sight before committing my act? Was I trying to shield them from something? What? Perhaps I felt that this creature's final moments should be one of dignity and not one of a spectacle, an experience, or a teachable moment. Ultimately it still had subjecthood, and I suppose I was afraid that I might turn it into an object, a lesson. So in the end, what transpired was between the bat and me, eliminated from virtue ("which by necessity must have neighbors"). No lessons, no right or wrong, just a human confronted with what must be done.

We stop for lunch at a large sand bar. Plastic jars of peanut butter, bagels, granola bars, and the last bits of cheese and tortillas spill out of packs. I watch Seaweed prepare her lunch, fascinated by the ritual precision. She places a small plastic bowl in front of her, ladles out three teaspoons of dried humus, thinks twice and puts one teaspoon back in the plastic bag labeled "humus." Using the lid to her bowl and her pocketknife, she methodically cuts sundried tomatoes into tiny pieces, adding them to the bowl. She then slowly adds water from her water bottle, and sprinkles some salt over the mixture. She peels off three pieces of purple cabbage and sets them aside on her thigh. Taking a spoonful of humus, she spreads this over the cabbage. Meanwhile the other students have wolfed down their lunches and are busy picking M&Ms out of their trail mix.

As we prepare to start hiking again, Sage informs me that Patience is sick. Just downstream I find her sitting in the creek and looking miserable. Since day one we've battled a series of intestinal illnesses, no doubt due to the foul water. Although we treat the water with iodine, some invariably seeps in, a mouthful when swimming or a drop of water on a spoon. I give her a dose of the miraculous grapefruit seed extract and consult with Sage.

"I don't know what to do. I looked at the map and it looks like we still have four or five miles before there's anywhere we can camp," she says.

"Let's wait awhile and see if she feels better. If nothing else, we can redistribute her stuff among the rest of us. Better inform everyone else of your plan."

No one seems put out. Yucca has been researching primitive living techniques for his final project and enlists everyone's help in building a wickiup out of driftwood. The morning's minor tension and strife soon disappear with the communal project. By the time Patience feels up to hiking, they've

built an elaborate structure, complete with entry path and mud sculpture. I weigh mentioning the impact of this against the positive impact it has had on the group dynamic. I say nothing, hoping the next rain will wash it all downstream.

Soon we enter a stretch with no mud banks. The creek water laps up against both cliff sides. Hemmed in by vertical walls less than ten feet apart, the water has nowhere to go but downstream. Neither do we. I watch those ahead of me wading deep and deeper. There are certain bench marks when hiking through water. We avoid water deeper than our ankles as long as possible and then once it tops our boots, it matters little, and we splash happily along until it begins inching up our thighs. As the water approaches the groin, we stand on tiptoes. But after that point, it doesn't make much difference. Wet is wet.

A shaft of sunlight penetrates the narrow walls and illuminates the still water ahead, transforming the canyon into a cathedral, a place of worship where the laws of ordinary reality are suspended. We slow our pace and saunter quietly. The yellow and red and blue cross-bedding in the polished sandstone glows like backlit stained glass windows. The only sense of perspective is the five backpackers in front of me. Under this lighting, the creek no longer looks like water but absorbs the light like empty space, and it appears as if we are about to walk off the end of the world.

MOENKOPI

Formed by iron rich runoff from the Ancestral Rockies that flowed onto a coastal lowland, the thin layers of Moenkopi peel apart easily revealing ripple marks left by ancient tidal channels. Layer after layer of mud stacked atop each other tumble down in great chunks. You can trace the thin layer of gypsum, one crystal thick, with your finger as you walk along the canyon wall.

Ecological ignorance breeds indifference, throttling up the cycle I call the extinction of experience: as common elements of diversity disappear from our own nearby environs, we grow increasingly alienated, less caring, more apathetic. . . . What we know we may choose to care for, what we fail to recognize, we certainly won't.

—Robert Michael Pyle

We camp at the mouth of Chimney Canyon, so named for the red Moenkopi spire that rises above Muddy Creek. The tent caterpillars feast on the leafed out cottonwoods in a race between the tree and the insects. Will the tree photosynthesize enough energy to live another year before the caterpillars eat all the leaves? Unlike most plants, cottonwoods flower and seed in early spring before their leaves fully appear. Have the caterpillars forced the cottonwoods to adopt this strategy of early blooming so the trees can insure reproduction before being devoured?

We spend the morning ruminating over the plant key, an agonizing activity for most students who are generalists and just want to know the common name of the more conspicuous flowers. For others, who seek order and precision, keying out plants can be deeply satisfying.

For days I've been looking for an evening primrose, with no luck. Because of their large parts (the pistil and stamens are highly visible), they are relatively easy for novice botanists to key out. After more searching, we settle on keying a cactus.

"Let's say you want to find out what kind of cactus this is, and you can't find it in the wildflower book. The wildflower guide only has representative species and is by no means inclusive. You need the *Utah Flora*," I say brandishing the thick green tome. "Every plant, every species, every variety is in here," I add handing the nine-hundred-page volume to Sage.

“Ouff-da,” she says.

“Yeah, I’ve been carrying it, and there’s no pictures in it either,” says Bobofet.

We’ve already run through the basic taxonomy of plants, vascular, angiosperm, dicot. So we reach the cactus family quickly. Then we hit botanyese. The students’ eyes glaze over when encountering terms like: glochidiate, tuberculate, caducous, areolas axillary. We have to look up every other word. Eventually we discover that this cactus, *Sclerocactus wrightiae* or Wright’s fishhook, is endemic to the San Rafael Swell.

“What’s endemic?” asks Seeker.

Yucca opens his eyes. He’s been dozing in the sun with his pack as a pillow.

“Means it’s found nowhere else in the world,” says Sage, impressed by this small cactus.

“The reason Bobofet is complaining about lugging this book around is because Utah has the highest number of endemic plants in the U.S. after California and Florida,” I say.

“What about Hawaii?” asks Huckleberry.

“Yeah, Hawaii has the highest biodiversity. I meant continental U.S.”

“I wasn’t complaining,” says Bobofet.

“Just the genus *Penstemon* takes up twenty-one pages. Why so many? Why is this cactus, a separate species of fishhook cactus, found only in the San Rafael?” I ask.

“Well, it was probably isolated somehow,” says Mud.

“By what?”

“There’s all that Mancos Shale where nothing grows, could that do it?” asks Seeker.

“Possibly. What else could cause isolation?”

“All these canyons,” says Huckleberry waving his hand. “It’s not exactly a homogenous landscape, is it?”

“No doubt. Anything else? Why so many different kinds of plants in Utah?”

“Uh, different environments?” guesses Sage.

“Sure. There’s the Mojave desert in the southwest part of the state, the Great Basin in the west, the Colorado Plateau in the south and the mountain and alpine environments in the northeast.”

“What might be a problem if you are an isolated endemic?”

“With only a few populations, you could easily become endangered or extinct,” says Huckleberry.

“Couldn’t the cows just come along and wipe out a whole population?” asks Sage.

“Yep, unless it’s growing some place inaccessible. Currently Utah has one hundred and ninety endangered plant species, many listed because of grazing. In the U.S. we’ve already seen two hundred plant species go extinct in recent years with another three thousand endangered.”

Farther on we encounter some globemallow, a tall perennial with clusters of orange blossoms like delicate paper lanterns. Using the plant key, we discover we have two different species on our hands. We will spend the next several weeks trying to distinguish between them and often confusing the two.

I leave the students with their botany assignment for the afternoon and follow Chimney Canyon upstream. The canyon soon becomes a sandy wash leading to the base of the Wingate cliffs. To the east a vast plateau rises to meet a sky laden with big cumulus clouds, so close you could almost reach up and hitch a ride on one.

After a lackluster interest from most of the students on plant keying, I consulted with Metta during lunch. “Why should we be banging our heads against the wall teaching natural history when there’s so little interest? I mean, is it even relevant when the world is going down the tubes and there’re so many pressing issues?” I asked.

She was unequivocal in her response, “It comes down to awareness. If someone begins to understand what’s around them and develops an appreciation for biodiversity, then sure, they are more inclined to save it. But by being able to distinguish between one species of primrose and another, you develop a fine-tuned inner discrimination as well.”

I ponder this notion of inner discrimination as I pass a blooming serviceberry. Their delicate white petals hang off the branches like hundreds of tiny propellers. Did she mean moral discrimination, an awareness of how one moves through the world? An occasional tamarisk in the dry wash indicates that there must be water somewhere, so despite the scorching sun, I continue upstream. Finally I encounter a young cottonwood and shortly thereafter, damp sand, dozens of bighorn tracks, and tall reeds. Would not heightened awareness lead to increased pain?

Dozens of painted lady butterflies (*Vanessa cardui*) float among the tamarisks, alight on the damp earth, fold up their wings, and die. For some reason, there is an unusual profusion of these butterflies this year. Like monarchs, painted ladies migrate en masse. However, unlike the specialized monarchs, painted ladies are generalists and have adapted to nearly every environment, becoming the world’s most widespread and least endangered butterfly, a stark contrast to the endemic cacti and struggling bighorns. The “spring” turns out to be a steady drip reeking of sulphur. I decide to forgo this water, preferring to return to camp thirsty and indulge in delicious Muddy Creek water. Yet the bighorns find it potable. How do they know there is water here? Do they remember the spot and return? Do they pass on

the knowledge from generation to generation? In this harsh environment, the bighorns' ability to discriminate is crucial to their survival. Perhaps it might be to ours as well.

The next morning dawns warm and clear. I finally decide to bury my watch inside my pack instead of looking at it every ten minutes as if that will somehow get everyone packed. I find that without my watch, I don't get as agitated by having to wait for everyone to get ready. I walk to the creek. The water level has been steadily dropping the past three days and is even getting clearer, changing from an opaque green-brown to an almost translucent pea green. I can actually see the bottom when the water is less than two inches deep.

A couple miles downstream we encounter fresh ATV tracks, the first since leaving Tomsich Butte. We take pictures and document this illegal intrusion into the Wilderness Study Area. The tracks run right through a cluster of cacti, crushing several.

"That's another endemic!" Sage says indignantly. "I keyed it out yesterday. It's *Opuntia basilaris*, variety *heilii*, a spineless prickly pear."

"Really?" I look at her, impressed.

"But, they've got lots of little spines," she adds looking at her fingertips.

The land slopes downward, and the Wingate cliffs come into view. As soon as we leave the Moenkopi and enter the Chinle, we pass a sign informing us of our departure from the Wilderness Study Area. Political boundaries instead of geographic ones. Chinle, of course, means uranium, and sure enough, we soon encounter an old roadbed. We break out the map and camera for documentation. Besides us, hundreds of other citizen activists are busy verifying what is actually out here, where roads exist and where they don't. With the large tamarisks growing out of it, this road is passable only to ATVs and dirt bikes. Nevertheless, the county could still claim it under RS 2477, an obscure clause of the 1866 Mining Law, which reads, "The right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted." To circumvent wilderness consideration, several Utah counties have used this provision to claim more than seven thousand roads across public lands, many of which are no more than two tracks across the desert.

Although repealed in 1976, RS 2477 granted existing valid rights, defined as: 1. The highway must have been constructed, 2. the highway must have received sufficient continuous use, and 3. the land must not be already reserved for a public use such as a national park.

The road berm alongside us indicates that this road was indeed constructed, meeting the first criteria, but the vegetation and erosion show that it has long been abandoned, thus failing the second criteria. In places gullies have washed out the road so that it is no longer passable; other roads indicated on our map, we can't even find.

Instead of limiting RS 2477 claims to constructed roads, Reagan's Secretary of the Interior, Donald Hodel, established the policy that right-of-ways may be established simply by the repeated passage of vehicles and even pack animals. Thankfully, this policy was rescinded in 1997. Yet repeated efforts in Congress, most notably by the Utah and Alaska delegations, seek to codify the county claims into law.

These road claims create headaches for the BLM and National Park Service, which estimates that sixty-eight park units and seventeen million acres around the country could be affected. According to the Park Service these claims "could be devastating . . . could cross many miles of undisturbed fish and wildlife habitat, historical, and archaeologic resources, and sensitive wildlands . . . [they] would undoubtedly degrade most unit values and seriously impact the ability of the NPS to manage the units for the purposes for which they were established." Meanwhile, the county commissioners who are vehemently opposed to wilderness (both the idea and the designation) are busy bulldozing roads into roadless areas.

A few years ago an armed showdown occurred over roads in nearby San Juan County. The sheriff arrested a wilderness activist who attempted to stop the county road crew from illegally bulldozing a road into a BLM roadless area. Two BLM rangers demanded that the road graders turn around, but they were forced to stand aside by the sheriff and deputies.

We stumble upon the rusted shell of a Ford V-8 pickup which provides photographic entertainment. Just above the creek squats a dilapidated bunkhouse that once housed miners, but now only pack rats reside here. High above us, a pair of mine audits punctures the cliff face. We follow an old road up to the Moenkopi bench. Other than the collapsing bunkhouse below and the mine audits, a few concrete foundations are all that is left of the Hidden Splendor Mine. Looking up at the mine audits, it's hard to believe that Vernon Pick wasn't tipped off. The holes are high up on a nearly vertical cliff, not the sort of place you'd be wandering around aimlessly with a Geiger counter, unless you were quite certain about this one particular spot.

We stand in the middle of an abandoned dirt airstrip that the BLM has approved reopening for a commercial air taxi service. With minimal environmental review (two pages), the BLM determined that allowing planes to land at this remote airstrip between two Wilderness Study Areas would cause no adverse impacts—no impacts to the bighorns, nor nesting peregrines; no impacts to recreationists; no impacts to the wilderness character of the area.

Although the roadbed ends at the bunkhouse, the ATV tracks continue, blazing a trail through the willows and crisscrossing the creek, sending a plume of sediment and oily water downstream. Like roads themselves,

stream crossings act as barriers to movement of fish and other aquatic organisms. These back country roads change hydrology of slopes and stream channels, diverting water along the roadway, and can cause erosion and route sediments into streams, reducing the aquatic productivity. Increased heat from roads creates heat islands, attracting birds and snakes who end up being killed by vehicles. Road dust settles on nearby plants, blocking photosynthesis and causing physical injury to plants already stressed in a desert environment. Exotic species prefer roadsides and disturbed habitats, and of course roads facilitate the increased use of an area by people.

The orange Wingate cliffs laced with black varnish slowly sink into the earth. We quickly pass through ten million years of drifting sands. Resembling a layer of pink Swiss cheese, the Kayenta, slopes in at a sharp angle, before it too slides into the earth. As Muddy Creek pierces through the San Rafael Reef, the sheer white cliffs of Navajo rise about us more than a thousand feet.

A few miles downstream I catch up to Mud who tells me the others are getting water at a spring a few hundred yards off. I grab my water bottles and walk through the thick reeds and willows. The willows end at a sandy area at the base of a tall pour off. I find myself standing in a bowl of sandstone, isolated from the rest of the world. All the guys are sitting in the sand staring at the pool in silence. I feel as if I've entered a cathedral. I quietly fill my water bottles from the pool and sit down as well. Sage and Seaweed arrive and fall silent as they enter. The power of silence engenders homage, and they fill their bottles and sit down as well. By unspoken agreement, we all recognize the sacredness of this place. Trivial concerns are lanced, and my mind empties.

The wind begins to blow, and the temperature drops dramatically. A dull roaring fills the bowl; the contours of the rock channel the wind so it sounds like a faraway jet. But it grows louder, almost as if something is trying to drive us out. The sound fades, and the wind dies. One by one, people file back out. Returning into the world, we discover that ten dirt bikes had just driven by. Mud had snapped photos as they roared down the creek bed.

"Dude, I totally thought that was the wind," says Bobofet.

"We encountered all four forms of abuses today: cows, ORVs, mining, and us," Sage says.

We exit the reef leaving the Navajo behind after traveling through thirty-five million years of the entire Triassic Period. We are suddenly spit out into a grey world. A dramatic change from the red and white rocks and green of the willows, it's like we suddenly went color-blind. After a short search, Mud finds an adequate campsite that no one is thrilled about. Dried cowshit, ants, and tumbleweed sticklers that lodge painfully in bare feet cover the hard pan dirt beside two very old and gnarled cottonwoods.

CARMEL

A grey, crumbly rock formed by marine tidal flats. It oozes off the Navajo like, well, caramel icing.

The names of the cerros and the sierras and the deserts exist only on maps. We name them that we do not lose our way. Yet it was because the way was lost to us already that we have made those names. The world cannot be lost. We are the ones. And it is because these names and these coordinates are our own naming that they cannot save us. That they cannot find for us the way again.

—Cormac McCarthy

Although most famous for his first descent of the Colorado River in 1869, it is the scientific contributions of John Wesley Powell that have proved most enduring. In his exploration of the Colorado Plateau, Powell noticed that rivers paid little regard to topography. The Colorado River flows across uplifts unexpectedly, leading Powell to speculate that the Colorado Plateau was still being uplifted against the entrenched rivers. Although there might be a nearby valley, the water instead often cut straight through massive ridges. Powell reasoned that the rivers were older than the ridges, and the ridges must have risen slowly across the path of the river. This notion was in opposition to his contemporary geologists who advocated catastrophic and sudden earth movements. Powell developed the terms still used to describe these phenomena. “Antecedent” describes an existing river that cuts through a rising ridge and stays on course. “Consequent” is where an obstruction diverted the river into a new channel determined by the new topography. “Superimposed” indicates a river, produced by the topography of one age, stayed its course while the landscape eroded away entirely and imposed itself on the newly exposed landscape underneath. In other words, the river began its present course across relatively flat surfaces, then once the uplift occurred the river became trapped and continued downcutting, often against the expected topography. Geologists now agree with Powell that the Colorado is a superimposed river. Muddy Creek is likely an antecedent river that rose from the San Rafael highlands and cut through the Swell and reef as they rose.

In subsequent years, Powell turned over much of the geological work to Grove Karl Gilbert and Clarence Dutton. “Dutton had looked down across

the San Rafael Swell and seen how erosion, starting at a high central dome, had eaten back into the surrounding country until now the Swell was a hollow ringed with concentric lines of receding cliffs—an immense, rainbow-colored intaglio,” reported Wallace Stegner.

Although Powell and Dutton acted as scientists, they could not ignore the sublimity of this unparalleled landscape. Indeed, these two men did much to alter our collective aesthetic impressions of canyons and deserts much like Goethe taught us to love mountains and not behold them as horrible abodes of evil.

“The lover of nature, whose perceptions have been trained in the Alps, in Italy, Germany, or New England, in the Appalachians or Cordilleras, in Scotland or Colorado, would enter this strange region with a shock, and dwell there for a time with a sense of oppression, and perhaps with horror. Whatsoever might be bold or striking would at first seem only grotesque. The colors would be the very ones he had learned to shun as tawdry and bizarre. The tones and shade, modest and tender, subdued yet rich, in which his fancy had always taken special delight, would be the ones which are conspicuously absent. But time would bring a gradual change. Some day he would suddenly become conscious that outlines which at first seemed harsh and trivial have grace and meaning; that forms which seemed grotesque are full of dignity; that magnitudes which had added enormity to coarseness have become replete with strength and even majesty; that colors which had been esteemed, unrefined, immodest, and glaring, are as expressive, tender, changeful, and capacious of effect as any others. Great innovations, whether in art or literature, in science or in nature, seldom take the world by storm. They must be understood before they can be estimated and must be cultivated before they can be understood,” wrote Dutton.

Yet even Dutton found this area aesthetically challenging. He described the San Rafael Reef: “It is a picture of desolation and decay; of a land dead and rotten, with dissolution apparent all over its face. It consists of a series of terraces, all inclining upward from the east, cut by a labyrinth of deep narrow gorges, and sprinkled with numberless buttes of strange form and sculpture”

While deep in the throat of the reef, we can't tell that the massive Navajo formation is tilted at forty-five degrees until we exit and look back and see Muddy Creek slicing through the reef like a knife. Before us rise a succession of three smaller reefs, all tilted as well, and an endless flat desert beyond. We find ourselves in an open and desolate landscape once again, an abrupt change after being immersed in a multi-toned wonderland. The shades of red are replaced by shades of grey, and everyone seems a bit depressed by the scenery. The weather doesn't help either. Behind us, a dark

grey sheet is being pulled over the reef and across the sky, eliminating shadow as it slowly creeps eastward. Battleship grey clouds move in low formation across a surreal, swirling sky. Bursts of light rain begin to pepper the air. I find it fascinating how landscape and weather affect us so much. Most of the students pitch their tents and crawl inside. However, Huckleberry and Patience set off exploring and return excited with stories of immense vistas, castles, and moonscapes.

With the rain and subdued light, the plants, instead of dusty and wilted, appear vibrant, green, and refreshed. Metta and I stroll up a big slab of white sandstone like a tilted chessboard. This hard layer may have been an offshore barrier island between the Entrada mudflats. Frozen within the red Entrada, hundreds of goblins stare back at us across a narrow rift strewn with basalt boulders. Light green drips down from the Curtis capstone and streaks the goblins' faces and buttocks. On closer inspection, some of these goblins resemble cartoon gorillas. From the top we can see Factory Butte shrouded in clouds like an evil castle. A single ray of light illuminates one of the castle's towers. A moment later the clouds shift, the light disappears, and all is grey once again.

During the night it really begins to rain, continuing into the morning. Coming down in sheets, the rain turns everything into mud. The creek continues to rise, becoming a thick, grey soup. However, by midmorning a band of blue sky in the west pushes the grey clouds beyond the horizon. As sticky as molasses and as slippery as transmission fluid, the ninety-weight mud accumulates on the soles of our shoes, which become more leaden with each step. We stump over low red hills stripped with violets and greens, colors accented by the rain. Mule ear flowers line a dry creek bed in an explosion of yellow joy, and a Say's phoebe performs ariel calligraphy while chasing gnats and flies. Gypsum crystals glimmer in the sunlight.

We scramble up the slopes of Carmel, dripping off the massive block of Navajo sandstone that comprises the San Rafael Reef. Unlike the naked Navajo, the Carmel supports sparse vegetation: ephedra, blackbrush, yellow crypanth, paintbrush, and clumps of grass. Single leaf ash and skunkbush find purchase in the cracks. Tiny yellow flowers appear on the desert trumpet, a plant that could have easily been conceived by Dr. Seuss. Standing about two feet high, this buckwheat has a bulbous hollow stem topped by spindly branches terminating in star-shaped flowers. Although some botanists think the inflated stem sequesters carbon dioxide, its purpose remains a mystery.

We drop off a small crest to a block of tilted Navajo sandstone. We stop and investigate a deep pothole on the way up. Although the water is still frothy and unsettled from the rain, Huckleberry, who is doing his final project on pothole ecology, searches out the various denizens: rotifers, daphnia, and water beetles.

“Hey!” Yucca yells. “There’s a rattlesnake over here.”

Coiled under a blackbrush is a small rattlesnake. This universe of slickrock seems a strange place for a snake. An unusual shade of pink-beige, with no other markings, the snake matches the sandstone. Could there be such a thing as a slickrock rattlesnake? A variety of San Rafael rattlesnake that has evolved into a very light color phase? Certainly such a light color would be a distinct survival advantage. Are there others this color or is this creature the only one? Have we stumbled upon an anomaly? Or are we witness to evolution in action?

A shallow waterway, a brief oasis in the shifting sand dunes that formed the Navajo, left behind dark brown outcrops of dolomite that erode into gargoyles and dragons perched atop the white and pink Neopolitan ice cream swirls of slickrock.

“Dude, this is like Disneyland without cables,” proclaims Bobofet.

“Or Willy Wonka,” adds Patience. “Look, there’s a chocolate river,” she indicates Muddy Creek far below.

This topography is so fantastic that it’s hard to believe it’s real except for the texture of the sandstone under our feet. The students keep suggesting it looks like an Indiana Jones movie, as if the landscape were modeled after the movie set. No one has said, “I bet this is where they *filmed* the movie.”

On the highest slopes a few twisted junipers survive, reaching for the almost-enough moisture of the passing clouds. One particular old and twisted juniper’s only sign of life is a basketball-sized clump of green on one of its gnarled limbs. All of the other branches are long dead, their shaggy bark fallen away, revealing their dark bones. The juniper twists its trunk around a slab of sandstone and anchors its roots between the slab and mother cliff. Somehow the tree extracts enough moisture trickling down the crack and enough nutrients from the rock to stay alive. Every year the trunk and root grow larger, pushing the slab closer to beyond the angle of repose. When that day arrives, the slab will drop from the cliff with a thunderous crash that no one will hear and impact the canyon floor like a knife hurled into soft dirt. The tree will follow, having insured its own demise through its continued growth.

We stop short of the top to allow everyone to regroup and conduct class in a sculpted bowl of slickrock sheltered from the wind. From our perch in the sky, we can see south for nearly one hundred miles. The Navajo domes of Capitol Reef National Park billow across the western skyline. Below us the rock slopes away to a series of smaller reefs, sinking into the earth like listing ships. A narrow rift parallels the reef before rising to the Caineville Reef, which is composed of thin shales of Summerville formation like a thousand layer cake. Beyond, lie a series of candy-striped hills devoid of any

vegetation, the Morrison. Then the land flattens out, not gradually, but completely flattens as if the response to too much drama is dead silence instead of applause.

Factory Butte, a dark-ribbed outpost of Mancos shale commands the foreground. Dusted by last night's snow, the Henry Mountains shoot out of the plain. Off to the far side of Wild Horse Mesa, we can just make out the snowcapped Abajo Mountains. The Henrys, like the Abajo and La Sal mountains, are laccolithic intrusions. That is, about thirty million years ago a mushroom of magma blistered the surface, shrugging off thousands of feet of sedimentary rock but not quite breaking through. The overlying sedimentary rock has long eroded away, exposing the underlying granite-like diorite. Geologists speculate that these igneous masses brought uranium to the outer crust where groundwater moved it into the Chinle. A triangle drawn between these three mountain ranges would enclose some of the wildest, least inhabited country in the lower forty-eight.

A strip of tamarisk traces the serpentine course of Muddy Creek until it disappears into a vast and desolate plain. While we can't see it, we know Highway 24 lies off to our left, and Hanksville squats tucked into one of the wrinkles of this ancient landscape. At Hanksville, Muddy Creek joins the Fremont River and forms the vast canyon system of the Dirty Devil. A terrific place to lose oneself. I begin to have second thoughts about heading out across all that empty space.

Our entire vista is bereft of human sign, except for the contrails of passing jets and the ORV tracks across the Mancos Shale, which stand out like tracks on the moon. Right below us Salt Wash trickles into Muddy Creek at what was once the proposed site of the world's largest coal-fired power plant. The three thousand-megawatt Intermountain Power Project (IPP), would have transformed this landscape into a vast array of smokestacks, power lines, and railroads, as well as plopping down a town of nearly ten thousand people. However, the IPP site lay within a roadless area. Since the BLM couldn't allow development in a Wilderness Study Area, they simply excluded the area and all potential rail and power line corridors from their wilderness inventory. In 1977, Interior Secretary Cecil Andrus made it clear that the Salt Wash site would not be used for a power plant, nevertheless the BLM eliminated three hundred thousand acres from wilderness consideration. Eventually, a scaled down sixteen hundred-megawatt IPP was built in western Utah, near Delta.

Cutting these lands out of the inventory allowed them to be open to mining exploration and forty miles of new roads were bulldozed, and hundreds of test wells were drilled in the area. "There appears to be a move to push roads into roadless areas . . . prior to study or designation," stated one BLM manager.

The energy crisis of the 1970s also triggered tar sand proposals within the San Rafael Swell. These proposals, approved by the BLM, included the drilling of more than a thousand injection and recovery wells; construction of an industrial plant, fuel storage tanks, a sewage plant, and a network of pipelines; and housing for more than two hundred workers. Large trucks would run through the interior of the Swell every ten minutes. Fortunately, the economic feasibility of tar sands sunk these proposals (thus far).

Salt Wash narrowly escaped the IPP only to have the Bureau of Reclamation propose the construction of a salinity control project. As irrigators pump water out of the Colorado and its tributaries, the water spreads over the fields and leaches the salts from the soil. The water then runs back into the river increasing its salinity. As the salinity of the Colorado rises, it becomes less suitable for irrigation and drinking water. To counteract this salinity, the Bureau proposed pumping the naturally saline water along Salt Creek out of the ground to a treatment plant that would inject the water some three thousand feet underground. In addition to the fourteen-foot-high well heads, treatment plant, and eleven-acre evaporation pond on Salt Wash, power lines would be built from Highway 24 to Factory Butte and along the Moroni Slopes below us. Each ton of salt would cost about ninety dollars to remove. Leaving the salt in the water causes an economic loss of about fifty-two dollars per ton of salt. In 1986, the Bureau issued a finding that this project would have no significant environmental impacts. The project has been put on hold.

After lunch, Banjo and I continue up to the highest point on the reef, a bald, pink Navajo dome. Nothing higher than this point, we cling to the wind. The view opens to three hundred and sixty degrees. Immediately to the north rise the Wingate cliffs, the Hidden Splendor Mine, and beyond a vast labyrinth of Moenkopi canyons. Directly below us, an anonymous squiggly line on the map is really a thousand-foot precipice giving way to a crazy jumble of canyons, slots, domes, and fins of Navajo sandstone. A country known to only a few bighorn, Seager's Hole is so broken and precipitous that it appears nearly impossible to traverse without a trapeze artist's set of ropes, slings, and carabineers. A hell of a place to lose a horse as they say.

Banjo perches on the ledge next to me, her face into the breeze. White-throated swifts zip about on the wind, in and out of cracks in the sandstone. They fly by inches from my face. I can even see the long whiskers on the sides of their beaks that they use to detect insects. Now, however, they aren't nabbing insects but reveling in the sheer joy of flight. All creatures seek joy and exuberance. Even Banjo will tolerate heat, thirst, exhaustion, and sore feet just to get to the top of this reef, where she can feel what? Exhilaration

in being alive perhaps? It's not for the view; cataracts cloud her eyes. At thirteen, she usually stays in camp sleeping, and I'm surprised that she insisted on tagging along today. Often she will stop and wait in the shade when she gets tired, but today she kept plodding up the loose sandstone scree. Just so she could get to the top?

Watching these swifts, these twisting, spinning boomerangs of flight playing on the wind, I wonder if we might not learn something from them. It seems that we might be jealous of the joy other animals are capable of experiencing, something that our bulbous brain often gets in the way of. We equate intelligence with evolution, but what about joy? We seem inordinately preoccupied with the intelligence of animals, pitting them against each other and rating how they measure up to the human standard in our smug state as the "thinking animal." Can joy not also drive natural selection? Would not the most joyous be the best at successfully producing offspring?

Picking my way back down the loose slabs of rock, I spy a dark pool below, welcome relief for a thirsty dog. By the time I reach it, I'm surprised to see that the pool has dried up completely. What I thought was the dark surface of water turns out to be dark mud, pine and juniper needles, and other bits of organic matter left by the evaporating water. However, Banjo finds a small pothole nearby. She wades right in and attempts to drink it dry.

I take off my boots, plunge my bare feet into the soft sand, and look up at the cottonwood and ash trees. I think I should be heading back soon. My watch broke last week, and I have only a vague inkling of what time it is, not that it really matters. Date and day are even less relevant. Although I'm tired, the canyon beckons. Leaving my pack, water bottle, walkie-talkie, boots, and clothes behind, I follow my instinct up the canyon. I slowly walk up the fluted slickrock, up the sandy wash and through a small section of narrows. The runoff has created a series of pools that drop in the sandstone not unlike the sacred Inca baths near Machu Picchu.

I'm enjoying my unencumbered state although I must walk slowly and carefully, paying close attention to where I place my bare feet. I walk differently barefoot; I just can't plod wherever I desire. I must pick my way, carefully placing my feet. It forces me to go slow, notice things, small things underfoot. I walk quietly, centered like a cat and sneak up on lizards. The soles of my feet have become thick and pachyderm. My toenails grow crenellated like the Wingate cliffs. My skin is becoming dry and leathery and the color of sandstone, deepening to a dark orange.

This is an inverse wilderness, instead of mountains, the land recedes. Instead of scaling peaks, we descend into the earth. This vast sky doesn't fill me with anything, but rather empties me so that my mind matches the landscape. My thoughts, like the plants, become sparse and simple. I focus not

on the grandiose but the simple, a single primrose wilting in the day's heat. Shade and water become essential; nothing else matters. All matter is reduced to its mineral essence, water, sulphur, gypsum. Consciousness is reduced to its essence. I am alive right here right now. All else is irrelevant. I begin fantasizing about not returning. Just keep walking; leave everything behind. Just disappear into the desert naked and alone, surviving off paintbrush and ricegass, lizards and rabbits. Growing lean and tough.

Was this the final temptation of young Everett Ruess, when he disappeared into the canyon country in 1934? After graduating from high school, Everett spent three years wandering the back country of the Southwest with only his burros for companions. By all accounts an exceptional young man, Ruess repeatedly stated his preferences for wilderness over the comforts of civilization. "I have seen almost more beauty than I can bear. . . . such utter and overpowering beauty as nearly kills a sensitive person by its piercing glory," he wrote.

"As to when I shall return to civilization, it will not be soon, I think. I have not tired of the wilderness; rather I enjoy its beauty and the vagrant life I lead, more keenly all the time. I prefer the saddle to the streetcar and the star-sprinkled sky to the roof, the obscure and difficult trail, leading into the unknown, to any paved highway, and the deep peace of the wild to the discontent bred by cities," Everett wrote in his last letter to his brother. The next day he set out with his burros for an extended exploration of the Escalante country. His burros were found fat and healthy four months later in Davis Gulch, the site of Everett's last known campsite. Likely he was killed by cattle rustlers and dumped into the Colorado. But maybe he just simply walked off. This is what we want to believe: that he disappeared himself into the desert, that he finally merged with beauty, that he dropped out completely.

What a strange notion to hold in our hearts, this desire to disappear into the unknown, to simply meld into the rock. The draw is nearly irresistible, and yet we always return to civilization, wistfully looking over our shoulder to what might have been, our wild, shadow selves.

I round a corner and scores of painted lady butterflies stream out of the canyon. They are everywhere, bobbing through the air, floating on the surface of the pools with their wings spread, lovely in death. They keep pouring out of the little slot like clowns staggering out of a VW. Eventually the canyon ends in a unique pour off. The rushing water has carved a small arch where the runoff drops into a large pool. I lay back on a rock and watch the blue sky and clouds drift past. By the time I get back to Banjo and my stuff, it has begun to rain lightly.

“I shall call this Keyhole Canyon,” I proclaim to the dog. “Why name it?” she asks. Has anyone been here before? Why would they? It’s just one of dozens of nameless canyons that lead nowhere. No, better it remains anonymous. And the next naked soul who wanders up here can delight in her own discovery.

After such a blissful day, I return to camp just as the sun returns and head to Muddy Creek for a quick dip. Emerging from the water, I notice several sets of jeep tracks through the mud. I could envision the destruction upstream even before Seeker tells me how bad it is. What had been a newly established ATV trail yesterday has just become a jeep road. Metta says five jeeps had come through. Mud had gotten photos and license plates. Not that the BLM would take any enforcement action since the jeepers told her the BLM office had suggested this route. I feel deflated as all the joy and wonder I experienced this day is ripped out.

Sage spent the afternoon keying out a vetch that we’d never seen before. It turned out to be an endangered species, endemic to the San Rafael.

“It got run over,” she says.

ASPHALT

A thin, but very distinct layer derived from petroleum. Impervious to water and devoid of all life, it was evenly distributed across the planet during the late Quaternary.

For it is not just the biotic community that is puzzled by the arrival of the exotic; so too is the creature itself. Figuratively speaking, just as the environment does not know how to cope with the new creature, neither does the exotic know what it ought to do. In other words, the exotic is a problem because it does not know how to comply. It has no sense of context, no relatedness to the community of which it is a part. The creature is suspended in ignorance, capable of material existence but not of community commitment.

—Neil Evernden

As soon as the sun rises above the far rim of the world, the clear desert air transmits its heat immediately. I'm already sweating as I pack, wearing only shorts and a T-shirt. It promises to be a long, hot, miserable hike across tamarisk flats and rolling badlands.

Looking over our camp, I have a hard time imagining what this place might have looked like before all the introduced species: horses, cows, cheatgrass, African mustard, and Russian olive. Tamarisk and Russian thistle (also known as tumbleweed) dominate the land to the extent that one could accurately describe this as a tamarisk-tumbleweed ecological community. While the cows could conceivably be removed, the tamarisk and tumbleweed are here for good.

Tamarisk, or saltcedar, a native of Eurasia, was introduced in the early 1800s as an ornamental because of its feathery white and pink flowers. The destruction of cottonwood bottomlands in the nineteenth century, along with overgrazing, engendered bank erosion. In the 1920s, the fast-growing tamarisk was planted as a conservation measure to stabilize the river banks. In the past fifty years, tamarisk has spread to all but thirteen states and dominates riparian areas throughout the Southwest, to the near exclusion of native species. While ten species of the genus *Tamarix* were introduced into the U.S., *T. ramosissima* causes the most serious problems.

Luckily a breeze begins to cool the air as we begin our hike. Navigation through the dense tamarisks and tall reeds becomes a challenge even for Seeker, today's leader, who professes to have "an absolute sense of direction." The low areas are still slippery from the rain, while the areas that have dried out glisten with a white residue. What passes for soil here is so saline that fresh rainwater draws the salts up out of the ground. Consequently few plants can tolerate such conditions. Saltbush and tamarisk thrive by absorbing the salt and extruding the mineral through the stomata on their leaves. The salt then drips to the ground further increasing the salinity of the soil. This allopathy prevents other plants from growing nearby. Evaporation from reservoirs, decreased flooding, and irrigation practices accelerate the salinity of many river systems resulting in a tamarisk boom. Grazing in riparian areas exacerbates the spread of tamarisk, as the cattle actively select the tasty willow and cottonwood over the unpalatable saltcedar.

Tamarisk further competes with native willow and cottonwood by producing seeds that can germinate while floating in water and within twelve hours of receiving moisture. A single plant produces more than six hundred thousand seeds per year. Well adapted to arid regions, tamarisk can survive indefinitely without saturated soil by sending down taproots more than one hundred feet and sucking up groundwater that cottonwoods and willows are unable to reach. Ecologists estimate one third of the Colorado River is lost through tamarisk, which has the highest known transpiration rate of any desert plant.

A dramatic illustration of this occurred in Spring Lake, New Mexico, where tamarisk inundation dropped the water table nineteen feet below the surface. Shortly after herbicide application killed ninety-five percent of the tamarisks, the water table began to rise, on average of nine inches per month, until the water reappeared in the lake. This marked the first time in twenty-three years that water was reported in Spring Lake, which had previously been used for swimming and boating.

The flexible and rapidly growing willows are well adapted to periodic flooding, and the cottonwood depends upon the spring floods for seed dispersal. Some botanists suspect that the lowered flood levels resulting from dams are detrimental to the survival of cottonwood. A 1974 study found a close correlation between the construction of reservoirs and the increase of tamarisk downstream. Where cottonwoods and willows are well established and regenerative, the spread of tamarisk is greatly reduced. Along undammed rivers, tamarisk proliferation is slowed as young tamarisks are easily killed by inundation. However, once established, older plants are very flood tolerant. The Bosque de Apache National Wildlife Refuge conducted an experiment by clearing an area of tamarisk, then flooding precisely at the

cottonwood bloom and allowing it to dry slowly. This resulted in stands of cottonwood seedlings with no tamarisk.

Tamarisk also leads to a decrease in native biodiversity and ecosystem health. Dense stands of tamarisk reduce available sunlight and, combined with the salt the plants deposit onto the soil, eliminate nearly all other plant life. Tamarisk provides little forage, consequently wildlife densities in tamarisk are significantly lower than in native vegetation. Tamarisk profusion in Big Bend National Park has nearly eliminated the Ord's kangaroo rat and greatly decreased beaver populations. Reptiles and amphibians avoid tamarisk as do most birds.

However, the southwestern willow flycatcher, one of the most endangered birds in the U.S., finds itself in a double bind. As tamarisk has replaced their native habitat, many of the four hundred surviving pairs now nest in saltcedar. Tamarisk offers less protection from predators, nest parasites, wildfires, and heat, reducing the flycatcher's reproductive success by fifty percent. Tamarisk eradication programs further complicate the situation. Can the bird survive short-term reduction of its simulated habitat?

Termed an "aggressive colonizer," tamarisk has been the subject of intensive government efforts over the last ten years to control its spread. Control attempts include: burning, chaining, root plowing, bulldozing, flooding, and poisoning. However, most controls, especially poisoning with herbicides, kill native vegetation more readily than tamarisk. After much experimentation, the National Park Service determined the most effective method of control is to cut down the tamarisk at the base and then inject a potent herbicide directly into the roots. Obviously, this method is extremely labor intensive and costly. Furthermore, many areas where the plant grows are inaccessible, and neighboring land-use agencies regard tamarisk as low priority. Inevitably the tamarisk returns.

While an accidentally introduced leafhopper causes considerable damage to tamarisk, it hasn't resulted in any stand reduction. Still, biological controls offer the best hope as university and government scientists study an Asian beetle that eats the tamarisk foliage. Concern over the impacts on the southwestern willow flycatcher calls for no beetle releases within two hundred miles of a flycatcher nest. The Environmental Assessment for the release of the saltcedar leaf beetle concludes that "the *Diorhabda* beetle is not expected to cause adverse impacts to federally listed threatened and endangered species."

"So to control one exotic, they want to release another?" asks Patience when we stop at a break in the tamarisk to rest.

"Wasn't that what happened in Australia and Hawaii?" asks Seeker.

"Yeah, well, scientists are indeed concerned about intentionally releasing an exotic insect. That's why they're studying the beetle first and conducting

test releases. Because tamarisk isn't closely related to other plants, the insects that have evolved to feed on it, don't eat other plants. There are more than two hundred natural enemies of tamarisk. None of them would eradicate the tamarisk, just keep it under control."

"It seems that's part of the problem, trying to control everything," says Mud.

"Are exotic species really the problem or are they symptoms of a bigger problem?" asks Metta.

"That's a good point. Is tamarisk an aggressive invader or an opportunist that takes advantage of human changes in the environment?"

"The tamarisk is just doing what it is supposed to be doing. If it's better adapted to the environment, it outcompetes other species. That's natural selection. Evolution is a process; it's going to take its own course no matter what we do. It's wild," says Huckleberry.

"The species that are doing really well are the generalists: coyotes, deer, foxes, cockroaches, rats, tamarisk. They thrive in disturbed conditions, along ecological edges like roads, clear-cuts, and developments. And we just keep making more edges. The species that depend upon stable environments, are genetically distinct, or geographically isolated are really hurting," counters Metta. "That's not their fault; it's ours for creating those conditions."

"It seems that everywhere you go biodiversity is declining. If it's not tamarisk, it's sagebrush. Everything we do, grazing, dams, and agriculture are creating monocultures. The landscape is becoming homogenized," says Sage.

"Just like Wallyworld," adds Mud.

"We're creating an ecological strip mall," adds Sage.

"You know, we're the real exotic species. Talk about an 'aggressive colonizer' that drives out native species, dominates the ecosystem, and poisons the soil. We have a lot more in common with tamarisk than we do with cottonwoods or some endemic vetch," states Huckleberry.

One mesa of Mancos Shale merges into the next as we hike across a broad valley. We push blindly through tamarisk and tall reeds.

"Ouch, shit!" cries Patience from the front of the line. "Look out for that." She indicates a tree armed with sharp spikes and covered with small yellow flowers.

"Smells nice, though," says Sage as a powerful fragrance wafts through the air.

"Smells like my grandma's bathroom," says Yucca.

"No! It smells nice," insists Seaweed.

Much less ubiquitous, the Russian olive, another "undesirable" exotic, has yet to incur the wrath of the government to the extent that tamarisk has.

Like tamarisk, it was introduced as an ornamental in the late 1800s, grows rapidly, and is salt tolerant. Instead of being allopathic, however, Russian olive fixes nitrogen in the soil. Furthermore, its fruits provide nutritious forage for more than fifty wildlife species. Yet native willows still have a higher density of nesting birds.

The creek surprises us as it bisects our line of travel in its countless meanders, and a steep bank suddenly appears before us. Instead of floundering aimlessly in a sea of tamarisk, Seeker leads us sliding down the bank and across the creek. Repeated hiking in and out of water causes the backs of our calves to become painfully dry, so that even applying lotion sends a sharp burning over our skin. My feet become chapped so badly that my heels crack open. Imagine what the constant soaking and drying and salt does to hiking boots.

Last night the creek continued to rise, turning the color and consistency of chocolate milk. I had put out a water bottle to settle overnight and poured off the top. A half liter of red sediment sat at the bottom. Far downstream, this Moenkopi runoff is creating a new geologic formation of red siltstone at the bottom of Lake Powell. We tried using coffee filters but the fine silt clogs them right away. The increased runoff, instead of diluting the water with fresh rainwater, increases the toxicity, flushing more effluence and debris into the creek. The human body can only drink so much water laden with floating cow turds before it gets sick. Despite iodine and boiling, everyone has been combating diarrhea for the past two weeks.

We soon come to the junction of Salt Wash which flows clear and shallow. Grazing has steadily eroded the banks, and ATVs and dirt bikes have left imprints on the mudflats, miles from the nearest road. We greedily fill our water bottles from the beautifully clear water of Salt Wash before it mixes with Muddy Creek. After the requisite twenty minutes for the iodine to take effect, I take a long satisfying draught from my water bottle and spit it back out.

“I guess that’s why they call it Salt Wash,” chortles Metta.

Farther on we stumble into a river channel abandoned by the creek. The few pools of rainwater offer another chance, but this too turns out to be brine. So it’s ole Muddy Creek for our water and possible food source as well since everyone is running precariously low on supplies.

When the students complain about the foul-tasting water, Metta reminds them that bentonite is sold in health stores for twenty dollars a pint.

“People take it as a detox: it binds toxins allowing them to be eliminated,” she says.

“Yeah, well it’s certainly doing some eliminating for me,” says Yucca.

“You know just being out here is sort of a detox. I feel that everyday; I’m eliminating toxins,” says Mud.

We pass some desert mint blooming along the wash. We pick some, inhale it and drop it into our water bottles to help disguise the taste of bad salty water flavored by massive doses of iodine.

All morning the wind continues to increase, and by lunch we are struggling through 80 mph gusts so strong it takes all our energy just to stand in one place. The clear desert sky becomes opaque with airborne sand. We can see sandstorms in the distance and a billowing rising mass of light grey, not unlike fog, and then suddenly we are engulfed in the midst of a sandstorm. It quickly passes, a brief lull and then another sandstorm. The reef fades in the distance behind us as we approach the multi-hued badlands of Wild Horse Mesa. Only a demented wild horse would try living out here. The wind saps our energy, and we dare not look up. All we can do is put one foot in front of the other and plod on. The wind begins to make everyone crazy.

Somewhere out here lies the Hunt Ranch, started in 1818 by Charley Hunt. His family lived in Caineville while he worked the land for twelve years although he never had title. Eventually, his sons, Floyd and Rulon, moved into a two-story house here in 1929 where they raised chickens, sheep, cows, hay, and corn. Although locoweed killed many of their cows, they held on for four years until their wives refused to stay any longer.

We seek refuge between a low cliff and a tangle of tamarisk that helps block the wind. It stays blustery all night, and as tired as we are it’s still impossible to sleep with the wind howling. We break camp at dawn, and under a cold north breeze Seeker leads us downstream. By late afternoon the winds have blown the clouds and cold air in. “Pretty nice hiking weather,” I comment but receive only grunts or looks of disgust in reply. Everyone is low on food, grumpy from grumbling bellies and little sleep, and edgy with the anticipation of hot showers and food. (When will we ever get there?)

The scenery, the dreary grey skies, the dismal grey hills, and cruel grey water has everyone down. Virtually no plant life grows outside the riparian zone, which is nearly exclusively tamarisk. Why is desolate country so oppressive? Does that make it a wasteland unworthy of wonder and contemplation? We expect wilderness to be spectacular. Spectacular—derived from spectacle. How do we begin to view wilderness as something other than scenery? Something other than a spectacle, outside ourselves, and beyond the ordinary? As much as we rationalize the idea of wilderness as having intrinsic worth, we still desire the scenic wonderland. Given the choice, how many of us would choose to spend two of our precious weeks of vacation in a grey wasteland of bad water over a lush forest surrounded by snowy peaks?

“Are we even going to go someplace beautiful on our next hike?” Patience asks.

Aldo Leopold summarized his land ethic as, “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.” I test it out, the first two stipulations make sense, seem self-evident and even quantifiable for the most part. When our actions disturb the integrity and stability of the environment, they are morally wrong. But I struggle with this third leg of the triad. Beauty depends upon perception, and we create our perception. Does that mean that ultimately we create beauty? Those who had seen photos of the Colorado Plateau found Muddy Creek a disappointment, but those who came without expectations regarded it as beautiful. Beauty, like wilderness has become something outside ourselves.

I find that it is the absence that creates the feeling of wildness. The absence of roads, human intrusions, and even our own conceptions of the sublime. Muddy Creek forces us to examine our assumptions about beauty. We write off this place as cow hammered, mined, tracked with ORVs, and overrun with exotic species. Do we not do the same with ourselves and each other? We cater to our immediate desires, yet ignore their causes, failing to recognize our dark side. Once we embrace our inner ugliness, we can begin to make the world beautiful. Restoration of self coincides with restoration of landscape.

“All of this makes me think about the desolate and barren places within myself,” Mud tells me as we hike along.

That night we witness a fantastic sunset from a low cliff of Curtis. We scramble up just as the sun drops below the layer of clouds and lights up the desert with a glow of low-angled light. From the top of the small hill littered with outwash gravel, we see the lights of cars on Highway 24.

No one needs any prodding to get going this morning since everyone is out of food and dreaming of breakfast in Hanksville. Even Metta and Huckleberry left before dawn to retrieve the truck from Tomsich Butte. After crossing the creek a few times, we hit a dirt road littered with beer cans old and new and mostly Coors and Busch. “Nature—a place to throw beer cans on Sunday,” said H. L. Mencken.

The dirt road leads to a strip of pavement, the old highway that now dead-ends in a pile of upended asphalt where the old bridge crossed Muddy Creek. The bridge is gone, dismantled or carried off in a flood, all that remains are the stone ramps perched on either side of the creek. The blacktop is cracked every few yards where Russian thistle and rabbitbrush push through the breaks. Pieces of mufflers and trash give the place a post-apocalyptic look.

Following the road, we cross a rusty one-lane bridge spanning the Fremont River, which has slowed to create a small wetland filled with the sharp gurgle of red-winged blackbirds. A flock of thirty to forty ibises circle over an irrigated field accompanied by a single egret. A pair of cinnamon teals lift off from the field.

Across the bridge, we bisect the highway and follow it past scattered trailer homes and billboards. We pass Jen's Tropical Oasis, a former gas station/gift shop with a "For Sale" sign in front. It's one of those places you wonder if someone will buy before it falls apart. A highway sign tells us that this section has been adopted by the Nimrod Gun Club—NRA affiliate.

We hike along the shoulder as enormous RVs and big pickups towing boats whip past on their pilgrimages to Lake Powell. An Expedition pulling a Nomad roars by.

We walk into Hanksville and find a diner which doubles as a T-shirt shop selling Lake Powell tomahawks and other necessities. We order huge breakfasts and wait for the van and truck to arrive.

UNCONFORMITY

According to geologist Donald Baars, “A major interruption in the normal deposition of sediments.”

You are here commencing anew. The soil, the air, the water are all pure and healthy. Do not suffer them to become polluted with wickedness. Strive to preserve the elements from being contaminated by the filthy, wicked conduct and sayings of those who pervert the intelligence God has bestowed upon the human family.

—Brigham Young

Set in the former Mormon settlement of Fruita, the campground at Capitol Reef National Park is laced with cottonwoods and surrounded by orchards. Deer nap contentedly under the trees. Songs of robins, warblers, and finches drift through the foliage. A weathered barn and old farmhouse accent the pastoral scene. Irrigation from the Fremont River supports this incongruous fecundity in the middle of a redrock desert. The greenery provides a welcome relief to our eyes as it surely must have to the pioneers who created this oasis after decades of hardship and a seemingly endless array of religious persecution. Built by the settlers to keep their livestock from wandering, a fence of large basalt boulders circles the hillside above the campground. I contemplate the sweat equity in this fence. They must have expected this to be used for generations. Established in 1889, this community peaked in the 1920s with ten families and faded when it was absorbed into Capitol Reef National Monument in 1937. What would these hardy pioneers think about the RVs lined cheek to jowl in their former village?

In the 1820s a series of revelations led Joseph Smith to uncover golden tablets in upstate New York, which he translated into the Book of Mormon. With that text he founded The Church of Jesus Christ of Latter-Day Saints. Because of their unorthodox religious beliefs, close-knit communities, and practice of polygamy, the Mormons were regarded as a dangerous cult by other Christian sects. They were driven out of New York and migrated to Ohio, then to Missouri, where they were attacked by the state militia. They fled to Illinois where the prophet Smith was lynched.

Brigham Young assumed leadership and ushered the faithful west to escape persecution.

They reached Salt Lake in July, 1847. Considered the promised land, they settled with religious fervor. Within days, they laid out home sites and began irrigating, damming City Creek and diverting water to the fields. Within five years, seventeen thousand had gathered in the Salt Lake valley, making the arduous journey from the Midwest. Too poor to purchase horses or oxen, many Mormon pioneers made the thirteen-hundred-mile trek pulling their belongings behind them in handcars. The next forty years saw more than eighty thousand immigrants arrive although some six thousand lost their lives along the way. The Mormons had 263,000 acres under irrigation and were supporting two hundred thousand people. During this time the potato harvest increased by a thousandfold and wheat by 1,500 percent.

Mormons approached the West differently than the miners and land speculators. They came not to get rich but to settle. Brigham Young opposed mining, insisting that it required more effort than it produced. "The world is after riches. Riches is the god they worship," Young stated. It's possible that he wished to keep the saints away from that which accelerates desire. Gold could be just as addictive a substance as the forbidden tobacco, alcohol, and caffeine.

Two years after their arrival, Brigham Young proclaimed the state of Deseret, stretching from the Continental Divide in Colorado to Los Angeles, from southern Idaho to the Grand Canyon. Seeking to expand and buffer Zion from the influences of the gentiles, Young launched tentacles of settlers to the north, south, and west. By 1900, more than five hundred Mormon communities were established, some as far away as Mexico and Canada.

Although the empty heart of Deseret, the rugged interior of the Colorado Plateau, was long considered uninhabitable, Young selected church members to establish settlements to head off the ranchers from Colorado, who were beginning to graze their herds in southeastern Utah and the miners who were beginning to prospect the region.

Not all who were "called up" were thrilled about their exile to these barren wastelands. However, as Wallace Stegner wrote, "Mormons obey because their whole habit and training of life predisposes them to obedience." The faithful persevered against incredible hardships and founded a smattering of towns in an area that hadn't seen permanent human habitation since the Anasazi left five hundred years earlier. The church not only organized the founding of towns, but also devised a highly organized system of water allocation that allowed for irrigation. The Mormon village was a model of self-sufficiency with the community controlling its own water, food, grazing forage, and firewood. Several of these villages practiced

communitarianism, holding the land and possessions in common, allocating grazing and water usage according to individual need. But this gradually faded away.

Worried about Mormon expansionism, Congress thwarted Deseret by creating the Territory of Utah in 1850, and statehood was delayed for another forty-four years. However, Brigham Young became governor of the territory. The federal judges soon discovered that Utah was a religious theocracy. Complained one judge, "Mormons look to Brigham Young and to him alone, for the law by which they are to be governed: therefore no law of Congress is by them considered binding in any manner." Convinced that Utah was an outlaw territory, in 1857 President Buchanan deployed the army against a church and community composed of U.S. citizens. For the next year, the Mormon militia fought a nonviolent guerrilla campaign against the occupying federal troops, burning supply trains, turning livestock loose, and wreaking havoc.

Brigham Young avoided open war by agreeing to accept a federally appointed territorial governor, settling the issue of secular authority. However the issue of polygamy remained unresolved. The Mormon practice of plural marriage was particularly repugnant to Congress, which went so far as to seize church assets and make polygamy a felony, punishable by up to five years in prison and hefty fines. From 1884 to 1889, U.S. marshals conducted raids throughout Utah, encouraged by a twenty-dollar bonus for each polygamist arrested. Federal agents broke into houses in the middle of the night and raided weddings and funerals, driving otherwise law-abiding and hard-working citizens into hiding.

Many fled to the desert. Early settlements along the Fremont River were in large part induced by the persecution of polygamists, increasing the pressure to settle on marginal lands. One of the first to arrive was Ephriam K. Hanks, a leader in the Mormon militia and a scout for the original Mormon wagon trains. A former polygamist, Hanks divorced all his wives and remarried the youngest before starting a remote ranch south of the Fremont River in 1882. This stalwart pioneer ran an underground railroad for fugitive polygamists, many of whom settled in Hanksville. Eventually, of the six settlements scattered along the lower Fremont River, all but Caineville and Hanksville were washed away by floods.

Polygamy opponents insisted that Mormon women "must be set free whether they wanted freedom or not." In response, the Utah legislature gave women the right to vote, the second state in the country to do so. "Antipolygamy reformers were thus in the peculiar position of fighting female suffrage in order to keep Mormon women from voting for their own oppression," wrote historian Patricia Limerick.

Finally, in 1890 Mormon president and prophet Wilford Woodruff received word from God, and the church denounced polygamy. One could make the case that polygamy, or rather the reaction to it, is responsible for much of the antiwilderness sentiment in southern Utah. The federal government could not ask for a more dedicated group of settlers. Mormons, more than any other group, were industrious, devoted, peaceable. The Mormons were the only European people who managed to survive, indeed thrive, in an arid and hostile land, largely through church-sponsored irrigation.

Distribution and allocation of water required a system of hierarchy and resources beyond what the individual could provide. Thus the church furnished: unified development, resource exploitation, peaceful water rights, capital, and security. The church stated that water belonged to the community rather than the individual. And of course, the need for water also bound the people to the church hierarchy. However, with the threat of the federal government redistributing water to gentiles, Utah modified its laws in 1880 to allow for individual ownership of water.

This changed everything. In Caineville, the largest settlement along the lower Fremont, disputes over water often lead to beatings and hangings. Indeed, old timers say that “more men have killed over water along the Fremont than over women.” One resident related the story of how a man named Grainger originally homesteaded upstream and had a spring on his place. He eventually moved down valley to better farmland but left his spring running to supply the irrigation ditch with the provision that he’d receive the water. Whenever the water failed to arrive “old man Grainger” could be seen heading up the ditch, not with a shovel over his shoulder but a rifle.

Although infused with cultural relevance, the land itself remained in federal control. “It is surely hard to think that a country where so much of your intimate family and community and church history has taken place is not yours, and that strangers tell you what to do with it,” wrote Wallace Stegner.

The brief history of Fruita provides an example. On the heels of Hanks, other families arrived and settled at the confluence of Sulphur Creek and the Fremont River. Originally called Junction, the name was changed in 1904 to Fruita when the community acquired a post office. Early settlers realized the potential of low elevation and abundant water and quickly planted orchards—apple, pear, peach, plum, apricot, walnut, and almond. Within ten years grapes had become the basis of a thriving illegal industry. Fruit was also traded for grain to make whisky. While they were culturally Mormon, the residents of Fruita were more tolerant of spirited drink than other communities along the Fremont. Not only did the isolation protect the polygamists, it also thwarted the feds seeking to shut down the moonshine operations. In fact, many stills were not even concealed. Fruita never even

had any civil authority nor a church. Religious services were held in homes or in the one-room schoolhouse, which was built in 1896 and served the community until it closed in 1941.

In 1937 a presidential proclamation by FDR created Capitol Reef National Monument, surrounding the rapidly diminishing community. During the 1950s, the drive for national security proved overwhelming, and Capitol Reef was opened to uranium exploration over the objections of the monument's superintendent. Consequently the AEC upgraded the road to Hanksville. Yet, as late as 1961 it was a full-day's trip to travel the thirty-five miles to Hanksville along the "the blue dugway." Travelers often had to wait for days at Pleasant Valley for the road to dry out before they could continue with their journey. Families would camp out and have barbeques and picnics, and everyone would join in the carnival atmosphere.

In 1943 visitation to America's national parks was six million. By 1950 it had exploded to 33 million, increasing to 72 million ten years later. The pressure to develop visitor services resulted in Mission 66, a ten-year effort to construct modern visitor facilities in the national parks. In Capitol Reef, this led to the purchasing of the private inholdings. By this time most of the original settlers and their descendants were gone, and the newcomers were more than willing to sell out. Locals remembered Fruita both as "poverty flats" and as "paradise." However a few residents held out, and since their properties were needed for the new road, they were condemned by eminent domain. Eventually the hotels and guest ranches were removed from where the campground is now. In 1957 the road from Torrey was paved, and by 1962 the highway extended to Hanksville.

While inclusion in the National Park Service spelled the end of the settlement of Fruita, it ironically is now the best preserved example of Mormon frontier life.

Survival in this harsh land depended upon religious devotion to production. The name Deseret is the name for honeybee in the Book of Mormon, and the beehive is the state symbol and industry is the state motto. "In Mormon doctrine, earthly labors carried a direct connection to spiritual progress; one's exertions in the material world directly reflected one's spiritual standing," wrote historian Patricia Limerick. Thus, wilderness can be viewed as antithetical to Mormon philosophy, preventing industrious work such as coal and uranium mining, oil and gas extraction, and power plant production. It threatens livestock interests and can't be exploited for tourism.

Leaving behind the pastoral lands of the east, Mormons were confronted with a grey desert that "did not become beautiful until the second or third generation when it began to be seen through the eyes of those with full

stomachs, reliable water supplies, comfortable homes, passable roads, and hearts buoyed up by hope,” explained Lyman Hafen, a fifth-generation southern Utah Mormon.

Possibly the isolated landscape informed cultural attitudes, just as the land itself was being affected by cultural values. This history, combined with a sense of ownership of the land, makes many Mormon communities suspicious, if not outright hostile to the idea of wilderness designation. While the church no longer appoints political leaders, it still exercises powerful influence over Utah politics. All of Utah’s congressional delegation is Mormon, as is more than ninety percent of the state legislature.

Although the Prophet Joseph Smith “taught the sanctity and unity of all living beings, and that plants and animals had souls,” the LDS Church is formally committed to inaction in terms of environmental positions. Yet, many urban Mormons actively support wilderness, including the new director of Southern Utah Wilderness Alliance, a great-great grandson of Brigham Young. And in 1976 church president Spencer Kimball stated, “But when I review the performance of this people in comparison with what is expected, I am appalled and frightened. Iniquity seems to abound. . . . I have the feeling that the good earth can hardly bear our presence upon it. . . . The Brethren constantly cry out against that which is intolerable in the sight of the Lord: against pollution of mind, body, and our surroundings.”

We spill out of the van onto the lush grass of the campground. Everyone stands around in a daze as if they’ve just landed in some exotic country.

“Uh, where’s the water?” Mud asks.

“Over by the bathrooms, there’s a spigot.”

“Bathrooms?” says Seeker somewhat mortified. “You mean we have to use bathrooms?”

I shrug. “Suit yourself.”

“Can we drink the water?” Mud asks.

“I’m sure it’s liberally dosed with chlorine.”

Everyone returns from the bathrooms excited and full of stories.

“Dude, there was some guy in there washing his underarms,” says Yucca.

“These girls had blow-dryers and were doing their hair and putting on makeup,” says Sage as if this were truly bizarre behavior.

Huckleberry sits on a picnic table staring past the RVs, green lawns, and twenty-four hour sprinklers to the fujichrome backdrop of azure sky, towering orange cliffs, and purple Chinle slopes.

“It looks fake, like a postcard, or it’s behind glass or something,” he mutters.

"It's almost too beautiful, but it feels like I can't get out and explore it," Patience concurs.

"That's because it's scenery, not nature," Seeker adds.

"They have big metal signs telling you what to expect on your hike, how far it is, what the trail's like, if it's easy, moderate, or strenuous. Sort of takes all the fun out of it," says Huckleberry.

"There's a Coke machine over there. You can get your Coke and go and check out the wild animals," Bobofet indicates the deer ambling through the campground munching contentedly on the green grass as they are stalked by an older man with a camcorder.

"I don't know; I get the impression I'm not supposed to really interact with nature here. There's all these railings and signs telling you to stay on the trail." Huckleberry shakes his head.

"Can you eat any of the plants in a national park? Can we make Mormon tea?" Sage asks.

"Technically, yes, but it's not encouraged."

"I feel really constrained here," says Seaweed.

"You know I think it's great, all these old people cruising around in their RVs," Mud joins the conversation. "Except for all the gas they use," she adds. "I mean, at least they aren't sitting at home in front of the TV."

"I saw a couple watching TV in their RV," says Seeker.

"Dude, this is like David Lynch meets the Brady Bunch," Bobofet excitedly articulates the precise metaphor.

"I was just talking to this old lady, and she was great. She was telling me about all the national parks they'd been to and how she and her husband retired and sold their house and just live in their RV traveling around the country. She was really interested in what we were doing. She said she wished she could have done this when she was in college. It reminds me just how lucky we are," Mud continues.

"Dude, what's up with all the sprinklers?" asks Bobofet. "I thought this was a desert."

"It is. The park ranger just told me Capitol Reef hasn't recorded precipitation in eleven months. But remember, it's use it or lose it with water rights. When it became a park, Capitol Reef acquired the senior water right of Fruita, and if they don't exercise those rights by irrigation, they lose them," I explain.

"Umm, seems like a national park should be keeping the water in the river. Or don't fish count?" says Seeker.

Huckleberry declines the trip to the RV park for hot showers.

"Can I just jump into the creek?" he asks.

"Suit yourself."

The ranger stops by, extracts himself from his air-conditioned patrol car and informs us that Banjo sleeping under the picnic table needs to be tied up, and if we continue to pee on the rocks at the edge of the campground, we will receive a citation.

After working in several national parks, I've begun to wonder about their role in our culture. We revere our national parks. They seem to lie somewhere between the sacred and Disneyland in our national consciousness. Even Wallace Stegner refers to national parks as "playgrounds and shrines." Lacking a national religion or cultural identity, we look to the national parks to meet our spiritual and aesthetic needs, indeed the park service highlights the historical role the parks play in the development of our national identity. It is significant that the parks tend toward monumentalism—the deepest canyon, the tallest mountain, the biggest geyser, the oldest tree, etc. Yet the park service fails us by catering to the most base secularism, homogenizing our experiences into paved roads, tame animals, and crowded campgrounds. A national park has more in common with a feedlot or an assembly line than with a wilderness. Success is measured by the number of visitors served. Instead of reveling in the glory of God, we revel in clean restrooms.

Thoreau warned us about becoming slaves to our possessions. Ironically, in our desire to make nature more accessible, we've barricaded ourselves within our automobiles. We have sold our freedom and spirit for the convenience of the personal auto, which sucks the vitality from our souls.

When I worked at Canyonlands National Park, I once encountered a beautiful mandala someone had made in an inconspicuous alcove. Juniper berries, colored rocks, and swirls in the sand composed the mandala. When I casually mentioned it to my supervisor, she suggested I go back and destroy it. Clearly, a national park is no place for religion, especially an earth-based one.

Across the river from the campground, a wooden boardwalk leads visitors to petroglyphs incised into the sandstone cliff recording the presence of the Fremont Indians, who practiced a truly sustainable existence of small-scale agriculture supplemented by hunting and gathering. A national park that secularizes our experience in nature has supplanted Mormon villagers, whose efforts to transform the landscape into a pastoral vision of England assumed religious importance. Peeling back another layer of history reveals the indigenous peoples made no distinction between the land, their lifestyle, and their religion. Like the Spanish cathedrals of Cuzco built upon the foundations of Inca temples, we find strata of human passages piled atop one another in this one place, each formation revealing a distinct epistemology toward the landscape.

Perhaps the wildlife provide the most glaring example. The Native Americans hunted deer and bighorn through the area for thousands of years. However, within thirty years the Mormon settlers had wiped out all the deer in the valley, and the bighorn had been extirpated because of disease contracted from domestic sheep. Now the park service has begun reintroducing bighorn into Capitol Reef, yet the population remains small and isolated. But the deer have returned with a vengeance. The campground provides abundant, albeit unnatural, food and protection from hunting and predators. (Although mountain lions will occasionally venture down in the winter when the campground is empty.) The result is an artificially high deer population comprised of small and undernourished animals.

In the evening I take my sleeping bag down to the river to sleep.

“Is that legal?” Metta asks.

I shrug. “Doesn’t matter; no one would ever know. Sleeping outside your designated spot, is outside the realm of their consciousness.”

We spent the next day shopping at Red-D-Market, making a noticeable dent in their inventory and completely eliminating their supply of granola, dried hummus, dried refried beans, and bagels.

At the checkout counter, the proprietor hands me his card. “Call us next time and let us know when you’re coming. Tell us what you want and we’ll be sure and order it,” he says.

At the campground, each student is surrounded by ziplock bags and three weeks worth of food. Empty boxes of granola bars, soup mixes, and instant rice fill several garbage bags. I cringe at all the packaging.

“You know you can buy this all in bulk,” I lecture. “One bag of rolled oats costs a fraction of buying it in these little packets.”

“Yeah, but then I won’t know how much to eat,” protests Mud.

The sky darkens, and it begins to rain, turning to snow by evening.

Lost in a netherworld behind a veil of Walkmans and raincoats, the students amble back and forth between the pay phone, the park service library, and their piles of food. News from home, preparations for the next trip, and researching their final projects fill the next couple days.

Chukars, a type of partridge, patrol the campground scavenging dropped raisins and M&Ms. These clownish birds sport a bright orange bill and a black teardrop that extends down their necks. Bold black stripes contrast the light beige of their wings. Their incessant and guttural clucking doesn’t help their dignity. Although capable of flight, they prefer to run, lowering their heads and charging forward. Like pheasants, chukars were brought from Asia for sport hunting. First introduced to the U.S. in 1893, they have

established populations throughout the West, consuming other aliens such as cheatgrass and Russian thistle. In Hawaii, chukars aid in seed dispersal and germination of native plants, occupying an important niche of extinct native species. Here however, they aid in the dispersal and germination of invasive species, especially cheatgrass, their primary food source. Cheatgrass, which increases with fire, drought, and overgrazing, makes possible the successful establishment of chukars. They also eat sagebrush and native grasses, switching to shoots and fruits in summer.

Although they compete with native quail, pheasants and chukars are considered naturalized rather than invasive exotics. I wonder how much of our terminology is determined by our desires. Chukars provide money to state fish and game agencies through hunting licenses. About six hundred thousand are harvested each year by hunters. Tamarisk and cheatgrass have no economic value.

Trout, however, are another story. Like chukars, rainbow trout were purposely introduced to the intermountain West. The Colorado Plateau and Great Basin host one hundred native fish species, half of which are threatened, mostly by competition from exotics. Rainbow trout have become such an economic mainstay, that the Utah Department of Resources recently dumped Rotenone into the Fremont River to eliminate whirling disease, a condition caused by a protozoan that makes trout lose their equilibrium and spin strangely in the water. The protozoan lives in the muck caused by increased turbidity and agricultural runoff. About twenty-five percent of the trout in the Fremont River suffer from whirling disease. Mortality from Rotenone is one hundred percent. After the trout (along with other fish and aquatic organisms) are killed, the Department will restock the river with disease-free rainbow trout.

Amidst all the chaos, we somehow manage to pull off a group potluck dinner while everyone plays tag team with the pay phone.

Bobofet confesses that he's been having a hard time. "I called my friends and told them I was thinking of coming home. They said, 'what are you, an idiot? There's nothing going on here. We're just sitting around drinking beer like always."

"My parents are so weird," says Mud.

"Where's Yucca?" Sage asks after a generous helping of seconds.

"Still on the phone," Seeker says.

"We should save him some food," she says.

Finally Yucca returns looking distracted.

"There's salad and a couple nature burgers we saved for you," Patience says.

"Oh, thanks."

Yucca tells us that he found out his sixteen-year-old brother had been diagnosed with schizophrenia last week and had just been arrested for attempting to hold up a liquor store with a shotgun.

The next morning Patience is the only one besides me who is awake. I sit at the picnic table slicing fruit while she lies in her sleeping bag, writing in her journal and listening to her Walkman.

"I can't believe my dog died," she says. I assume she's talking to Sage lying beside her.

"Everyone around me is dying," she cries a moment later. I glance over and see Sage is still asleep. At first I think she's talking to herself, but doesn't realize she's talking out loud because she has her headphones on. Then I understand she is speaking to the world, to anyone who can hear. I walk over and kneel down beside her.

"I just talked to my mom, and my step-dad's tumor is getting worse. They can try chemo but that only works on twenty percent of patients, and even then it only gives them a few more months. I don't even know if he'll be alive when I get back. And my dad told me that my dog Sadie got run over by a tractor. She was only a year old," she sobs.

"My mom said they were watching a movie and he tried to get her to dance with him, but he was too weak. He's gotten all romantic suddenly. I was talking to him and he started crying. He said he'd pay for my college, that I didn't have to worry about that. They just got married last year. He's totally changed too. He used to be gung ho businessman, always working, concerned about making money. But he quit working when he found out he had a tumor and is just enjoying the time he has left," she added, making no attempt to dry her tears.

I watch the chukars clucking across the campground. I grew up thinking every problem had a solution. I want to fix things, offer advice. Instead, I just sit beside her and listen.

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CARMEL

A slumping formation that flows over the contours of the underlying Navajo, Carmel was formed by a shallow sea that stretched into Wyoming. It is found primarily in the San Rafael Swell.

Could it be that what we fear most is our capacity to feel, and so we annihilate symbolically and physically that which is beautiful and tender, anything that dares us to consider our creative selves? The erotic world is silenced, reduced to a collection of objects we can curate and control, be it a vase, a woman, or wilderness. Our lives become a piece in the puzzle of pornography as we go through the motions of daily intercourse without any engagement of the soul.

—Terry Tempest Williams

We rejoin Muddy Creek where we left it, at the old bridge near Hanksville on a muggy overcast morning. Banjo runs ahead and splashes into the water, glad to be free of the constraints of the campground. She bounds through the mud and joyfully laps up the murky water as if greeting an old friend.

Minutes downstream we cross the mouth of the Fremont River. The recent precipitation has turned the normally clear mountain stream into a turbid torrent as it meets Muddy Creek and forms the Dirty Devil River. On his first trip down the Colorado, John Wesley Powell encountered the mouth of this unknown river: “As we go down to this point we discover the mouth of a stream which enters from the right. Into this our little boat is turned. The water is exceedingly muddy and has an unpleasant odor. One of the men in the boat following, seeing what we have done, shouts to Dunn and asks whether it is a trout stream. Dunn replies, much disgusted, that it is ‘a dirty devil,’ and by this name the river is to be known hereafter,” he wrote.

I was a little concerned that the river would be high and present some difficulties in crossing, but the water level has subsided in the past twenty-four hours, leaving behind vast mud flats of quicksand. Shortly after the confluence, we pass under the new bridge of U.S. Highway 24. I glance up at an SUV with mountain bikes mounted on the roof, the last sign of the modern world we will see for the next three weeks.

We cross a cow-hammered lowland of greasewood and tamarisk. Cowshit and salt cover the surface of the mud. Each step requires delicate

balance to keep from slipping in the mud, which congeals on the bottom of our boots so that each foot weighs several pounds.

“It’s like walking on chocolate cake with vanilla frosting,” says Patience.

After resupply, everyone is feeling low energy and complaining of the heat. Then the mosquitoes descend. With scattered reeds and cattails, I imagine this lowland could be a wetland if not for the cows. The students call it “The Fire Swamp.”

To escape the mud and mosquitoes, Patience leads us up to the bench above the river, where we enter a whole different world. The rain and snow of the past few days have transformed the desert into a floral oasis. We crest a rise, and a field of lupine opens before us like a mountain meadow in June. The fragrance of the indigo flowers fills the air, making us forget our tired limbs. A blooming blackbrush provides cover for a large leopard lizard, who freezes at our approach. Blackbrush, a spiky shrub that not even the cows find palatable, covers this plateau in the rain shadow of the Henry Mountains. A lesson in patience and endurance, blackbrush awaits years for a drenching and then explodes with small yellow flowers. Instead of its normal dull greys and browns, the land vibrates with brilliant yellow and blue. Small pink vetches pop through the sand. Prickly pears show off their yellow and pink flowers.

I nearly bump into Patience when she comes to a sudden halt.

“Are those prickly pears?” she indicates a sprawling cactus with thin pads and pastel pink blossoms.

“Yeah.”

“What about those?” She points at an identical cactus but with yellow flowers.

“Yeah.”

“Are they the same species?” she asks suspiciously.

I suspect teacher baiting, the Socratic method inversely applied. “I think so. We’d better look it up.”

At the next break, Patience asks Bobofet for the *Utah Flora*.

“Okay but you gotta carry it then,” he says, rifling through his pack.

According to the *Flora*, each of the various species of prickly pear cactus (*Opuntia* sp.) can host blossoms of myriad colors. The different species and varieties also hybridize freely leading the editors to state, “Recognition of proposed intraspecific taxa seems moot.”

“Can we key this out too?” asks Sage pointing out an intriguing yellow flower with a red stipe on one of its petals and delicate filigreed leaves. We discover that this delightful flower we had been fawning over was none other than the infamous goat-head or puncture vine—*Tribulus terrestris*. In uncharacteristic candor, the *Utah Flora* echoes the sediment of Linnaeus

(who named the species) and provides some insight into the secret life of field botanists, "This tribulation of the earth is a vicious weed, leaving in its wake a refuse heap of punctured tires and painfully injured feet."

Sprinkled throughout this flower garden are fantastic rocks, many with purple and yellow stripes. Unlike sandstone, these rocks are dense and rounded, suggestive of river stones. Closer examination reveals that they come in two types, a coarse-grained diorite that originated deep within the magma chamber that formed the Henry Mountains. These were then exposed by subsequent erosion and tumbled down to this deposition zone. The other stones appear similar on the outside but when broken open reveal vivid colors and a silky texture. Some contain quartz crystals and bubbly brachioidal crystals of pink and white.

Mineralized sea water, rich in silica, percolated through the strata until it reached a hollow cavity where the mineral solution precipitated out and formed this microcrystalline or amorphous quartz, termed agate, chalcedony, jasper, carnelian, or chert, depending on its color. Not only did the Henry Mountains leach uranium into the surrounding area, they also contain veins of gold and silver as well as numerous trace elements, such as nickel, copper, aluminum, and iron, which give these rocks such fantastic colors. A hint of copper provides green, aluminum yields blue, and of course iron makes yellow to red depending on the amount. The surrounding sandstone eroded away, and the rocks became stranded on this knoll.

We find some interesting chunks of puddingstone, a rock that forces one to contemplate deep time. This rock is composed of river pebbles cemented together in a matrix of chert and worn smooth by tumbling down another river. While we can trace the origins of the matrix, you have to ask what river rounded and polished the pebbles? What long gone mountain chain did they come from? How long did it take for that mountain to be reduced to pebbles which were caught up in another upheaval and welded into this piece of yellow chert? This one rock represents a kaleidoscope of time spinning around on itself. I hold in my hands mountains and rivers without end.

Gradually the rounded pink domes of the Navajo Sandstone come into view and we drop back to the river. I stand on the bank giving detailed instructions on river crossing safety: look upstream for debris, have a sturdy stick to gauge depth, undo pack straps, and cross in groups of three holding hands. Yucca takes one look at this innocuous-looking river and decides the hell with it. He crosses on his own and promptly falls face first into the water. Embarrassed, he splashes back amidst laughter.

The problem in crossing the Dirty Devil is that you can't see the bottom because the water is so thick with suspended solids. Luckily the bottom is generally flat and rock free, however, flat does not mean level and you can

go from one foot to six feet in a single step. Furthermore, the deep spots move around like a shell game. Standing in the middle of the river, you feel its force. What looks like a placid flow can be quite strong when directed at your knees. If this weren't enough, add quicksand. Trying to explain quicksand to the uninitiated is like trying to explain snow. You just have to experience it. The quicksand moves about too, so that one minute it will be here and the next minute there. The river shows itself as a living, breathing thing with blurred and shifting boundaries.

The first step is the most shocking. The cold water comes pouring in over the tops of your boots, and you can't see where to place your feet. The river is wide; you look up and see the distant bank, twenty yards away. Another step and the mud yields your foot unwillingly; you pull it up thinking you'll pull your foot out of your boot. Slowly you work across the river. It gets deeper over your knees, thighs, you stretch up on tiptoe, trying to avoid the inevitable. It hits your crotch, and you gasp for air.

The first group makes it about halfway across when Sage goes down and chaos ensues. Attempting to pull Sage up, Seeker goes down himself, falling back into the river. Behind them, Patience gets stuck in quicksand, and Bobofet gets haplessly mired trying to help her. It looks like a Three Stooges show. In moments the entire first group has either fallen into the river or is stuck in the mud while the second group laughs hysterically and snaps photos. Huckleberry, who made it across, sits on the far bank wearing a bemused smile. Soon, the would-be rescuers of the second group are stuck as well. Reaching Sage, I take her pack off, and we fire brigade it from one stuck person to the next and finally to Huckleberry who wades out and hauls it to shore. One by one we shuttle our packs across the river in this manner. Relieved of her burden, Sage is able to get down on her hands and knees and extract herself from the muck. By the time she reaches the bank, she is in hysterics and nearly hypothermic. Metta runs with her to the top of a nearby hill to get her warmed up. The others shuttle packs and pull each other out, often pulling each other back down into the water and laughing. Metta gets Sage into some dry clothes, and she calms down.

"How many more river crossings are there," she asks, when I finally struggle to shore having extracted one student after another.

"Three weeks," I reply, and she shoots me a dirty look.

By the third crossing the students have figured out that if they just keep moving, they won't get stuck. Sage insists on crossing hand in hand with either Huckleberry or me, and her terror diminishes with each successful crossing. By the time we reach camp, everyone has become comfortable with the mud, considering we are wearing it.

Without the indecision that seems to plague everyone else, Patience finds a campsite, a sandy spot ringed with squawbush. This member of the cashew family has been rechristened “skunkbush” because of the derogatory nature of the word “squaw.” However, “lemonade bush” seems a more apt name for this shrub that produces dense clusters of tart red berries. The berries are nearly ripe, and I pop handfuls into my mouth to alleviate my thirst. Hot and tired, I jump into the coffee-colored river and float downstream past the cattails lining the bank. Then I run across the river happily splashing, free of the burden of necessities (food, sleeping bag, etc.). I find a nice long mud bank. Taking a running start, I go into a baseball slide and skid across the mud, which is slippery as an oil slick. Pretty soon there are ten naked bodies wallowing in the mud. Mud discovers that you can spin on your belly in the mud like a merry-go-round.

The quicksand that plagues us when hiking is really quickmud. Conducting an experiment, I find that if I stand quietly in one place, I only sink up to my knees, but if I struggle and move my legs back and forth, I can auger myself down to my upper thighs. Now I’m really stuck. Noticing my helpless condition, the students begin lobbing great gobs of slimy, stinky mud through the air. Seaweed stands on the bank screaming, “I don’t want to be in a mud fight!” whereupon everyone rushes her slinging mud. Mud—luscious, cool, slippery mud; it squishes through hands and toes like some sensual and forbidden substance. We curse walking through it, but praise it when we wallow in it.

The Dirty Devil doesn’t flow so much as ooze back and forth across the channel like viscous pudding. The main channel of the river is constantly shifting; rushing along the bank, it rips pieces off, dissolves them, and regurgitates the sand and silt downstream along one mud flat or another. The mud flats are spiderwebbed with tracks of invertebrates that make their living in this changing ecosystem. I’m curious about a thick squiggly line in the mud that looks exactly like what I assume are worm casts in the Moenkopi. I lie on my belly in the mud and soon a tiny beetle pops out from the squiggly line and flies away. It alights not far off and burrows into the mud creating a crinkle above it that will one day harden and provide a fossil record of its search for food.

During our evening debrief, we hear a peregrine screech and look up to see it in hot pursuit of a violet-green swallow. A pair of ducks flies up from the river oblivious to the danger overhead, but the peregrine disappears beyond the canyon rim. Another peregrine screeches from atop the far cliff. Its mate soon returns, sans sparrow. We fall back in the sand, binoculars glued to our faces as we watch the falcons soar, twist, and dive in mock combat.

“Are they fighting?” asks Mud.

“I think we’re seeing a courtship ritual. That smaller one is the male. He was probably trying to nab that swallow to present to the female.”

“Could a peregrine really catch a swallow?” Patience asks.

“Sometimes the pair will work together, trapping a bird in flight.”

“They eat other birds?” asks Seaweed somewhat horrified.

“Exclusively. Peregrines are the fastest animals on earth. In a dive they can exceed two hundred miles per hour. They have fantastic eyesight. They soar overhead looking for birds and dive-bomb them. You can imagine what happens to a bird when it gets hit by a falcon’s outstretched talons at two hundred miles per hour. If the impact doesn’t kill it, the hit will often stun it so the peregrine can swoop down and put its victim away with a bite to the neck. They especially like pigeons and ducks, but can even take out a goose.”

“Cool!” exclaims Bobofet transfixed by the birds.

Like its swooping flight, the story of the demise and recovery of the peregrine falcon provides a glimmer of optimism in our current extinction crisis. Once common across the globe, peregrine populations began a precipitous descent after WWII. By 1963 they had disappeared from the eastern and central U.S. and Canada and only held on by a few hundred in the West. Widespread spraying of the pesticide DDT was pegged as the culprit. As Rachel Carson described in *Silent Spring*, DDT bioaccumulates in the fat tissues as it works its way up the food chain. Songbirds ingested DDT directly from the dusted plants and indirectly through insects they ate. Soon songbird populations were in decline. Since DDT doesn’t readily break down, when peregrines ate the birds, they too received the DDT. Sometimes the toxin killed the falcons, but more often it disrupted the females reproductive systems and interfered with their ability to produce calcium for the eggs. When they were actually able to lay eggs, the weakened eggshells broke when the adult birds attempted to incubate. Unable to produce offspring, the populations went into a tailspin.

In large part due to Rachel Carson’s book, the public became concerned about pesticides and Congress finally banned DDT in 1972, just in time for the peregrine. Spearheaded by the Peregrine Fund, a massive effort to recover the peregrine began by breeding captive birds and releasing them back into the wild. More than six thousand birds were released, and by 1999 they were removed from the endangered species list. Currently more than sixteen hundred pairs inhabit the U.S., including about five hundred pairs in Utah. Because of the canyons and diverse habitats, Utah is ideal peregrine country, and the population here recovered naturally.

Peregrines recovered remarkably, adapting quite well to humans. The creation of Lake Powell has been a boon to peregrines. With infinite cliff

nest sites and more than two hundred and seventy bird species, Glen Canyon National Recreation Area contains one of the highest densities of nesting peregrines anywhere. Peregrines have also adapted to living in cities, feeding off the abundance of pigeons and nesting on skyscrapers. At one of Salt Lake's upscale penthouse restaurants, you can dine on filet mignon while watching peregrines eviscerate a pigeon.

Unfortunately peregrines still show elevated levels of DDT and their eggs are barely able to withstand incubation. Peregrines receive DDT residues that persist in the environment for decades. They also absorb the poison during their winter migration to Mexico and Central America where DDT is still sprayed. Although the use of DDT is banned north of the Mexican border, the U.S.-based Dow Chemical Company continues to manufacture and distribute DDT overseas.

"Do you think they can see us?" Mud asks as the birds wheel overhead.

"No doubt."

As the light wanes the distinctive falcon silhouettes drift out of sight. The full moon rises above the canyon wall and its light shimmers on the water.

NAVAJO REVISITED

The formation rolls softly across the horizon. Colors fade into pink and white. Sculpted into domes, breasts, and hips, the Navajo is quintessentially female. One senses the Great Mother incarnate.

Apache places are named after symbolically important events, so individuals in the tribe are continually moving in a webwork of places whose names embody the stories of their people. Living inside a mesh of significance constantly tells them who they are, where they reside in tribal history, and how to act if they wish their fellows well. It is a society attempting to be absolutely located, and thus secure.

—William Kittredge

The Dirty Devil flows wide and imperial like an abandoned Nile wandering through sand dunes and statues of pharaohs and sphinxes. The river winds lazily back and forth in a undulating rhythm, alternating between concave salmon-colored cliffs that bend in and receive the river and long protruding tongues of rock or sand. Sometimes these tongues form gently sloping benches where prickly pear, blackbrush, ricegrass, and flowers grow. Other times they are sand dunes or reclaimed riverbanks consisting of a riparian community of willow, tamarisk, and reeds. Farther back we encounter rabbitbrush.

Massive Navajo sandstone rises above us as we plod down the river to a small canyon tucked between two longer ones. Despite fences at the mouth of each canyon, cows have gotten in and turned the shallow, willow-lined creeks into quagmires. For one reason or another, the cows have avoided the middle canyon, and we make our camp in a sandy wash. This canyon has no name on the map. Since I often camp here, I feel justified in calling it Jumlung Canyon after the Tibetan term for middle path, which refers to the way to enlightenment advocated by Buddha—persuing neither extreme asceticism nor indulgence.

While the others busy themselves with setting up camp, I wander up the canyon for a few moments of peace. Rather than pitching camp and hanging out, I simply drop my pack and continue on, walking off the physical strain of the backpack and the psychological strain of the day. I'll find a nice, quite nook somewhere, take off my boots, enjoy the silence, and feel of

this new place, allowing all thoughts, responsibilities, and frustrations to flow away. That way I return to camp reinvigorated.

Up the canyon, the sand dunes blaze with sunflowers—rough mule-ears. Yuccas send up long white candlesticks of drooping flowers. An *Astragulus* simultaneously sports violet flowers and crescent seedpods, mottled green and purple. In the heat of the day, the Fremont barberry advertises its sticky scent to hundreds of bees that converge on the yellow flowers. I dig some wild onions out of the sand to flavor our dinner.

After a few bends, the Navajo sandstone demonstrates its magnificence, unfolding a giant alcove streaked with a single line of black varnish. Moving from the direct sun into the alcove is like walking into a refrigerator. Water seeping along the cliff cools the rock and the decades of rockfall piled at the outer edge trap the cold air in and keep out the day's heat. Along the weeping wall, maidenhair fern, a spindly ash, and a buckthorn grow right out of the rock. A pair of ash-throated flycatchers chase each other through the oaks along the edge of shade and sunlight. These sky-coyotes always put on a show, swooping, diving, snatching up insects one moment and chasing down a prospective mate the next, while keeping an eye on me as if this were a theatrical display for my benefit. Who knows? Maybe it is. One alights on a branch, cocks his head, gives a "pechwee," and looks at me for a response. None forthcoming, it tries again and finally abandons attempts to communicate with such an obtuse creature.

Around the next bend, the canyon comes to an abrupt end in an amphitheater. An incised slot brings water from the canyon above, depositing it into an ephemeral pool. I duck under a fallen, but still living, cottonwood. The trunk lies horizontal and the leaves grow skyward, out of the trunk and even out of the exposed root. An orange-headed spiny lizard trundles along the cottonwood's deeply furrowed bark, licking up ants as they march blithely past. It eyes me suspiciously as I take refuge in the shade and slip off my boots.

I return to camp just in time for dinner. Huckleberry, Yucca, and Bobofet have formed their own food group. After being continuously hungry on Muddy Creek, they've agreed on substantial dinners. Substantial is hardly an adequate description. In town they bought a huge six-quart cooking pot that Yucca carries strapped to the back of his pack. Each night they fill it to the brim with a thick mass of carbohydrates. Tonight it's burritos, and their pot is filled with a thick paste of refried beans and sticky rice.

"You want cheese in it?" Yucca asks.

"Yeah," says Bobofet.

Yucca lops off chunks of cheese from a two-pound block.

"More?" he asks.

"More," Huckleberry replies.

A full pound of cheese goes into the pot. Then Huckleberry begins dumping dried jalapenos into the mixture.

I watch in amazement as the three of them scoop the amalgam into giant tortillas and down one after another. Running out of tortillas, they stand in a tight circle chortling as they spoon the remains out of the pot. So focused on eating, they haven't even bothered to sit down. Despite the amount, they are finished long before anyone else. Each night the same ritual is repeated. No matter what the delicacy, a pound of cheese and a quantity of jalapenos goes in.

"You know, that's borderline disgusting," I tease.

"Yeah, but we're finally getting enough to eat," Bobofet replies.

Meanwhile, Seaweed flits around like a hostess at a cocktail party, offering samples of her dinner.

While everyone is cleaning up, Seeker comes running excitedly into camp.

"You guys have to come see this!" he implores.

He leads us a short distance from camp to a small dune covered in evening primroses.

"Check it out; just watch," Seeker says bending down to one of the flowers. "You have to get close," he adds, lifting his head.

In groups of two and three we cluster around the flowers. Pregnant torpedoes dangle from the thin red stalks. As we watch, the torpedoes begin to swell, bursting through their casing into four sections and exposing brilliant white insides.

Amidst a chorus of gasps, the casings suddenly give way with audible pops. They peel back becoming the sepals of the emerging flower. The tightly coiled blossoms begin to unfurl before our eyes. Within minutes the petals have spread wide, and the brilliant white reflects the moonlight to attract moth pollinators. The star-shaped pistil rises into the air awaiting fertilization. The four stamens droop under the weight of their anthers sticky with strands of pollen that dangle like yellow spider silk. A sweet fragrance permeates the air. Sage bends close and takes a long olfactory draught. She raises her head, and her nose is powdered yellow.

We watch transfixed as one flower after another opens. Tomorrow morning the flowers will have wilted pink. Based upon anecdotal evidence, it seems that evening primroses time their blooming to coincide with the full moon, when the white inflorescence is most conspicuous. Since they only have one night in which to become fertilized before their flowers wilt, they need to make the most of it.

The plaintive wails of Woodhouse toads surround us as the full moon crests the canyon walls. I walk up a small gully to throw my sleeping bag

down and am overwhelmed by the delicate scent of sand verbena, another night-blooming flower. By day, the sand verbena resembles a tightly clustered snowball, but each night it explodes in white fireworks.

I lie awake listening to the night. The chomping of caterpillars on the cottonwood leaves sounds like a jet engine. Their droppings ricochet off the dry leaves onto the ground. A loud crunching by my head sounds like a bear eating a boulder. I turn on my headlamp and reveal a beetle rustling in the leaves. Bats dart about with great clicking commotion.

I awake with a start at dawn as a great horned owl wings silently a few feet above my head. She perches on the cliff and stares at me with big yellow eyes. She hoots twice and continues up the canyon. I stare up at the V-shaped wedge of sky above my sleeping bag. A wedge of sky inhabited by violet-green swallows, flashing iridescent green and violet as they soar, dart, and pirouette in three dimensions. A swallow perches on a dead juniper branch and spreads a wing to preen. The morning sunlight glimmers through the bird's nearly translucent wing. A moment later it's airborne again. A pair of swallows plays tag, each one rising higher and circling the other as if on a vertical column of air. Higher and higher they fly until almost out of sight. They join in conjugal bliss and plummet earthward locked in a deathly embrace. A few feet above the ground they part in two and resume their sky antics. They nest in cracks and hollows in the cliff, but they live in this slice of sky, this emptiness. Benevolent protectors, angels on our shoulder, consuming thousands of gnats and mosquitoes each day. How can something fly so fast, so effortlessly?

I then notice a strange vibration in my right ear. Rolling over I see a hawk moth the size of a hummingbird gorging himself on the pungent lavender flowers of the desert mint that line the gully. "Today is going to be a good day," I think.

As I walk into camp, I meet a porcupine waddling through our kitchen. I guess nothing looks too appetizing, for he continues up the streambed to where Huckleberry is sleeping. I call to wake him, but he doesn't respond. However, the porcupine turns around and trudges off faster than I thought possible. I laugh at his little legs treadling back and forth in an attempted scurry. A few dozen meters are all he can manage. He passes within a few feet of Banjo, both animals purposely ignore each other. He climbs up into a Gambel's oak and falls asleep.

After class we explore one of the neighboring canyons. Along the way students stop off to work on their journals, essays, or projects. Soon only Seeker, Huckleberry, and Patience accompany me up the canyon. We halt below an intriguing looking alcove scooped out of the Navajo sandstone.

“Think there’s anything up there?” Seeker asks as I scan the alcove with binoculars.

“I doubt it; just a pile of rubble. Still, only one way to find out.”

Despite the heat we zigzag up the slickrock, and before long we are standing before an alcove much bigger than it looked from below. The pile of rubble at the entrance is undoubtedly a wall constructed to provide protection from the wind and cold.

The four of us stroll through the alcove in silence. Our footfalls raise the soft sand like moon dust. Others have been here before us and left their boot prints, which remain undisturbed and protected from the elements.

A series of stacked sandstone blocks denotes rectangular sleeping quarters. A beehive-shaped structure squats at the back of the alcove. A block of sandstone leans against the beehive. It would fit perfectly into the opening as a door to guard the precious contents. I run my hand over the mud-plastered walls and let my fingers slide into the indentations left by a man unaware that the Normans were invading England. My fingers are too big, and they spill out of the mud furrows. Smaller rocks are impressed into the mortar in a line like decorative jewels. I peer inside. The floor is littered with corn cobs.

Originating in Mexico about four thousand years ago, corn cultivation spread north, becoming established along Muddy Creek by the dawn of Christianity. At first these nomadic hunters and gathers supplemented their diet with corn, squash, and beans, but then became increasingly more reliant on agriculture. In time they developed their own variety of corn, capable of resisting the extremes of cold and drought, called “Fremont dent” after the indented kernels and the name we’ve bestowed upon this group of Native Americans.

Anthropologists have belatedly recognized the cliff dwellers of the Four Corners region as the ancestors of today’s Pueblo Indians and now refer to the Anasazi as Ancestral Puebloans. However, we continue to use the term “Fremont” (after the river where they were first described in 1937) to distinguish this particular group. Incidentally, the river was named after a rather pompous explorer, John C. Fremont.

Determined to find a transcontinental railroad route across Utah, John Fremont attempted to push through the San Rafael Reef. Encountering a narrow, boulder-strewn canyon, his party soon gave up. Unwilling to follow in Gunnison’s footsteps, which lead north along the Old Spanish Trail, Fremont led his men south. They explored all along the reef but found no passage through. Instead of waiting for spring, Fremont pushed on to the ten thousand foot Aquarius Plateau in the middle of the winter of 1853. Fremont and his men nearly died of starvation and cold. Fremont went on

to become California's first territorial governor and the 1856 Republican nominee for president. He was subsequently fired by Lincoln as a Civil War general for issuing his own emancipation proclamation months ahead of the president's.

A mano and metate lie nearby. I heft the mano in my hand; this grapefruit-sized river rock plucked from the benches below would easily serve to crush corn kernels. I place it back on the smooth surface of the metate, a slab of sandstone worn smooth by generations of Indians using it for grinding. The mano and metate predate corn by several centuries and were originally used to grind seeds of Indian rice grass and acorns. I can't help but wonder how much sand ended up in the flour.

I then spy a large piece of pottery sticking out of the sand, a solid black shard marked with indentations forming short vertical lines all around the rim. Agriculture required an increasingly settled lifestyle, which in turn facilitated the development of pottery. Because of their distinctive pottery style, anthropologists are uncertain whether the Fremont acquired pottery independently from Mexico or adopted it from their Anasazi neighbors. Anthropologist David Madsen writes, "[A]n internally consistent and widely accepted definition of the Fremont has never been developed. Given the lack of elaborate ceremonial kivas, polychrome pottery, detailed basketry designs, and other hallmarks of 'higher' social organizations, the Fremont have always been considered to be some sort of poor, out-back Anasazi."

Anthropologists distinguish the Fremont from the Anasazi based upon pottery and basketry styles, clay figurines, rock art, and footwear. Unlike the yucca sandals typical of the Anasazi, the Fremont wore a unique type of moccasin. These were fashioned from three pieces of hide from a deer's foreleg with the dewclaws intact. Likely this provided a distinctive footprint so tribal members could readily identify each other. Through minor modifications of the sole, one might even be able to distinguish family groups or clans. I wonder if future anthropologists will categorize us as cowboy boot culture, high heel culture, or Birkenstock culture.

Because the Fremont defy categorization, archaeologists continue to debate just who they were and how they were related to each other. Further complicating matters was the discovery of small villages scattered along Bull Creek, south of Hanksville on the flank of the Henry Mountains. This site shows continuous occupation from 6000 B.C. The Fremont occupied this complex of rock-lined pit houses, camps, and storage areas between eight hundred to twelve hundred years ago. Archaeologists have uncovered a potpourri of Fremont as well as Anasazi artifacts, including both classic Fremont and Anasazi pottery.

Some archeological evidence suggests that the Fremont and Anasazi shared geographical regions but occupied different niches, so to speak. The Anasazi confined themselves to lower elevations conducive to agriculture while the Fremont practiced hunting and gathering at higher elevations, living in groups of five to twelve extended families. Certainly the two groups were in frequent contact and may have shared both language and religion, surely a stronger cultural glue than footwear.

Furthermore, Fremont is a rather porous category encompassing both Great Basin hunter-gatherers and these Puebloan farmers. Fremont designates the people who from A.D. 650 to 1300 lived in the area from Grand Junction to Ely, Nevada, north to Pocatello, Idaho and south to Cedar City, Utah. Likely those living in the Great Basin had more in common with other hunter-gatherers than they did with those here on the plateau who adopted a lifestyle similar to the Anasazi. These people doubtfully categorized themselves as a single group and may have even spoken different languages. Madsen speculates that what we call the Fremont were really three separate groups of different origins that shared a few minor traits acquired through trade and the spread of a religious cult. "Today we call these scattered groups of hunters and farmers the Fremont, but that name may be more reflective of our own need to categorize things than it is a reflection of how closely related these people were," writes Madsen.

Seeker waves me over to a corner of the alcove. By unspoken agreement, none of us have uttered a sound since entering. Seeker places a large spearpoint in my hand when I reach him. I stare at him in amazement. He points to the soft sand just past his feet. I hold the spearpoint in my hand, running my finger along the razor sharp edge. Made from green chert, the spearpoint is notched slightly at one end where it was laced onto a spear with sinew. I sit at the edge of the alcove staring out to the canyon beyond, holding the spearpoint and puzzling over it.

The corn, pottery, and ruins all suggest that the Fremont lived here about a thousand years ago. The years A.D. 700 to 1300 marked the most widespread and dense indigenous population on the Colorado Plateau. Perhaps the climate was especially conducive to agriculture at that time. The Anasazi and Fremont cultures flourished, but agriculture demanded that people remain in one place, at least seasonally. Thus the game in an area was soon eliminated. The bow and arrow appropriate for small game replaced the atlatl and spear. Yet here was this spearpoint. The juxtaposition of seemingly different lifestyles is indicative of the Fremont who adopted strategies appropriate to the location. In some places and times they practiced agriculture, and in others they depended upon hunting and gathering. Some

groups shifted seasonally between the two. In the fall, these shifting groups would harvest crops then quickly head to the highlands to gather pine nuts and hunt deer and sheep. In the winter they retreated to the rock shelters and subsisted off stored food supplemented by hunting. Spring brought planting and gathering. In summer they continued to gather wild plant crops, such as acorns and rice grass, as they came into season.

Other groups would be settled agriculturalists for a few years then take up hunting-gathering again, perhaps moving to another locale to settle. This harsh environment required a diversity of lifestyle strategies in order to survive. Perhaps some individuals simply preferred hunting to farming. Often we get trapped in our thinking, assuming a society *progresses* from hunting-gathering to agriculture.

About the time the Crusades ended, a watershed was reached among people in the Colorado Plateau. The Ancestral Puebloans had abandoned their villages in Utah and Colorado and consolidated into the Hopi, Zuni, Acoma, and Pueblo peoples along the Rio Grande, focusing nearly exclusively on agriculture. These villages are now the oldest continuously inhabited settlements in the U.S., dating back to A.D. 1250.

The Fremont took the other route, abandoning agriculture. What actually became of them is speculative. A large proportion of Fremont sites show concurrent use by Shoshone and Paiute with a total replacement of Fremont-style artifacts. This combined with the fact that the most recent artifacts (dating back five hundred years) are found the farthest away from the Shoshone-Paiute expansion, led Madsen to believe that the Fremont were pushed out of the region. Some argue that the Fremont moved south, integrating with the Pueblo Indians and losing their separate identity. Others hold that the Fremont, having originally come from the plains, simply moved back. Or that they were absorbed into the Shoshone-Paiute culture; I once met a Paiute man who claimed Fremont ancestry.

Nonetheless, this spearhead pointed backward, not forward. Could it be an artifact of the Archaic Indians who preceded the Fremont and also used this alcove? Could it be that humans have been visiting this particular alcove off and on for the past several thousand years? A similar alcove just east of here called Cowboy Cave contains thirteen thousand years worth of sediments that can be radiocarbon dated. The oldest layer contains dung from mammoth, ground sloth, horse, and camel. The earliest human artifacts date back to 7000 B.C. These people left little evidence besides fires, kill sites, and stone tools. At some point (precise dating is difficult), they began painting and carving figures on rock surfaces. Then they began making things for us to discover: arrowheads, animal figurines from willows, humanoid figurines from clay, baskets,

awls, and other bone tools. This Desert Culture traveled about in small bands of twenty-five to fifty individuals, engaging in a sustainable economy for thousands of years until agriculture arrived and the population exploded. Artifacts flourished as well: pottery, burial sites, jewelry, moccasins, and of course buildings, ranging from tiny granaries tucked into a cliff to entire villages.

I hold the spearpoint before me admiring the handiwork and skill it took to fashion it. Suddenly I'm filled with a desire to possess this artifact. I could easily slip it into my pocket and no one would be the wiser. I test out several rationalizations: if I don't take it, someone else will; the museums already have more spearpoints than they know what to do with; it's of no value, really. But they all ring false. This spearpoint has been here for several centuries, and in another thousand years it will still be here where it belongs. Who am I to disturb it? Antiquity bears its own authenticity. I will always have the satisfaction of knowing that it lies here unmolested. That in itself is worth far more than mere possession.

As I turn back to the alcove to replace the spearpoint, I remind myself that removing artifacts not only destroys any archeological value the artifact may hold but also robs the public of what is rightfully public property. It is akin to going into an art museum, cutting up the paintings, and taking all the pieces. I notice for the first time that the alcove is pockmarked with shallow pits where pot hunters have been active. An unbroken pot will fetch more than forty thousand dollars on the black market, and every accessible site on the Colorado Plateau has been raided.

Out of the corner of my eye, I notice a brown circle on a pink rock. Stepping closer, my eye perceives a tight coil of concentric circles radiating outward, and it takes a moment before my mind recognizes it as the bottom of a basket. I kneel down. Rock and pottery are so durable they should last a thousand years, but to find something as delicate as a basket comes as a surprise. Aridity, however, is a wonderful preservative and early archaeologists and settlers have found numerous baskets, moccasins, rope, sleeping mats, headdresses, and even buffalo hide robes and shields.

This basket is one of the distinctive features of the Fremont. The Fremont had a unique style of basketry called rod and bundle where stripped willow rods were bound with yucca cordage. This method of construction allowed the yucca fibers to swell, and, combined with a bit of mud, rendered the basket virtually waterproof. Baskets and pottery were not only used for hauling water but also for cooking. A hot rock was dropped into the basket and quickly heated the water inside. Unlike their Anasazi neighbors, the Fremont never abandoned basketry in favor of pottery. Baskets were quicker and easier to make and could be readily constructed on site, important for a people clinging to their nomadic roots.

Made valuable by time alone, this treasure was uncovered and exposed by men intent upon quick profit. Reduced to a fragment, it was tossed aside as worthless. I lean over the basket fragment, and my strong scent permeates the dry air. I become hyperconscious of my own presence.

I step through a breach in the wall of the ruin. I notice the indentations in the sand left by dozens of feet. Nike, Adidas, and Teva have all left their trademarks. I pick up a piece of shaggy juniper bark and begin to sweep the prints clean. I sweep the floor of the ruin, working toward the exit so that all that remain are the striations of juniper bark. I want to obliterate all signs of profanity in this space. I wish to wipe clean my culture's impact. I want to erase the past; sweep away Wounded Knee, Sand Creek; obliterate poverty, reservations, alcoholism, diabetes, and depression. I want to place the stones back in the wall and seal this one ruin up from the poking and prodding of the curious. I want to sweep the whole alcove clean. I want to glue the pieces of broken pottery back together. I stand outside the ruin with my juniper bark broom and look at the hundreds of footprints in the alcove and sigh at the enormity of the task. I get down on my hands and knees and slowly begin sweeping.

MORE NAVAJO

Immense pink cliffs streaked with black and red rise above the river.

This move to exterminate cattle rustlers and put an end to cattle rustling seemed to us like the final blow to the Old West. We listened to Butch Cassidy's eloquent call to action, grabbed our Winchesters, and rode out to defend and preserve the Old West. Our peculiar way of defending the Old West was to get a good tough outfit of horses together and plenty of artillery, make a fast dash up into the Belle Fourche or Johnson County country, take a big herd of cattle right from under the noses of the cattle kings, and show 'em they couldn't get away with their game of murdering and exterminating rustlers. . . . "If we let 'em get away with what they've started," said Butch, "this here won't be a free country any longer."

—Matt Warner

We take a break at the mouth of Robbers Roost Canyon. On the other side of the river, an impressively smooth cliff rises five hundred feet to the skyline. Textured-red stripes on the cliff face look as if someone knocked over a giant bucket of paint on the canyon rim, and it slowly dribbled down. Thin black streaks also taper down from the rim.

These black and red tapestries draped over canyon walls were long regarded as mineral-laden runoff leached from the strata above. Recent research reveals desert varnish to be the work of microorganisms. These creatures extract manganese and iron from airborne dust and runoff and then oxidize it onto the rock surface. Manganese-rich varnish is shiny black while manganese-poor, iron-rich varnish tends toward red. Water pouring over the cliff provides small bits of organic matter and the bacteria experience a bloom. Too much water, however, fortifies other microorganisms and lichens, which compete with the bacteria and chemically erode the varnish. Sheer cliffs that occasionally drip water but dry quickly offer ideal conditions for these bacteria. Desert varnish takes thousands of years to form and hence doesn't occur on unstable surfaces.

Is desert varnish animal, vegetable, or mineral? Or all three? If something like desert varnish, resembling little more than dried paint, actually thrives on barren cliffs, what are the chances that rock itself constitutes a form of life?

Indeed, when I stare at the cliffs long enough, great swirls of Indian warbonnets and eagles emerge, the stripes begin to move and the rock takes on a fluidity. Black merges into red, red into pink and orange, and the entire tapestry marches across the wall like shadow dancers or a curtain of rain sheeting down on some faraway mesa leaving the crops untouched.

“Hey, are those petroglyphs?” Seeker asks, pulling me from my hypnosis.

Below the desert varnish we can make out faint red outlines of human-like figures, and we cross the river to investigate. Incised into the rock we find: several figures filled with wavy lines like a weaving, an outline of a man with a halo, a circle of outward spokes, and several indecipherable lines and markings. Sprinkled across the panel are numerous depictions of bighorn sheep.

“So, uh, like what’s this all mean?” inquires Mud.

“Well, what do you think?”

“These are obviously bighorns,” says Huckleberry. “They might have carved them here after a hunt to portray what happened.”

“Or before a hunt, for good luck,” adds Yucca.

“Maybe they drew them so the animals wouldn’t disappear. You know, like we do with endangered species; we have pictures of them to prove to ourselves they still exist,” says Sage.

“What about these hatch marks?” asks Patience.

“A counter of some sort, marking time maybe?” suggests Metta.

“It could just be graffiti, you know a bunch of kids scribbling on the rock,” says Yucca.

“Or different tribes tagging the rock, telling others this is their turf,” adds Bobofet.

“Could be, but they’d have to have a lot of time on their hands,” I reply, keeping an eye on Sage in case she should provide another profound insight. “Imagine how much time and energy it takes to chisel out these figures with an antler and a rock. It’s not like they are just scribbling on the rock. They are very deliberate, but they certainly could be a form of communication. These abstract geometrical patterns are most likely symbols that depend upon cultural context and interpretation.”

“Like a dollar sign,” suggests Metta.

“Or a heart,” adds Mud

“Or one of those Darwin fish. How would you know what that was all about five hundred years from now? An outline of a fish with legs and a smile. Wouldn’t make any sense,” says Bobofet.

“Right, look how much background information is needed to interpret that one symbol,” says Metta.

“This guy looks like he’s falling,” says Mud pointing at a figure on his back with hands and feet in the air.

"Maybe he did. You know, fell off a cliff or something," suggests Seaweed.

"Or he's a shaman falling into a dream state," says Huckleberry.

"Maybe he got killed," says Patience.

"They could be depicting a shamanistic experience or mythological event," says Metta.

"Hey, this looks like some sort of map," says Seeker, indicating a long squiggly line. "It looks like the Dirty Devil."

"How 'bout this guy with the antenna coming out his head like an alien," says Bobofet.

"Maybe he is an alien. They could have drawn aliens that visited them, you know," adds Seaweed.

"Those are probably horns or antlers. All across the world, horns are associated with shamans. Pueblo Indians dress up as kachinas for the dances, and several of the kachinas have antlers on their masks. I imagine that these are depictions of kachinas. There *is* something heroic or mythological about them," says Metta.

"Kachinas?" Patience raises her eyebrows.

"Spirit beings or demigods that journey back and forth between this world and the spirit world," clarifies Metta. "These could also be a religious storytelling device, like the Stations of the Cross or Tibetan tankas."

"There's some spirit beings if I've ever seen one," says Seeker. He points above us, indicating the faint red outlines with broad shoulders, long tapering bodies, and bulging eyes like sockets in a skull.

Lacking arms or legs, these eerie anthropomorphs appear to hover like ghosts, floating out of a past so ancient that we shudder at their possible significance. Distinct from the carved Fremont petroglyphs below, these life-size figures were painted with hematite or ochre by archaic hunter-gatherers centuries earlier. Called Barrier Canyon style (after the next canyon to the east of us), these figures display a high degree of artistic quality, while the Fremont artwork is less stylized and more realistic. With the modern natives, such as Ute and Navajo, rock art becomes even more simplistic, depicting stick figures on horses. Archeologists attribute this diminishment of artistic quality to later cultures investing their artistic energy into other art forms such as pottery, basketry, and textiles.

It appears that we are looking at three sets of rock art, with the eight-foot high ghost figures as the oldest. Thought to date between 1000 B.C. and A.D. 500, the Barrier Canyon hunter-gatherers immediately preceded the Fremont and were likely their ancestors. However, rock art is difficult to date, and these could be much older. Clay figurines resembling the ghost figures were found in Cowboy Cave and date back 8,800 to 6,600 years ago.

At ground level, the petroglyphs have similar shapes but are filled with squiggly lines. The Fremont modified the archaic style with rectangular bucket heads and added arms and legs. Both styles depict trapezoidal anthropomorphs with headdresses and jewelry. Similar styles of rock art are found east of the Colorado River, suggesting that the Anasazi in these areas may have borrowed Fremont styles and symbolism. Rock art expert Polly Shaafsma believes these similarities provide strong evidence that the Fremont and Anasazi arose from the same indigenous Archaic peoples. "We seem to be dealing with a single tradition encompassing three related but different art styles in which the anthropomorphic figure receives special emphasis. These styles, in turn, are undoubtedly underlain by a single tradition of religious ideology that existed in this area over many centuries," she writes.

Shaafsma points out that the Fremont preoccupation with the shaman motif suggests the retention of hunter-gatherer ideology rather than a priesthood that develops among agriculturists. "Art is an artifactual or material record of the ideological component of a prehistoric social system," she adds.

The archaic rock art seems to be displayed in a highly visible location, high on this cliff face, at the mouth of Robbers Roost Canyon. It would be hard for anyone to miss this enormous canvas. Indeed, the panel seems to be deliberately composed with the images assuming importance. But why are the Fremont petroglyphs hidden from view, lower down and around the corner on a nondescript rock face that no one would ever see? Perhaps it was the act of carving, especially in the case of bighorns, that was more important than the impression upon the viewer.

One can't help but wonder if these wandering desert tribes inhabited a world of dreams. A world infused with beauty, art, and meaning; a world of porous boundaries with no distinction between the world of spirits and dreams and the world of waking.

A peregrine dives off the top of the cliff crying shrilly as we wade back across the river.

We enter Robbers Roost, a small creek lined with willows and cottonwood that invites us upstream, past graceful sandstone walls decked with desert varnish. Bighorn tracks lead up the canyon in the damp mud past the emerald green of oaks and cottonwoods. Bobofet, today's leader, finds an appealing alcove that he is quite excited about camping in.

"You guys won't believe this. It's like a tropical paradise," he says, returning to the group huddled in the scant shade of a cottonwood. We follow him into a grotto, where a deep-green pool flanked by water birch lies in the middle of the alcove. The cliff drips with water, nurturing a dense carpet of false Solomon's seal and poison ivy. A black ribbon of desert varnish cascades down the underside of the alcove, ending at a sandstone drain spout

poised three hundred feet above the pool. We stand before the scene in stunned awe.

Finally Sage says, "I don't think we should camp here."

Bobofet turns toward her in surprise. "What? This place is awesome!"

"That's just it. Think of the impact we would have."

"If we camp somewhere else, we could come here and have class," Metta suggests.

Reluctantly, Bobofet capitulates and leads us out of paradise. We find another alcove around the next bend, this one dry and sandy where our impact will be minimized. That evening we discover that spadefoot and Woodhouse toads use the grotto as an amphitheater, broadcasting their amorous intentions up and down the canyon.

A crazy patchwork of blooms decorates the wash in front of our camp. Naked-stem sunflowers and clusters of rough mules, ears mingle with peppergrass. Penstemon, both the red Eaton and the blue narrow-leaf, square off with fuchsia prickly pears. Gumweed, mounds of yellow crypanth, and lavender desert mint all vie for attention. We key out a purple five-petaled flower. While prying open the corollas, we find a small beetle tucked inside the tubular flower.

"Hey, here's another beetle inside this flower too," says Sage.

"I wonder if they are this plant's pollinators," muses Huckleberry.

"There's a spider over here," announces Mud.

A pale-yellow spider hangs from the plant's leaves clutching a lifeless fly in its jaws. A spotless ladybug strolls through the stems. Meanwhile, a tiny lacewing lands on my thumb. It seems this plant provides habitat for a diversity of creatures. A member of the Dogbane family, we discover this flower has no common name.

"Does that mean we get to name it?" asks Sage.

"Sure, why not?"

And so the students christen this "purple dogstar." Certainly this is a more becoming name than the bastard toadflax growing nearby.

A hummingbird zips past us like a bullet, heading right for the Eaton's penstemon, which waits patiently for its pollinator, its tubular flowers excluding all other suitors.

"You can tell it's a broad-tailed hummingbird because it sounds like the Jetson's spaceship—bleble, beelbe, beelbe," I say.

"Pop culture!" the students gleefully chastise me.

Finished with the penstemon, the hummingbird aims for the red bandana Metta has tied around her head. He hangs in midair, trying to decide if her head is edible. Right color, wrong shape. Finally, he zips off to a nearby box elder where he hovers in one spot for several minutes, flashing

his bright fuchsia neckware at a prospective female sitting on a branch. He begins flying in a tight figure eight, rising and falling before her in frenzied courtship. Emboldened, he zips off to harass a kestrel that lands nearby.

The day becomes absurdly hot, and we move from shade to shade trying to avoid the gnats, horseflies, and deerflies that torment us. In the afternoon I walk up canyon looking for a shady alcove that might catch a breeze to keep the insects at bay. I spy a small cave high up the cliff and scramble up. Some rocks are piled in a rough wall at the entrance as if to block the wind. Behind the wall is an area free of debris, just big enough for a person to lie down. Bits of charcoal scattered in the sand indicate an old campfire. Deeply incised into a rock are the initials and date of the camper, "JB 1903." These were probably the initials of Joe Biddlecome who pioneered the Robbers Roost Ranch on the mesa above the canyon. At my feet lies the carving implement, an old horseshoe. Unlike a modern horseshoe, this is smaller and rounded. Toward the rear of the alcove, I notice a couple of pits dug in the sand, suggesting that someone was searching for something. More pot hunters perhaps? Or someone searching for some of the loot Butch Cassidy reportedly stashed in these canyons?

Although Butch Cassidy and the Wild Bunch made this area infamous during the 1890s when it was one of their chief hideouts, Robbers Roost received its name twenty years earlier when a horse thief named Cap Brown frequented the area. Cap stole horses in western Utah and brought them into this no man's land, moving them from water hole to water hole across the desert and into Colorado where he sold them for a tidy profit. One time Cap was followed by a posse as he dropped into the Dirty Devil. He decided to ambush them as they rode down Beaver Canyon and scare them off. In the ensuing gunfire, one of Cap's young cowboys was wounded. He made it up the Angel Trail before his fate bestowed the name Dead Man's Hill to a nearby knoll.

Bringing horses out of the canyon and up the slickrock posed a challenge, and the rustlers often had to throw sand on the rock to give the horses' hooves purchase. Eventually so many horses and cattle traversed the trail that their hooves wore grooves into the slickrock. Cap said he named the Angel Trail because one needed the wings of an angel to make it. Cap also built the corrals on Twin Corral Flats.

This remote region owns a long tradition as a refuge for those seeking to escape civilization and its institutions. The first white men to see the Dirty Devil were probably three Mormons who were wanted for the murder of a gentile physician and advised by Brigham Young to hide out in the vast unknown of southern Utah. During the 1880s when polygamists were fleeing

the feds, Ebenezer Hanks and several other families founded the isolated village of Hanksville where they could freely engage in their practice.

The Homestead Act notwithstanding, any cowboy who attempted to start a small ranch of his own met with stiff opposition from large ranch owners, who in effect controlled the public lands for their own use. Independent cowboys retaliated by rounding up and bestowing their own brands on maverick livestock. Furthermore, once a calf was separated from its mother, it was technically a maverick. This practice was tacitly acknowledged and tolerated by the ranchers. But once the cowboys crossed the line to rustling (altering existing brands), they were considered outlaws.

Charles Kelly, author of *The Outlaw Trail*, reported that unlike other parts of the West, the rustlers of the Roost country were well organized. Each rustler would only pick up a few strays and then move them on to the next station where another man would add a few more. "None of them had *stolen* any stock; they had merely moved a few head of strays off their own range," he wrote. The cattle were finally assembled in Robbers Roost and then sold at Green River or in Colorado. "Profits were split all the way down the line. This system was so foolproof and so profitable that almost every other small rancher in southern Utah was a rustler on the side," Kelly continued.

Mike Cassidy was one of those cowboy-rustlers who operated about seventy miles west of Robbers Roost near Bryce Canyon. A Mormon farm boy named Robert Leroy Parker fell in with Cassidy who taught him the tricks of the trade. During this time Robert was falsely arrested, jailed, and mistreated by the sheriff. This incident left him with a lifelong grudge against the law. Robert was named after his grandfather, one of the original Mormon handcart pioneers who left Missouri in late summer of 1856 with his wife and four children. For three months they walked and pushed their belongings across the Great Plains, reaching South Pass, Wyoming, in mid-October where they confronted deep snow and starvation. As one of the leaders and one of the strongest in the party, Robert Parker broke trail through deep snowdrifts. Eventually his strength gave way, and he died one night frozen in his blankets. In later years his eldest son, Maximilian also guided emigrants from Missouri to Utah. Maximilian married and settled in Beaver, Utah, where Robert Leroy Parker was born. A few years later the family moved to a ranch near Circleville.

Mike Cassidy had acquired a sizable herd by questionable means and hired Robert to take it to Colorado to sell. At Hanksville, Robert met up with Cap Brown who guided him and the livestock across the Dirty Devil and into the Robbers Roost country. They spent the night at the mouth of Beaver Canyon, and Robert saw for the first time the country that would be his impenetrable hideout for the next fifteen years. From Robbers Roost he

and Cap herded the horses north toward Green River, where Cap left him on his own to take the horses toward Moab and then into the booming mining camp of Telluride, Colorado. Robert wasn't the first and certainly not the last to lose his innocence in Telluride.

In Telluride Robert fell in with an unsavory crowd, including Matt Warner and Tom McCartry, leader of the infamous McCarty Gang. Charles Kelly reports that these three were responsible for a train robbery outside Grand Junction in 1887 in which they failed to open the safe and netted nothing of value. At some point, Robert borrowed his mentor's surname and became known as Butch Cassidy. Butch, Matt, and Tom continued their exploits, holding up the bank in Telluride and escaping with \$10,500, a considerable sum in 1889. Although the posse had conceded the chase, the outlaws rode to Brown's Hole in northeastern Utah and then fled south again to hide out in Robbers Roost. Nervous still, they soon rode north to Wyoming where they split up.

Meanwhile, J. B. Buhr, a tailor from Denver, attempted to start a large ranch in Robbers Roost country during the 1890s. J. B. headquartered his ranch near Hanksville and hired Jack Moore, a competent cowboy but a rather unscrupulous character. Jack ran the line camp on Robbers Roost Flats and invited his outlaw friends and their acquaintances to join him. The outlaws would drift in during the fall, spend the winter at the Roost, and then head out in the spring.

For a cowboy, Jack didn't think much of cows, often complaining of overgrazing and even supplying the outlaws with beef poached from wayward cows. Jack often rustled cows himself, herding them to Green River or to Colorado. He was finally arrested for cattle rustling but jumped bail. Jack reportedly fended off a posse that chased him into the Dirty Devil by ducking behind a boulder and poking out a charred willow that resembled a rifle in the diminishing daylight. Finally Jack was shot by a rancher in hot pursuit of rustlers. In 1899 Jack's wife and J. B. were charged with harboring criminals. They were tried in Hanksville where J. B. supplied a keg of beer for the trial. They were soon acquitted. A few years later J. B. sold the ranch, and he and Mrs. Moore left Utah together.

Butch Cassidy's most infamous exploit was the Castle Gate payroll robbery in 1897. Castle Gate, the region's largest coal mine, lay tucked in a narrow canyon near Price. Since Butch was known only by reputation, when he rode into town on a big grey horse, everyone took him for a cowpoke. Castle Gate was a mining town and no one rode a horse in town. To allay suspicion, every day for a week, Butch rode his horse at a full gallop through the town to meet the train and back again. Town folks assumed he was training his racehorse.

The day the mine payroll arrived, E. L. Carpenter and two assistants each carried a bag of money from the station to the company office a short distance away. Two men sat loafing at the foot of the stairs to the office. As the paymaster walked past, Butch stuck a gun in the side of one of the assistants and relieved them all of their burdens. Although the robbery took place in broad daylight and in full view of the station, pursuit was slow. When he attempted to notify the sheriff in Price, Carpenter discovered the telegraph wires had been cut. Butch and his partner, Elza Lay fled down the San Rafael and into the Robbers Roost country with eight thousand dollars in gold.

Butch set up a luxurious camp in the Roost while waiting for things to cool down. Whenever a posse pursued outlaws heading into the Roost, they always rode white horses to notify the outlaws of their approach. This prevented the outlaws from being taken by surprise so as not to put the lives of the posse in jeopardy. After being fired upon from a safe distance, the posse, having discharged their cursory duties, returned to more civilized enclaves.

The Salt Lake Tribune stated, “[T]he coal company may as well give up any attempt to capture the holdups or regain the cash. The robbers are too well organized and the country so unsettled and so little is known that a sheriff’s posse would fare badly should it attempt to dislodge the desperadoes.”

To stimulate action, the governor of Utah put a five-hundred-dollar price on the head of a dozen of the Roost’s better-known rustlers. Sheriff Tyler of Moab figured he’d supplement his income by pursuing two of the rustlers, Blue John and Silver Tip, after their visit to Moab resulted in the disappearance of several horses. Tyler and six deputies entered the Roost from the north with assistance from a guide. They found the stolen horses grazing on the mesa and the four rustlers camped in an alcove at the head of Robbers Roost Canyon. The outlaws had left their horses on the mesa above and were trapped. The officers could fire at will from the rim. Silver Tip kept up a steady stream of bullets while the others escaped up an exposed trail to the mesa. Although Ed Newcome received a bullet in the leg, the escaped outlaws were able to cover Silver Tip while he ran up the trail to join them. The outlaws split up and got away while Tyler and his men returned to Moab empty-handed.

A few months after the Battle of Roost Canyon, Butch Cassidy and the Wild Bunch returned to Robbers Roost with thirty thousand dollars from the Wilcox train robbery in which they had blown up the safe in the express car with dynamite. The next year Butch passed through Robbers Roost for the last time, returning from the Winnemucca, Nevada, bank robbery. In 1902 Butch Cassidy and the Sundance Kid left for South America where they attempted ranching in Argentina before slipping back into their outlaw

habits. Despite persistent rumors to the contrary, the preponderance of evidence suggests that Butch and Sundance died in a shootout with army troops in San Vicente, Bolivia, in 1909.

Many speculated that the loot from the Castle Gate payroll robbery was buried at the Roost and searched these canyons for hidden treasure. But only one known recovery took place. In 1930 a mysterious stranger arrived at the Robbers Roost Ranch. The foreman noticed the man retrieve something from a cave, load it onto a pack mule, and disappear back into the desert.

Remembering and recording is a universal human condition. Legends and stories are passed from generation to generation as part of our collective consciousness. Perhaps rock art functions the same way, binding the landscape to culture while striving to make sense of the world and attempting to derive order from chaos. By recording the successful hunt or paying homage to the animal spirit or the keeper of the game, people bound their history to the rock in much the same way their ancestors recorded their shamanistic visions. Art thus created a sacred geography so that culture and landscape became inseparable.

Walking this river is our attempt to weave together landscape and culture. At first glimpse, there appears a great divide in our consciousness, as if the two hemispheres of our brain have been artificially severed, but we retain a ghost memory. We *feel* something in wilderness, it speaks to our innermost being, but it lacks any cultural significance. We lack language and context in which to place our experience. We've created a society bereft of landscape, a satellite of consciousness. While we may never know the precise significance of rock art, and although we suffer from the hubris of conquerors, we can nevertheless recognize that our wilderness has a history. Walking down Muddy Creek we are forced to examine the ultimate folly of nuclear weapons. We experience first-hand our culture's priorities; we see the impacts of overgrazing and mining and ORVs. Farther downstream, along the Dirty Devil we connect with our western mythology, camping where Butch Cassidy camped. We also create our own mythology: This is where we saw bighorn sheep; this is where we got stuck in quicksand; this is where we found a spearpoint. The wilderness is no longer other, but infused with cultural and personal meaning.

NAVAJO

The price of an ecological education is the realization that we live in a world of wounds.

—Aldo Leopold

To avoid the heat of the day, we decide to hike to Beaver Canyon in the evening. By the time we leave, however, ominous dark clouds fill the sky. As we hike back down Robbers Roost, a strong wind begins to blow, bending the willows at right angles and swirling the sand. The wind sandblasts our exposed skin and makes walking difficult. I think we should find shelter, but everyone seems to be enjoying the power and exhilaration of the storm. By the time we reach the canyon mouth, the wind has died down. The clouds begin to break up, and a surreal light spreads through the canyon, a deep indigo that could never be replicated. It's impossible to tell the difference between cloud and sky. The pair of peregrines patrols the cliffs above the mouth of the canyon. It occurs to me that we haven't seen a single raven the entire time we were in Robbers Roost. Could the peregrines be the cause, driving the ravens out of their territory?

The next morning we resupply by taking a spectacular hike up the slickrock, past sandstone swirls of reds and pinks and beige. Motorbike tracks blacken the slickrock, and it looks like someone tried to ride a horse down from the rim but gave up quickly. We top a rise and behold the Henry Mountains, shooting straight out of the desert before us, their peaks still covered in snow. After a week down in the canyons, we'd forgotten that there was another world besides the one we were in.

Chaos erupts at the truck. Everything comes spilling out: food, duffel bags, garbage. Boxes of cookies are passed around and quickly emptied. Bobofet busts out chocolate, and everyone goes ballistic. Finally T-shirts are changed, dirty socks are swapped for clean ones, and packs are loaded with food.

Metta collects us in a circle overlooking the Dirty Devil. Rain clouds gather behind us. The afternoon sun pierces the clouds and ignites the San Rafael Reef to the north. Metta lights a bundle of sage, and we smudge each other as the wind blows the sand around. She asks us to hike thoughtfully, mentally discarding all the things we wish to leave behind. "Think about those things that are the most frightening to leave behind and see if you can

leave them for the next two weeks. Lighten your load with each step toward the river,” she says.

Seeker and Bobofet fall behind, lost in conversation. I stop and wait. Soon everyone else is long out of sight. It’s getting late and this can be a confusing route; there’s no trail, just a route across the bare rock. I’m sure nothing is wrong, but nonetheless I head back up to see what happened. No sign of Seeker and Bobofet. I look down below; nobody there either. Trying to contain my anger, I stomp over to the cliff overlooking camp and yell, “Are Seeker and Bobofet there?”

“No.”

“Then come back up and help me look for them!”

In no great hurry, nearly everyone returns, and soon we find the missing pair who had sat down to enjoy the view. My anger dissipates as quickly as it rose. Silly really, I think. All I had to do was wait.

Returning to camp, we pass Seaweed sobbing and shaking. She had just had a fight with Yucca. Eventually I get her to tell me what happened.

“I just said, ‘Did you find them?’” she recounts.

“Yeah, thanks for helping,’ he snapped at me.”

“I said, ‘you don’t have to be so snotty.’”

“Then he said, ‘Nobody’s ever called me that before.’ He said, ‘Fuck you, Bitch.’ No one’s ever called me a bitch before, I try and get along with everyone,” she sobs.

“What did you say?”

“I said, ‘Fuck you,’ back.”

I mull all this over in my head as Sage and Patience help Seaweed back down. Yucca had been glowering all day. I’m not sure why. How much of all this is a product of the group culture we create? How much of Yucca’s anger fed mine, how much of mine fed his? How much of it is just stress at being out here so long with the same people? Some people seem to thrive, others really struggle with being removed from distractions. Suddenly they are faced with their individual issues day in and day out. Be that as it may, we’ve got a genuine group conflict on our hands; how to resolve it? I hate these things. Do I actively get involved or let them sort it out?

I decide to take a short walk up to Angel Cove Spring, a beautiful little spot where I sit and listen to the crickets, the wind through the oaks, and the steady trickle of water into a pool. Blooming columbines, wild roses, and poison ivy line the cliff. A scrub jay pursues a butterfly as it flutters above the oaks. Perhaps he learned this uncharacteristic behavior from watching a flycatcher, demonstrating “the ability to perceive relationships and use one’s knowledge to solve problems and respond appropriately to novel situations”—Webster’s definition of intelligence.

Corvids (the family including jays, magpies, and ravens) outscore cats, elephants, and monkeys on many intelligence tests. Ravens have demonstrated the ability to count to six in lab settings by matching the number of objects to the number of black marks. Without a developed cerebral cortex, birds have evolved a hyperstriatum, which mammals lack, as their source of intelligence. Corvids own a large hyperstriatum and brain. Their brain to body ratio is even equal to dolphins.

Researchers recently determined that the scrub jay is able to use memory of past experience and plan for the future, formally considered a uniquely human trait. Jays often cache food, some even returning later and re-hiding it when other jays aren't around. In one experiment, jays who had the opportunity to rob food caches, re-hid their own food as well if they were observed by other jays. Non-thieving jays were not so cunning and did not re-hide their caches. This indicates that jays may have the ability to anticipate another individual's intentions and desires, a trait that in humans develops around age three.

Corvids are also highly adaptable. Failing miserably at catching the butterfly, this jay resorts to hopping on the ground picking up dropped bits of trail mix. His lifelong mate soon joins him. Male jays determine the site of a nest in a pinon or juniper. He carries sticks to his spot and entices the female. If she follows him and accepts his decision, he feeds her there. Siting the nest is an important decision. Should he choose an open spot, the nest will get the sun's heat, avoiding cold temperatures and late spring snow. But an open site is also exposed to ravens, who will eat the eggs. Of course, neither the weather nor predators are stable, and what may be ideal one year could be tragic the next. Is nest selection hard wired or do jays learn from their mistakes? Researcher John Marzluff decided to test the ability of pinon jays to learn about variables in nest selection. He discovered that inexperienced males chose sunny locations. If successful, they made a similar choice the following year. But if they lost eggs to predators, they began using sheltered sites. "The frequency of nesting in exposed locations dropped from eighty percent to fifty-five percent after individuals suffered their third predatory experience when nesting in exposed locations," he writes.

By the time they are five years old, most jays learn to choose sheltered nest sites. By seven they've refined their selection, moving slightly to catch a little more sun without exposing the nest to predation. "The process by which jays select nest sites appears to involve many forms of learning," wrote Marzluff.

While this pair appears to be solo, other jays often have up to five apprentices from previous clutches that act as helpers to the breeding pair, much like a wolf pack. The helpers assist in building and defending nests

and feeding the young. They often watch the adults and pantomime their behaviors. Pairs with helpers raise twice as many fledglings as those without.

Not only are Corvids intelligent, resourceful, and cunning, not only do they engage in thievery, babysitting, lifelong learning, and correcting mistakes, they share a few other traits with humans as well. For the most part Corvids are a generalist species, adapting readily to changing environmental conditions, and consequently, they are often found around human developments. One exception is the endangered Florida scrub jay, whose habitat is rapidly disappearing.

The jays hop around a cold campfire ringed with rocks. Bits of aluminum foil are mixed with the coals. I break up the ring, pick out the trash, and scatter the coals so that the wind and rain may wash them away. I don't know if it does any good. I go through the same ritual here every year, and the campsite just seems to get bigger with more bare ground, more random trails, and more trash.

Each year the impact zone grows, pushing back the soil crust that coats the sand like a layer of stale chocolate frosting. Often called cryptogamic (or microbiotic) crust, this type of biological soil crust is found in arid climates worldwide and forms a living community of organisms that scientists are just beginning to recognize as a crucial aspect of the desert ecosystem. Composed primarily of cyanobacteria, biological soil crusts also include lichens, mosses, algae, fungi, and bacteria, forming a symbiotic ecological support system.

Formerly known as blue-green algae, cyanobacteria are one of the oldest forms of life on earth. Fossilized cyanobacteria called stromatolites date back three and a half billion years. Covering the oceans in vast mats, these bacteria were responsible for converting the carbon dioxide rich atmosphere to oxygen, making animal life possible. Surely we owe a debt of thanks to these tiny creatures.

As they move through the soil, cyanobacteria bequeath a cluster of filaments surrounded by a sticky sheath that binds soil particles in a fine web. This web of soil resists erosion and acts as a sponge, swelling tenfold in a rain and holding moisture for days afterwards. Fully capable of photosynthesis, cyanobacteria are well adapted to arid conditions and can suspend respiration temporarily. They can also begin photosynthesis within minutes of receiving moisture. Furthermore, cyanobacteria fix nitrogen, taking nitrogen from the air and converting it into a form useable by plants. The crust contains other bacteria, single-celled green algae, and microfungi, including free-living decomposers and mycorrhizae that live on plant roots.

After centuries of undisturbed growth, lichens and mosses become established, further increasing soil stability. The nitrogen-fixing lichens

themselves are a product of symbiosis; the fungus provides the structure and the algae photosynthesize. I often use the story of Alice Algae and Freddy Fungus to illustrate the point.

It seems that everyday Freddy Fungus would come to school with just bread for lunch, while Alice Algae only had peanut butter. One day Alice sat next to Freddy and said, "If you give me some of your bread, I'll give you some of my peanut butter." And so they took a lichen to each other.

All in all, biological soil crusts host a high degree of biodiversity and serve as an indicator of biological health. One can often find more species in a piece of crust than in the rest of the surrounding plant community. Crusts can even account for up to seventy percent of the plant cover in some communities.

Once fully developed, the castle-like towers of the crusts provide lodging for seeds and increased water infiltration. The combination of retained moisture, soil nutrients, nitrogen fixation, and protection from wind and water erosion increases the viability of vascular plant growth, such as grasses and shrubs. The dark surface of well-developed crusts can increase the surface temperatures by twenty-three degrees. This magnifies soil metabolism, especially in the colder, wetter months, and aids in seed germination. Because of the increased soil stability, the crust discourages large-seeded annual grasses like cheatgrass.

Unfortunately a single footprint can put an end to all this because the crusts are easily crushed. While new crusts can form from isolated footprints in a year or two, all it takes is ten sets of boots to create a trail that may take up to ten years to recover. Mountain bikes and jeeps do even greater damage—a single tire track will remain in place at least five years, and on steep slopes or repeated passes, the crusts may never recover. The crusts need sunlight to photosynthesize, and blowing sand from passing vehicles covers and can kill crusts up to a mile away. Cattle grazing also damages the crust with repeated trampling of hooves. When disturbance is limited, the cyanobacteria can recolonize quickly. However, it can take fifty years to develop full thickness, and mosses and lichens can require two hundred and fifty years to recover.

An awareness of the biological crusts prompts the students to police themselves and each other. We confine ourselves to the slickrock and sand and trails. In India, *Ahimsa*, refers to "causing the least possible harm in every situation." By following this precept, we find ourselves imbued with a universal human quality—compassion. According to Gary Snyder, the awakening of compassion starts one on a two-fold path of ecological ethics and personal enlightenment.

Normally we would choose an impacted site where people have already camped, but I refuse to camp here. It's too special a place despite the impact.

Instead we camp in a less desirable place among the tamarisks at the mouth of Beaver Canyon. The site at the mouth of Beaver Canyon used to be a large barren expanse, but in the past few years vegetation and cryptobiotic soil have moved in, so that only a small patch of sand remains.

I was surprised to discover that last year's rehabilitation of the campsite has remained, and there isn't even a sign of a fire ring. A flash flood washed what was once a high bank covered in willow into the Dirty Devil and scooped out a pool. Beaver Canyon was the route that outlaws once took to get into the canyons. For all the tamarisk (which wasn't here then) and beaver ponds, you couldn't hike up this canyon today, much less drive a herd of stolen horses through it.

The river too has changed over the years. Ever since the first time I came here ten years ago, the channel has run deep next to the small cliff overhang at Beaver Canyon. This was always one of the deepest holes in the river. Expecting a nice swim this afternoon, I jumped in and discovered that it barely covers my ankles. The channel had shifted to the opposite shore.

Other than Pasture and Buck canyons, there are no signs of recent grazing, and the land shows substantial improvement. Since the last owner of the Robbers Roost Ranch died in the late 1980s, there hasn't been any grazing from Robbers Roost to Poison Spring Canyon, and the BLM has no plans to reissue the leases. Not that anyone wants to graze here; it's too remote and rugged to be worth the trouble. Although there are still lots of mustards and greasewood and cheatgrass, I notice considerably more plant diversity each year. Places that were barren wastelands ten years ago are now vegetated and showing the beginning stages of cryptobiotic crust. In some places it's thick and black just like it should be. But now people have replaced cows, and we must ask how much recreational use can this place sustain?

A couple from Arizona arrives in the cove and sets up camp on one of the few remaining grassy spots. I can't help thinking that there's no sense in conserving something if someone else is just going to come along and use it.

Huckleberry seeks me out in a corner of the alcove for advice on his essay.

"I'm having a hard time getting started," he confesses.

"What are you writing about?"

"Well, I was up in the Sierras backpacking with my dad, and we met up with these boy scouts who were coming out late. They'd lost one of their scouts, and we went back in looking for him. When we found him, he was having an asthma attack. I had my inhaler and that worked. We finally got him out just before dawn."

"Uh, huh. What are you doing this summer?" I ask switching topics to buy time.

“As soon as I get back, I’m moving out. I can’t live under my father’s oppressive overhang any longer,” he says, glancing up at the overhanging rim of sandstone.

“I imagine that’s tough.”

“The man is a pathetic, totalitarian imbecile. He totally ruined my life.”

“How so?”

“I’m totally detached from everything around me. I used to care about things, and now I don’t. I’m hoping this trip will allow me to reconnect to nature. I can’t connect with anyone here; they have inane conversations about pop culture that I don’t want to be a part of. I can talk to you, but everyone else is so immature.”

“But how is your dad responsible for your detachment?”

“He ruined my relationship?”

“How so?”

“I was involved with this woman who was older, a friend of his, and he walked in on us once.”

“Did you talk to him about it?”

“I tried once, but he wouldn’t listen. We don’t communicate at all anymore. I used to write poetry and be passionate about life, but my father ruined that.”

“How long ago was this?”

“About a year and half.”

“Yet you still go backpacking together?”

“I go with my brother and my dad. My brother and I hang out and make fun of him, ‘cause he’s fifty pounds overweight and so out of shape.”

“Why do you go then?”

“Tradition, I guess. We’ve gone every summer since I was fourteen.”

“Let me see your pocketknife.”

That morning Huckleberry had lent me his knife, and I was struck by the inscription engraved into the blade—“Love, Dad.”

“You still have this knife.”

“It’s the only pocketknife I’ve ever owned. He gave that to me on our first backpacking trip. And that stupid whistle. It’s so dirty and disgusting, I’d never use it.”

I close the blade, wrap the cord with the whistle around the knife, and hand it back. “I’d be more interested in hearing a story about this knife than about a boy scout’s asthma attack,” I say.

Huckleberry stares up at the overhang in silence.

One by one the others find their way up here. Everyone entering this cove becomes quiet. There are seven people here, and no one is making a sound. The sky darkens, the temperature drops, thunder booms, lightning

flashes. We wait out a brief thundershower under the overhang. Minutes later the rain stops, and the sun returns. When I reach camp, I find Yucca and Seaweed have sorted things out themselves.

At our evening meeting Yucca tells us that he's taken a vow of silence until after the solos. "I just feel like I've been doing too much talking. I think I can pay more attention to what's going on around me if I'm silent. I hope that's okay with everyone," he explains.

Patience describes her walk back from Angel Cove: "It was so beautiful, I was walking back thinking how wonderful this place is and how lucky I am to be here, and I came across this great big fire pit, a condo of fire pits. 'What were these people thinking?' I thought. 'They shouldn't be here.' I got so mad, I kicked one of the rocks and stubbed my toe. I cleaned up the trash and started thinking about the plants I'd trampled. 'Maybe I shouldn't be here either,' I thought. Why are we even here?"

"*Why are we even here?*" Once I get past my immediate visceral reaction, I begin to consider the question.

Why *are* we here? Why do we feel this need to experience wilderness? Are we trying to escape something? It's not just us either. Outdoor recreation is now a major industry. Rock climbers, mountain bikers, ORV users, kayakers—we are all looking for something beyond our everyday experience. Is there something so lacking in our lives that we need to seek out wild places?

I think of the story told to me by a Himalayan mountaineer when asked by his Sherpa companion, "Why so many people coming here?" His response was that they were coming to visit beautiful places.

"Whatsa matter, you no have beautiful places where you live?" the Sherpa asked.

Perhaps in our homogenization of landscape, we've eliminated beauty from our lives. The more we make our own space less livable, the more we seek other places, but in doing so we destroy the very qualities that brought us there in the first place. Over fifty years ago, Aldo Leopold wrote, "Recreational development is a job not of building roads into lovely country, but of building receptivity into the still unlovely human mind."

I wonder if our perennial dissatisfaction with our lives stems from a deep-seated lack which creates craving, a desire that can never be satiated. But what is this lack? A lack of beauty, perhaps? Lack of community? Lack of place? Lack of love?

Sage reads us her essay about discovering she had Hodgkin's disease at sixteen. She has to stop several times to choke back sobs and gather herself to continue. She describes the irony of the children's hospital with its paintings

of clowns, elephants, and seagulls and the behind-the-scenes machinery that gave her the radiation treatments. I'd almost forgotten about the lump on her hip that she had told me about in Capitol Reef. I had left the decision to her as to whether to get it checked out and contact her doctor. She decided to continue with the program. She wasn't going to let her cancer, or rather the fear of cancer, dictate her life, despite what long-term repercussions might result from a three-week delay. It strikes me that all through the gnats, the sandstorms, the heat, the snow, the rotting cow carcasses, the disgusting water, and the long hikes, Sage was the one person who never complained.

Evening light by the river. The cliffs glow orange as if suffused with light from within. I drift off to sleep like the water rat listening to the river carry on a changing and endless conversation with itself. To speak the language of rivers—maybe I just need to listen more carefully.

KAYENTA

A series of brick-red shelves formed by river deposits. This hard formation caps the softer Wingate. Once erosion removes the Kayenta, the Wingate calves off in huge chunks like orange icebergs.

People paying more attention to what other people tell them than to their own perception is the beginning of civilization. Civilization does not occur among healthy people.

—Ken Carey

I awake at dawn in a sleeping bag soaked with dew. Strange, since a few feet above the river bank, all is dry. The color of chocolate milk, the river runs thick with suspended sediment and flotsam. The storms of the past two days have raised the water level and flooded the mud flats. A cloudy day, a cool breeze, strange weather—something moving up from the Gulf of Mexico? The air has an ominous, electric feel to it.

A common yellowthroat serenades us from within the tamarisk thicket as we pack. Seaweed enthusiastically volunteers to lead today. I'm unsure why she is so enthusiastic until I learn that she's afraid of heights. The river makes a tight horseshoe bend, and by hiking through the Sawtooth, a jagged series of Wingate spires, we can cut off several miles. The route takes us through a notch in the cliff and along a narrow bench high above the river. From below, the trail through the Sawtooth resembles a string glued to the side of a cliff.

"If I don't lead, I won't be able to do it," Seaweed confesses.

It doesn't look like anyone has used this trail since last year. While not exactly a sheer drop off, stepping off the trail would send you on a five-hundred-foot slide. It's fine if you don't look down. But Seaweed looks down and comes to a halt at the worst spot. Confused and on the verge of panic, she retreats behind a rock and wraps her arms around herself. But soon she gathers herself for the final push. She approaches the notch in the cliff that requires us to take off our packs, climb up a short section of cliff, and haul our packs up by rope. Seaweed breaks down and begins crying. It looks like she has given up. Everyone stands behind her waiting patiently. I give her some dried pineapple and mango (amazing what raising the blood sugar can do), and she pulls herself together and confronts the cliff. With flawless

cooperation we set up a fire brigade and quickly get everyone and the packs over the cliff. Taking a well-deserved break, we see a young male bighorn watching us from above.

It suddenly dawns on me that not only is Yucca silent, but none of the guys have spoken all morning. Patience declares that the guys are getting back at the girls for something. I doubt it, but it is interesting how she viewed silence as punishment or intimidation. For the most part, the women respect the silence and talk in low tones all day. I consider how one person influenced the entire group dynamic by simply deciding to be quiet.

After a lengthy traverse along the ledge, we drop down to the river and finally reach No Man's Canyon. As we turn and hike up the sandy wash, Seaweed grows concerned. "Is there any water up here?" she asks.

"I hope so."

Soon we encounter damp sand then a tiny trickle. "Do you guys want to camp here or keep going?" asks Seaweed.

"Let's keep going," responds a chorus of female voices while the men point upstream in agreement.

"Okay a ten-minute break then," replies Seaweed, clearly disappointed in the response.

She consults the map searching for strength and a way out of the corner she's painted herself into. For the most part, she has been a terrific leader over strenuous terrain. She has acted decisively in choosing routes across the creek and through the brush. She's been confident in setting times and keeping everyone going. This seems out of character and has been a pleasant surprise since she has previously shown little enthusiasm for hiking.

But she has simply run out of whatever was fueling her all day. I pray for her to draw on some inner resolve and hold it together. She studies the map, buying time.

"Okay we've got three options: camp here, where there's a little bit of water, or it looks like there's another place a mile down, or our last option is another mile and a half. So does anyone want to camp here?" she asks.

"Let's keep going."

I try to avoid influencing her decision-making process and pull my hat down over my eyes and lay down on Banjo as a pillow.

"Sundog, what do you think?"

"It's your decision," I reply.

"Well, I'd like to camp here. I think this is a really beautiful spot and I'm tired, but other people want to keep going. Does anyone want to camp here?" she pleads.

This time she receives "yeah, sure," and "it doesn't make any difference," and nods from the men.

Fifteen more agonizing minutes later Seaweed announces, "Ok, I think we should camp here. Does anyone have any objections if I go look for a site?"

When we reach the nearby campsite, she drops her pack with a thud and says, "That's the hardest thing I've ever had to do."

As the men end their silence (save Yucca), we give her a cheering round of applause for leading today's hike.

The wash splits our camp with half the group camped on either side. The rain begins just after dinner, and we gather under the alcove to have a dry meeting. No Man's Canyon is where we've decided to do our solos. After finding their individual sites, the students will remain on their own for the next forty-eight hours. In many ways the solos function as a rite of passage, marking the transition between adolescence and adulthood.

Metta elaborates on the solo concept: "Rarely in our culture do we get the opportunity to be truly alone. Those times we are alone, we quickly fill ourselves with distractions. We have the TV or radio on or are reading a book or are on the phone. Someone else is filling our heads. This is an opportunity, not just to be alone, but be in solitude, to have a reunion with yourself. By eliminating distractions, by going within, we can come to know the Other. We discover ultimate connections with the world. As Thoreau says, 'Not until we are lost, do we discover where we are and the full extent of our relations.' You can make it anything you want to make of it. It can be a personal vision quest or just a chance to sit quietly in your surroundings. The idea is to remain in one place with yourself, so I discourage bringing any books or doing any hiking. You'll get bored. But that's okay. Instead of trying to fill time, let time fill you. You might get scared, feel frustrated, contented, and joyful. Let yourself be exposed to all these emotions. There's nothing to come between you and your emotional state. Seek 'sympathy with intelligence.' By fasting and being alone in the wilderness, you might find the self dissolves and you discover your place in the universe."

Metta passes out small votive candles. "If you get lonely, you can light one of these for companionship. I like to think of it as my friend who's always there when I need her," she says.

The rain gradually increases, but we think nothing of it until Huckleberry says, "What's that noise?" A sound like the rumble of a faraway train pierces the night. We simultaneously share the same thought and jump up. As we reach the creek, the beams of our headlamps reveal a swirling bulwark of water bellowing down the canyon.

"My food's over there!" cries Bobofet, and he leaps across the stream just in front of the surge of water. The rest of us step back from the bank as the trickle of water suddenly turns into a raging river. "All my stuff's over there too," says Seeker. But it's too late. He attempts to wade across, but just a few feet from shore the water reaches his waist. A seething mass of brown water,

sticks, and logs hurls down the streambed; it's apparent that no one will be crossing anytime soon. We can see by the cottonwood now in the middle of the river that the water is more than six feet deep. We retreat to the alcove and take inventory. Those with sleeping bags give up their pads, tents, and extra clothes to those without. We tuck ourselves under the alcove and manage to spend the night in some degree of dry comfort.

The next morning the water is still high, and it isn't until afternoon that the water recedes enough so that Bobofet is able to return. We shuttle everyone's gear to the alcove. By the second day the water level has dropped enough that we are no longer trapped.

While the students search for their solo sites, I stroll up canyon. Walking up No Man's Canyon is like visiting an old neighborhood. As I pass former campsites, I recall the people who were there and some of our adventures. Banjo trots right up to the old sites, nose twitching. How much does she remember? Undoubtedly, she recalls the places. Can she remember all the people who fed her or petted her? Does she associate events with locations, the way I do?

I check our previous camps to see how they have fared after our visits. They are all recovering nicely. The first year we camped at this site, it was bare sand; the next a host of evening primrose had taken over. Now it's so overgrown that you wouldn't even think of camping here. At last year's camp, the only signs that anyone had been here are a few flat rocks strategically placed as if to sit or cook on. The cryptobiotic soil hasn't colonized it yet, but several forbs (mostly mustards and globemallow) grow in what was once a sandy footpath. The alcove itself has changed from what I remember; it seems smaller. It looks like the sand has blown in and filled a good portion of it.

Farther up, two species of willow crowd the streambanks; horsetails and rushes are moving in; bunch grass flourishes. Purple scorpionweed and orange globemallow dot the trails. Fields of peppergrass, carpets of primrose, serviceberry, and penstemon are all in bloom. Lavender cave primrose dangle from seeps in the canyon walls.

Although the sky is blue, it rains in bursts and fits. Small clouds rip past on the wind and indicate a warm front is pushing this rainy, grey weather out. This canyon drains a vast area. The numerous branches veer off like a lupine leaf—three main forks and one hidden fork all funnel down to a constricted main branch—explaining the tendency of this canyon to flash flood. No Man's Canyon meanders through the Wingate in tight bends with extensive benches and alcoves. It soon becomes choked with boulders.

Pushing through a willow thicket, I come upon a scene from Tahiti: a small moss-covered waterfall plunges into a deep, clear pool. I don't know whether to jump in the pool or take a shower under the waterfall.

I stare down at the pond. Blue dragonflies patrol its margins. A predaceous diving beetle, black with yellow spots, quickly submerges out of sight. Whirligig beetles (genus *Gyrinus*) race around on the water surface like dozens of tiny black bumper cars. Their eyes are split horizontally so they can see through the air above them while viewing the water below. Holding their antennae on the water surface to detect ripples, they discern where other beetles are or where prey might be struggling. Like a bat's echolocation, the ripples from the whirligig's own movement bounce back from other objects on the surface, allowing the whirligig to place itself in space.

A few feet away, a violet-green swallow skims the surface of the pool picking off fat water striders. Like the beetles, water striders use ripples to find prey, detecting vibrations through the hairs on their feet. The strider rushes over to its prey, jabs its beak in and immobilizes it with a poisonous digestive juice that enables the strider to suck out its prey's insides. Miraculously held aloft by surface tension, the striders race around in a mating frenzy. I often find myself drawn more to their reflections than the actual creatures themselves. The indentations made by their feet on the surface magnify into saucers when looking at their shadows. The striders glide about on the margins of two worlds—not of air, not of water. Imagine spending your life peering through a plate glass window and never being permitted to enter.

I consider that if I jump into the pond, not only will I be disturbing all these creatures, but my body oils, sunscreen, and insect repellent will be introduced into this tiny ecosystem, polluting the water and damaging many of the organisms I can't see.

The potholes in the slickrock are even more delicate. When filled with rainwater, these pits in the rock explode with life. In just a few hours, eggs hatch and crustaceans and insect larvae emerge from dormancy out of the sediment in the thin skin of soil at the bottom. Algae begin to grow, and microscopic rotifers eat the algae. Worms and crustaceans, such as fairy shrimp, feed on the rotifers. Snails, shrimp, mites, and insects all rush to eat, grow, mate, and lay eggs as quickly as possible before the pothole dries up. The shrimp only need two weeks to complete their life cycle. The beetles and striders, on the other hand, need a continuous source of water as they will overwinter as adults.

A small waterfall (just the right height for sitting under) feeds the pond. I'm surprised by how warm the water is. Standing on a rock, I peer over the waterfall. The creek runs across a bed of Kayenta sandstone and is heated by the sun—how idyllic. Behind the falls, moss drips with water. A red-spotted toad, no bigger than a nickel, hops along the rock shelf.

I boost Banjo up above the waterfall and then realize that I will have to lower her back down. So she will have to come with me all day instead of

returning to camp on her own as she often does. Where the Kayenta ends, so does the water. Rainwater percolates through the Navajo formation, hits the hard layer of Kayenta, and is forced out in a perennial spring lined with leafy thistle and clematis. We enter a wide canyon lined with buffalo berry, ephedra, sumac, and prince's plume, quite a change from the riparian zone downstream. Like stinking milkvetch, prince's plume indicates selenium in the soil. This three-foot tall plant is quite distinctive with its yellow flowers that wave in the breeze.

This landscape is enough to make one seasick—it's all up and down and sideways jumbled. One canyon is below me, and I'm here in a much larger one. Canyons stacked upon canyons. Curved sweeping walls of Navajo sandstone dripping with desert varnish compose the skyline in all directions. We encounter a pile of boulders. Knowing Banjo won't be able to scramble up, I tell her to stay. After the boulders lies a sandy wash that terminates in a great bowl at the base of an immense Navajo alcove ringed by a horizontal seep. Water from the storm poured off the cliff and scooped out a giant sandbox. The wind rippled the sand and the recent rain soaked into the troughs darkening them while the sun dried out the crests. Two-tone stippled ripple marks are the result. The echo from the bowl is such that slapping my hand against the sand creates a loud reverberating drumbeat. A most magical place.

A few minutes later Banjo trots up having discovered her own route around the boulders. Huckleberry's afternoon peregrinations find him in the same place, and we head back to camp together. He expresses surprise when Banjo returns to her route around the boulders instead of following us. I'm glad Huckleberry showed up because even with two of us, lowering a sixty-five-pound dog down over the waterfall would be sketchy at best. I worry that she might try and do it herself and skitter right over the edge. Just then we hear the sickening sound of claws scraping across the sandstone and look over the edge to see Banjo standing proudly at the bottom wagging her tail.

"I wish she wouldn't do that," I say.

We encounter Seaweed who had searched unsuccessfully down canyon for a solo site and is now looking upstream. Unable to decide on a spot, she finally settles under an overhang near camp. Finding a solo site can be an arduous process. Where does one want to spend the next two days? Each site offers something different. I can sympathize. I'm often plagued with the same indecision when trying to decide on where I want to live. How do you know when you've found *the* place?

The next morning, the students leave for their solos. Seeker hugs Bobofet before leaving, starting a trend among the men.

“Look at that!” exclaims Patience in astonishment.

With the students settled into their solo sites, it’s my turn. With no particular destination in mind, I allow myself to be pulled by the kachinas of aimless wandering. I climb a scree slope where rocks balance precariously. One large slab, balanced on a single point, teeters when I step on either side. A piece of pale-yellow Navajo sandstone like a giant mushroom looks like it might slide down the Kayenta ledge at any moment. It’s like walking through a gallery of gigantic sculptures.

I follow a coyote’s tracks up a side canyon. I nearly step on a backbone lying in the wash. “A bighorn?” I think, noting the arched back. The jaw bone lies nearby. I soon find the horn sheaths but no skull. A young male brought down by a mountain lion perhaps?

Startled at my find, I stop to contemplate the scene—death in the desert. Is this a sign? Have I found *the* spot? Was I led here by these tracks? What to make of these horns? Was I meant to find them, to take them? What is their significance? As I begin to ruminate on life and death, I notice that the coyote had defecated right on the sheep’s spine. “Not very respectful,” I think. “How like coyote to take a dump right on death.”

“The trickster teaches many lessons,” says an interior voice.

“No. Coyote shows us something. It’s up to us whether we learn anything from it or not,” I argue. I wonder if I’ve been taking myself too seriously lately.

I enter a small side canyon that descends into a slickrock toilet bowl, a horizontal arch carved by rushing water, known as a pothole arch. I drop through the lid into the bowl and settle down on the smooth rock tucked between the swirling sandstone cliff and a juniper huddled out of the wind. When the wind blows, sand and small rocks rain down on me.

With my finger I follow patterns of rock colors unashamed of their peculiarity. Junipers proud of their twisted nature. Brazen prickly pear and knobby ash. Soil bare and exposed, canyons laid open and naked.

The shadow of the overhang moves across the slickrock marking the passage of time. The warm rock feels good next to my bare skin, and I curl up in the embrace of a slickrock cradle, a fluted venue carved by runoff during the occasional storm. My body fits perfectly into the polished sandstone. I lie back at a forty-five-degree angle and watch the clouds roll by. My back, rump, and legs are all supported, like floating in amniotic fluid. I absorb warmth from the rock below and from the sun above. I could lie here forever.

The first thing I notice is the quiet. No voices, no human energy, and if I stay quiet long enough, I blend into the rock. I can hear the rocks crack and move and shift as the canyon settles. A side-blotched lizard inches its way down the twisted trunk of an ash. It reaches a rock and does a few

pushups. These lizard pushups have long intrigued me. When two lizards meet, they face off a few inches apart, each pumping up and down several times. Then one lizard runs off, sometimes chased by the other, more often not. In some species, the males sport a bright blue patch under their throat and the pushups could help display that patch to rival males or to attract females. In species without a throat patch, it could be a form of posturing much the same way a cowboy swaggers into a bar.

This lizard, however, is pumping with no other lizards around. Some speculate that it may also be physiological. Just as a fish needs to keep moving to push oxygen through its gills, lizards might need to keep their blood moving when they stop. This little lizard gives a couple of pushups and then runs on, pauses and does a few more. Unlike primates, lizards' eyes are on the sides of their heads, thus they lack parallax vision and depth perception. Only when something is moving can a lizard gauge how far away it is. Or when the lizard itself is moving. Deer bounce to look around and get a sense of depth. Could it be that lizards do pushups for the same reason?

I watch as the lizard forages, scraping loose sand in search of food, not unlike a towhee scratching the ground. Then it jumps up into a lupine and starts licking tiny insects off the leaves. Lizards are supposed to run along the ground not dangle from vegetation like monkeys.

The longer I spend out here, the simpler life becomes. As the day warms, my thoughts become slow, reptilian. I begin to think in terms of sun, shade, and water. Even food seems an extravagance.

An over-eager hummingbird startles me awake at dawn as it attempts to feed off my purple sleeping bag. A canyon wren mocks. A flycatcher sounds off. While I meditate, a cottontail hops up and sits next to me. Then it hops around behind me, munches on some rabbitbrush, and skitters off. The rabbit soon returns and sits on my sleeping pad. For a moment I contemplate the notion of making a mad lunge for it and having roast rabbit for breakfast. But watching it groom itself in front of me, I realize it's more meaningful to me alive. I'd rather go another day without eating than kill this creature with its big eyes and soft fur. Its sheer vulnerability is disarming.

What is the significance of this visit? When you are visited by a wild animal first thing in the morning, it must be a good sign. What is it about encounters with wild animals that makes us feel so blessed as if they are somehow reaffirming our existence?

The low-angled morning light highlights strands of spider silk stretching between the scant branches of the single-leaf ash growing out of the center of the slickrock bowl. Like the juniper, the ash appears half dead. Many branched, desiccated limbs twist skyward. Thinly distributed, heart-shaped,

waxy leaves provide meager shade for the twinberry growing at its base. Seeking water, the ash sends a thick root across the rock, snaking down over the lip and along the roof of the overhang. It drops into a pool, soaking up available water long after the last rain. A surreal effort to sustain green life. But how did the tree survive until its giant root finally reached water? And even more perplexing how did the ash know to send its root in the right direction?

I am no longer surprised to see trees, deciduous ones at that, growing straight out of a crack in the rock, yet it continues to amaze me. I attempt the yoga tree pose and wobble uncertainly. The world appears too jumbled to grow straight up. The angle is all wrong. I'd send my roots deep into a crack to anchor against wind and gravity too. Not coincidentally the crack serves as a convenient funnel for water, much more important than soil. In the rainforest, epiphytes, or air plants, live in the crooks of trees. Is there a word for rock plants?

Not unexpectedly, along the canyon's north aspect, ash, ephedra, and mountain mahogany bunch the watercourse. One can trace the water's path down the slickrock and talus by connecting the green dots.

An Eaton's penstemon grows right out of the slickrock. Fine-grained sand dusts its pubescent leaves; red tubes hang down as if ashamed of their brilliance in this stark land. Suddenly a hummingbird appears and probes each blossom inserting its bill the full length of the flower.

The gnats and black flies are out, and I climb from under my little overhang to seek the wind. I traverse a small shelf surrounded by domes of sandstone like swirls of raspberry ice cream and enter a flat area. The cliff rises on one side, and the other three sides drop off two hundred feet. A very gnarled and stunted ash, a bonsai created by time and wind, grows out of the rock. This little space resembles a Japanese garden. Yet garden is the wrong word, for this has never been pruned nor cultivated by humans; it exudes wildness. I get the eerie feeling that no one's ever been here before. I look around for a sign, a pottery shard, a piece of burnt wood, anything to signify human presence. Nothing but the wind through the rock. There is indeed something terrible and beautiful about these places of human absence as Stegner noted when describing the Dirty Devil, "a vast and terrible desert such as Christ and the prophets went in." I walk around avoiding the thick, crenelated cryptobiotic crust. I feel that even my footprints are a desecration. There is no way out but the way I came.

I look for a place to sit, but every place seems too sacred. Finally I plop down against a rock in a little cove. The contents of my pack come spilling out. Around me, I create my own space, separate and comforting. Water bottle and binoculars on one side, raincoat on the other; I've insulated myself just slightly. I reach down and pick up a piece of milky chert, unusual among

all this sandstone. Turning it over I realize it's half of a hide scraper. I hold it in my hands, somewhat comforted.

Come nightfall I walk up the creek bed barefoot and soundless. The fallen silver cottonwood leaves, I'd never before noticed, reflect the moonlight like thousands of silver dollars. I walk up to an old cottonwood embracing a large rock at its roots, a sublime still life. The thick root snakes horizontally along the canyon wall instead of plunging vertically into the soil. I sit by the tree. The evening is so beautiful I nearly burst into tears. I can feel my heart expand, pushing against my chest seeking to burst free of bodily confines and free-fall through the universe. I feel as if I love someone so much, so deeply that my heart will burst. Yet there is no object for my affection, no one being, not even this tree. Nothing, save a pervasive and all encompassing compassion. I feel diffuse and scattered, alone and beyond words.

We converge on the third day. By previous agreement we remain silent until everyone returns from their solo. One by one the students filter back. Yucca arrives with his head shorn. His scalp looks rather odd with knobby protrusions where his dreadlocks once were. We gather around the fire pit Metta has prepared. Yucca has been working on his bow drill, and he begins the magical process of creating fire. He places a spindle of cottonwood about the size of his index finger on top of a flat fireboard. The fireboard has a notch cut where the punk can fall out. Using a willow bow and a length of rope, he spins the spindle back and forth while pressing down with a hand socket cut from tamarisk. Soon we smell smoke rising from the fireboard. He stops and pulls away the fireboard revealing a pile of glowing punk. Yucca leans back on his heels to catch his breath.

After carefully scraping the coal into a prepared tinder bundle of cottonwood bark, he gently blows it to life. Smoke curls from the tinder. Then it bursts into flame. He drops it into the fire pit and we cheer.

We begin hauling wood to build up the fire and then pile on grapefruit-sized rocks. After several hours the rocks will be extremely hot, and we will transfer them into the sweat we have constructed out of willows and sleeping bags. This sweat lodge ceremony symbolizes our reconnection with each other after our solo journeys.

I can't help but feel some apprehension about appropriating a Native American ritual, considering that we've already appropriated their land. After attending several Native American sweats, I asked one of the elders, a Blackfeet pipe carrier, what he thought of white people borrowing the sweat lodge ceremony.

"As long as it's done with respect. You know, we are all in this together; we are all brothers and sisters. Anything that helps people connect with the earth is a good thing," he told me. "The only thing I have problems with is

these people who use the sweat to make money. You know, they charge people to have a 'Native American experience.' If they want a Native American experience, they oughta come up to the res. The sweat should not be used for money," he added.

Nevertheless, I feel uncomfortable in mimicking a Native American ceremony. Thus we construct the sweat and abide by the rules of the sweat, but create our own ritual within. I once sat around a campfire with elders from several different tribes and listened fascinated to their debate. It seems that there really is no set sweat lodge ceremony. Everyone's grandfather did it differently; it varied from tribe to tribe, from generation to generation. Tribes also borrowed freely from each other, incorporating their own traditions. I wonder if in some ways it isn't more appropriate to immerse ourselves in Native American ideology now that we are inhabiting this continent rather than imposing old world religion upon Turtle Island. Wouldn't the ceremonies of the people who've lived here for a thousand generations bring us more communion with this place?

When the rocks are hot enough and the sweat is ready, we gather and smudge with sage. Metta elaborates on the sweat: "Through all of our efforts and energies, we create this sacred space. The sweat is shared sacred space, the same way our stories are. We use the sweat to reconnect with ourselves, our origins, our ancestors, our planet, and each other. We fast to cleanse and purify our bodies and mind. We sweat to complete that purification and unite our bodies and souls. We experience hunger and uncomfortable heat so that we may appreciate all that we have and give thanks. Dark, warm, and moist the sweat symbolizes the womb, Mother Earth. When we emerge, we are symbolically reborn."

The women circle the sweat sunwise and enter while the men tend the fire outside. We hear muffled voices, then silence. Shortly thereafter singing and chanting resonates from within. They emerge dripping with sweat and plunge into the creek laughing with relief.

As the men prepare to enter the sweat, we deposit our offerings at the altar I set up, a flat rock flanked by the pair of bighorn horns. It's dark and cramped inside. Pouring water on the hot rocks quickly elevates the temperature. I feel my pores open wide and beads of sweat form on my skin. Soon rivulets of sweat run down my forehead and into my eyes. I'm being flushed from the inside out.

We evoke the four directions and welcome the ancestor spirits. We offer thanks for the willows, for the food we all thought about while fasting, for healthy bodies, and for the people in our lives. We offer thanks to our parents.

Seeker says, "I'd like to offer thanks for my dad and my moms who raised me." He pours water on the rocks that instantly turns to steam. "I call

them my moms—they're the women my dad lives with in the commune—but I didn't know my real mother for the first eight years of my life," he continues. "I was conceived on the second floor of a Rajaneesh ashram in Punjab. My parents then followed the Rajaneesh to Oregon. My dad became disillusioned with all the apocalyptic preaching and left with me, but my mom stayed on."

Bobofet says, "I'd like to offer prayers for my sister who was killed by a drunk driver. My dad couldn't deal with it; he became an alcoholic, maybe he was one already. I guess it was too much for him, and he abandoned us. I haven't seen him in ten years. I don't even know if he's alive. But I offer prayers for him too, wherever he is."

For the first time in a week, Yucca speaks: "You guys are probably wondering why I cut my . . . accck." His voice cracks and he clears his throat. "I wanted to wait until the sweat to break my silence. That's weird hearing my voice again. Anyway, during my solo I went down to the creek and saw my reflection and decided it was time to stop hiding. I was hiding behind my dreads, so I took my knife and cut them off one by one. I put them on the altar as an offering. I dug up a yucca root and made some shampoo and washed my head.

"When we divided the sweat along gender lines, I wasn't sure where to go. I guess I've always had these feminine traits. I always played with girls and dolls. I guess it upset my old man. He was always telling me to stop crying and act like a man. But I don't know what it means to act like a man. When I was in junior high, everyone called me a faggot. I didn't know why. But at some point I realized that women don't hold any physical attraction for me. I mean, I don't know for sure if I'm gay or not. I've never had any sort of sexual relationship. But I figured it was time to stop pretending I was something I'm not."

"That takes a lot of guts, man," says Huckleberry.

WINGATE

If the Navajo is female, then the Wingate is surely male, with its sharp right angles and sheer cliffs that erode into pinnacles. The Wingate cliffs form a rampart of colossal stone soldiers.

It is through the cracked ones the light comes through.

—Hindu Proverb

The students want to get an early start to avoid the heat and decide to get up at 5:30 A.M. We shoulder our packs as the sun first tinges the canyon rim. The mercilessly blue sky promises a long, hot day. The river strips away the rocks as we descend, opening up layer after layer of cuticle for our inspection. With each bend in the river, we cut steadily through the Wingate as we alternate between hiking the sandy benches, wading through the river, and fighting through tamarisk.

We pause for lunch against a sheer wall of Wingate streaked with desert varnish. Dark-green lichens betray its north aspect. As the sun begins to creep up, we seek shelter under the big blocks of sandstone. Patience pulls out a large plastic bag full of energy bars.

“Good Lord, how many bars do you have?” asks Metta.

“Three per day, but I started with forty-five.”

Everyone is tired of their particular brand, and so we trade. The students continue their endless debate about energy bars, the flavors and benefits of each. Huckleberry and Mud agree that Luna bars taste good, but use a cheap marketing ploy aimed at exploiting women’s insecurities. A final consensus seems to be that they are all overpriced and too small.

There’s much less accord about our next move. A few people, including Seeker, today’s leader, want to continue on with the goal of reaching the mouth of Twin Corral Box Canyon. A few others want to wait out the heat and resume hiking in the evening. About half are too hot, tired, and ambivalent to care. Finally banking on my insistence that the brief appearance of mares’ tails this morning indicates clouds and rain, a compromise is reached—we will rest another hour before continuing.

An hour later, dark clouds loom over the cliffs, yet it is still sweltering. Nonetheless, Seeker musters everyone, and we begin the long march to

Twin Corral. Around the next bend we encounter the Chinle formation and, not coincidentally, evidence of an old roadbed. This road hasn't seen the passage of a vehicle for over forty years, and while we can still make out the berm created by the dozer blade, little else remains. Rockfall and gullies have long since made it impassable to any vehicle. In places rabbitbrush and tamarisk have obliterated all signs of road. This was never really a road so much as a bulldozer scraping a path of optimism across the desert, not unlike other hubristic attempts such as the plan to build a railroad along the Colorado River through Glen Canyon just downstream of us.

In the 1880s when Cass Hite went looking for gold along the Colorado River, he found gold flakes near the mouth of the Dirty Devil. He also realized that this was a good place to cross the Colorado and called it Dandy Crossing. Hite publicized the crossing and the gold discovery, speculating that Glen Canyon would be the next big mining boom. Numerous prospectors found their way down into Glen Canyon and established a few productive placer and sluice operations. Following McKinley's election on the gold standard, prospectors began pouring into Glen Canyon. By 1889, more than a thousand miners were feverishly working the fine sand in hopes of striking it rich.

The discovery of gold in Glen Canyon made the notion of a railroad along the Colorado appear financially feasible, regardless of the canyon's challenging topography. Frank Brown, president of the Denver, Colorado Canyon and Pacific Railroad Company wanted to continue the line from Grand Junction along the Colorado and over to California. Brown and his chief engineer, Robert Stanton, floated the Colorado to investigate. However, they neglected to bring life preservers, and just below Lee's Ferry, Brown was caught in a whirlpool and drowned. The notion of a railroad along the Colorado died with him.

Stanton, however, had seen enough to envision a grand scheme: a series of floating dredges along Glen Canyon to extract gold, powered by hydro dams built in the side canyons. His crew staked one hundred and forty-five claims along one hundred and fifty miles of river. In 1900 Stanton brought in the first dredge, shipped in pieces to Green River and hauled by wagon to Glen Canyon. At one hundred and five feet long, the dredge got stuck on submerged sandbars and the silt gummed up the machinery. His one hundred thousand dollar investment yielded sixty-seven dollars before he gave up and abandoned the dredge.

The gold was so fine that it tended to float, and no technique had been devised to capture the tiny flakes. But in 1909 Charlie Spencer hit upon a solution. He would employ a pneumatic pipe dredge with high pressure hoses to dissolve the gold-bearing Chinle and then trap the gold with mercury. However, the operation required a lot of coal for power.

Spencer discovered coal on Warm Creek and hauled it by wagon twenty-eight miles to the river, where he loaded it on the largest boat to ever float the canyon. The steamer, *Charles H. Spencer*, also ran into sandbars, but its biggest hurdle was that it required almost a full load of coal to power back upstream. Spencer then devised a tow barge to haul the coal. However, the silt interfered with the mercury so that it was unable to absorb the gold, which slipped away and back into the river. In 1915 the *Charles H. Spencer* sank.

As we follow the road grade, the Chinle becomes more evident, a rainbow of dirt. Reds, yellows, greens, and blues erode from under blocks of sandstone creating pedestals and podiums for giants. The heat adds to the hallucinogenic quality of this Goyaesque landscape. We round another corner, and I recognize a finger of Wingate along the sawtooth wall that separates Twin Corral Canyon from the Dirty Devil. We reach the mouth of the canyon in time for a dip in the river before the mares tails fulfill their promise and deliver clouds, wind, and rain.

A party of rafts floats by. I wonder how they will respond to a bunch of muddy, naked people frolicking in the river. But the scene is so innocent and natural, they stop to chat.

“What are you doing for water?” a man asks.

I consider this a rather bizarre question from a man floating in the stuff.

One woman offers us water from Salt Lake City. We quickly dump out the brown Dirty Devil from our bottles and fill them with clear, chlorinated water hauled by petroleum from hundreds of miles away.

Loath to set up a tent after our long hike, I crawl under a tilted boulder and fall asleep watching the lightning as wayward raindrops sprinkle my face.

It remains grey and overcast the next morning. Everyone appears listless, a combination of yesterday’s march and the weather. Bobofet shows up late, misses breakfast, and is visibly distraught. Throughout the hike, he is in a foul mood, unusual for him. I think he’s taking the breakfast thing a little too hard and run through scenarios of what he will say this evening and the different responses I could offer. The canyon narrows with no apparent campsites. Huckleberry, who is leading, is far ahead. Too tired to continue, however, everyone else simply plops down in the creek bed and proclaims this as camp. After our two-hour hike, Bobofet collapses on his stomach. Metta tells me that his hips are in pain from a snowboarding injury, and that he downed lots of medication in order to hike. Once again I’m reminded of the bizarre realities that we create in our heads. We start to inhabit those realities and that blinds us to what is really going on.

“Have you noticed Sage lately?” Metta asks.

“What do you mean?”

“She glows, this radiance comes out of her.”

“Come to think of it, yeah, you’re right. And Seaweed actually looks at you instead of at the ground when she’s talking.”

After breakfast the next day, we investigate our surroundings. Although we still find an occasional primrose, everything is going to seed now, ephedra, sumac, and penstemon. Purple scorpionweed produce long strings of black seeds. The cottonwood seed pods have burst open and a soft down floats on the water. The tamarisks grace the breeze with lacy fronds of pink and white.

We seek refuge from the sun under an overhang. Piles of droppings, both fresh and dried, litter the ground.

“Hey, are these rabbit?” asks Patience.

“I don’t know; let’s check it out. Rabbit droppings are round and tan. These are more oblong and brown,” I say, holding up a pellet for inspection.

“Deer?” posits Mud.

“Seems like a strange place for deer to be hanging out,” says Huckleberry.

“Hey, check this out,” says Seeker from outside the overhang. “I was taking a leak over here and look . . .”

We peer down into the small gap created by two boulders leaning against each other.

“There’s something in there,” Seeker adds.

He and Huckleberry crawl inside. “They’re a couple of bighorn skulls here. Adult males with full curls,” says Huckleberry.

“They’re half buried. Looks like they’ve been here for years,” adds Seeker.

“How did the sheep get down in there?” asks Patience.

“And why two?” asks Sage.

“Do you think the Fremont set them there, like an altar or a ceremony or something?” asks Mud.

“I don’t think they are that old,” says Huckleberry emerging from under the boulders.

“Still, in this climate, they could be,” says Metta.

“Do you think they could have locked their horns together and pushed each other off that cliff?” asks Yucca, pointing to the cliff above the overhang.

“Or maybe there was one badass bighorn who used that cliff to push off rival males,” suggests Bobofet.

“But how did they get under that rock?” asks Patience.

“Maybe a mountain lion dragged them there,” suggests Metta.

“Maybe a mountain lion knew that bighorns hung out under that overhang. I mean that’s probably all bighorn scat under there, right? And this mountain lion pounced on them from above,” says Sage.

“Or maybe it’s just where bighorns go to die. Sort of like a bighorn graveyard,” says Seaweed.

“Could it just be a coincidence?” asks Mud.

“It is a little odd to find all this scat in one place and then find two skulls nearby,” I admit.

“Do they hunt them here too?” Mud asks suspiciously.

“No, the population can’t take it. While they only counted forty bighorns in the Dirty Devil in the last census, the Department of Natural Resources estimates there are seventy-five sheep here. They occasionally augment the population by bringing in a few more sheep from elsewhere and dropping them in Sam’s Mesa. But the population just hasn’t taken off and will probably need more animals transplanted to reach a viable level. Although that carcass I found in No Man’s Canyon indicates they are expanding their range,” I say.

“If their range is expanding and this seems like ideal habitat, there’s no competition from livestock and no hunting, why is the population so static?” asks Huckleberry. “Are they not reproducing?”

I shrug. “No one knows. It’s hard enough just to count the sheep that are here, much less try to determine what’s going on with them.”

“Maybe the transplanted animals don’t like it here; they’re used to some place else,” Sage suggests.

“Maybe. Part of it may just be a factor of the low population itself. When you get into these low population levels you encounter all sorts of problems: male-female ratios become skewed, breeding individuals can’t find each other, disease, inbreeding, predation. If just a few crucial individuals die, it can mess up the whole herd,” I indicate the horns below.

Back under the overhang, Yucca finds what he considers to be bat guano.

“Oh, yeah, that’s amberat,” I say.

“Amberat?”

“Yeah, pack rats combine their feces with urine and create this tarry stuff,” I clarify.

“Yech,” says Seaweed, wrinkling her nose.

“It’s pretty cool actually. The pack rats incorporate all sorts of other materials, like cactus spines and pine needles into the amberat and build middens. The middens protect them from predators. The really cool part is that the sticky amberat acts as a pollen and insect trap, and it’s resistant to weathering. Each generation of pack rats adds to the midden, so the middens provide an ecological record. Based on pack rat middens we know what the Colorado Plateau was like during the Pleistocene.”

“Sort of like a time capsule?” says Mud.

“Exactly. Ecologists have found pack rat middens dating back forty-five thousand years. The middens tell us that up until ten thousand years ago, Engelmann spruce, subalpine fir, and limber pine, species now found at higher elevations, dominated the Colorado Plateau. This indicates a much wetter climate. As the climate dried, Douglas fir and ponderosa pine took over. Then about five thousand years ago, Utah juniper and pinon pine became prevalent in amberat. That’s about the same time that hunting and gathering replaced big game hunting.”

“Do they find any animal remains in this stuff?” asks Patience bending closer to the midden.

“Some—mostly bones of rodents the pack rats have stashed. Sometimes the feces of other animals. You can imagine how many centuries of bighorn scat is beneath us. Down in Glen Canyon, they discovered a cave called Bechan, which means ‘big shit’ in Navajo. It was full of Pleistocene dung including Colombian mammoth and Shasta ground sloths.”

“That’s some big shit,” jokes Yucca.

“Hard to believe that mammoths and ground sloths were running around here,” says Bobofet, gazing out at the desiccated landscape.

“They had company too. The North American lion, long-horned bison, saber-tooth cat, camel, dire wolf, and jaguar all lived here ten thousand years ago.”

“That doesn’t seem that long ago, really,” says Patience.

“How big’s a ground sloth, anyway? Aren’t they those huge things they found in La Brea tar pits?” asks Yucca.

“The Shasta ground sloth was nine feet long and five hundred and fifty pounds, and the Harlan’s ground sloth stood twelve feet high and weighed over eight hundred pounds.”

“No wonder they went extinct,” says Bobofet impressed.

“Actually the Shasta ground sloth would do quite well in current conditions. At Bechan Cave the sloth’s baseball-sized pellets revealed that it ate globemallow, Mormon tea, yucca, cactus, salt bush, and mesquite.”

“So what happened?” asks Mud.

“Aren’t they now saying the Native Americans killed off all the big mammals?” asks Patience.

I nod. “Uh huh, the ‘overkill hypothesis.’ Ecologist Paul Martin suggests that the arrival of humans in various places around the globe has coincided with extinctions of large animals. In North America skilled hunters arrived in a continent rich in big game and quickly moved through the landscape, killing off the species as they went. Large animals have a slow reproductive rate. So they could not sustain this onslaught from a predator they’d never before encountered.”

“But what about saber-tooth tigers and lions; it seems that people with spears would have a hard time killing them too,” says Bobofet.

“If all their prey disappeared, they wouldn’t have anything to eat,” says Huckleberry.

“Oh yeah.”

“Still, I have a hard time believing that a bunch of guys with spears would be able to knock off that many animals,” insists Seeker.

“So do a lot of other scientists. In fact, on the Colorado Plateau and Great Basin only mammoth and ground sloth remains show up at human kill sites. However, one hundred and thirty-five species went extinct over a relatively short time period of four hundred years. Small mammal species were unaffected. What else could cause that?”

“Well, like the pack rat middens show, didn’t the climate shift? It seems small animals would be able to survive the drier conditions. Doesn’t seem like there’s a lot for a mammoth to eat around here,” says Sage.

“Some scientists theorize that the oscillating glaciations of the Pleistocene destroyed the large animals’ habitat, driving them into smaller and more isolated patches. This spelled doom for species that were widespread but lightly distributed across the continent. Only those that could adapt, such as the pronghorn, bighorn, bison, and wolf, survived.”

“So why did they die off all over the world then?” asks Huckleberry. “Did people kill them all off in Europe and then follow them across the Bering Land Bridge and then knock them off here and all the way down to South America?”

“Could be. Another possibility recently proposed is that many of these animals died off from diseases brought by dogs and rats as they accompanied humans across the Bering Land Bridge. Just as small pox decimated the indigenous population, these new pathogens found a continent full of animals lacking immune resistance.”

“That still doesn’t explain why the megafauna went extinct in Eurasia,” insists Huckleberry.

“True.”

“Couldn’t all three be contributing factors? An unstable climate reduced the populations so much that humans were able to kill enough of them to keep their populations from recovering,” suggests Metta.

“Or vice versa,” adds Huckleberry.

“It seems that humans are just a plague upon the planet,” says Mud. “Humans killed off all those animals and now we’re killing off—what’s the latest statistic?—half the world’s species will go extinct in the next hundred years.”

“That’s the estimate. Twenty-five percent in our lifetimes. That’s between two and ten million species gone by 2020,” I confirm.

"I think it's presumptuous to assume we are endangering the planet," says Huckleberry. "We're overpopulated, just like deer on an island. We'll keep consuming until everything is gone. Then our population will crash, which may be a good thing. We may succeed in killing off ourselves and higher life forms, but the cyanobacteria will continue, and a few million years later other things will evolve."

"So environmentalism is pointless?" Metta asks.

"Essentially," he responds.

"But if people find out about these things, how destructive their lifestyle is, they will change," suggests Sage.

"Is it really lack of information?" I ask.

"It's easier to deny there's a problem than to change your behavior," says Metta.

"And people don't want to feel guilty. Either you're contributing to the problem or you're not doing enough to change it," says Seeker.

"All we can do is live our lives as an example. When people see that there's another way, that you don't need all these material things to be happy, they'll see that and think," says Patience.

"Is that all we can do?" I ask.

"Without making people feel guilty. And then they'll just deny there's a problem or do little things out of guilt," says Sage.

"What about fulfillment? Can you work for change out of a sense of fulfillment and well-being rather than from a sense of guilt?" inquires Metta.

"But it's so overwhelming. Global warming, destruction of the rainforest. How do you avoid despair?" asks Mud.

"I guess just by doing the little things that need to get done. Maybe it won't ultimately make much difference whether you ride your bike to school or drive, but the act itself is what's important. By engaging in these small acts, which are really forms of protest against the global juggernaut, you are honoring, not just the earth but yourself. Even if no one else is willing to do so, taking responsibility for our existence is a matter of self-respect. It's a practice, like minimum impact on a bigger scale."

"Still, half the species suddenly went extinct with the dinosaurs and life rebounded. Things evolved. And after the Pleistocene extinctions, life continued," insists Huckleberry.

"No doubt, tamarisk, Russian thistle, scorpions, and rats will all survive just about anything. But do we really want to turn earth into a planet of weeds? These 'edge species' or generalists do really well in disturbed environments. Deer, coyotes, chuckars . . ."

"Humans," adds Mud.

"But is that the kind of world we want to inhabit?"

"It seems like that's where things are headed. Even out here the exotic species are taking over," says Seeker.

"Yeah, it seems that everything we come across is dead," adds Bobofet.

"You know, I did think we'd see a lot more wildlife out here," says Patience.

"Well, after the Pleistocene extinctions, many mammals went underground, literally. Smaller species adapt more readily to changing environmental conditions. The shorter your life span, the quicker you can evolve. So dinosaurs, in essence, became birds, and mammals went back to being small and nocturnal. There are sixty-five species of mammals out here, twenty-one of those are rodents and nineteen are bats. You just have to redefine your concept of wildlife. Over sixty species of reptiles and amphibians inhabit the Colorado Plateau and Great Basin. We had the age of fishes, the age of reptiles, the age of mammals, maybe next is the age of insects. Over half the species on earth are insects. We have somewhere around twenty thousand species of insects on the Colorado Plateau. Utah has one hundred and sixty-nine species of ants. And big sagebrush hosts forty-six species of aphids. Although there's no longer any lions here, we can still see ant lions."

"Ant lions?" asks Patience.

"Yeah, let's see," I say, scoping the sandy floor of the overhang for the telltale pits.

"Here." I crouch down at a small inverted cone in the sand. "This is an ant lion trap. An ant walking along falls in here and can't get out because it's too steep. The ant lion, buried at the bottom of the pit, grabs it from below."

"Here's an ant," says Yucca, dropping it into the pit.

"No!" exclaims Mud.

Attempting to climb out, the ant sends a stream of sand grains down into the pit alerting the ant lion, who in a sudden flash catapults out of the sand and seizes the hind end of the ant in its jaws. The ant lion thrashes the ant back and forth, knocking it senseless, and pulls it back into the sand out of sight.

"Cool!" exclaims Bobofet. "Did you see that?"

Mud looks horrified

A few moments later, the ant lion flicks the ant carcass out of the pit, having sucked the insides out of its prey. I scoop up the pit and spread the handful of sand on a notebook. The ant lion's massive pinchers are clearly visible. "Take a look through your hand lens," I suggest. "See how all these hairs angle forward. That helps it lodge into the sand so it can pull its prey down. This is actually the ant lion larva, which lives for one to three years then hatches into an adult, which only lives for a month."

"Jezz, what's the adult look like?" asks Seeker.

"It's pretty innocuous. It looks like a damselfly and only lives long enough to breed."

The ant lion scurries backward across the notebook leaving a small trough. It drops off the edge and quickly disappears into the sand.

“You know, it looks disturbingly like Piglet,” says Sage.

As we drop down toward the creek, Banjo makes a curious prodding with her nose at the base of a cottonwood. Looking closer, I see a small bull snake clutching the leg of an enormous Woodhouse toad in its mouth. Judging by the toad’s size, it’s probably a female. We stand and watch in fascinated horror as the toad struggles pathetically to free herself from the snake who has a viselike hold on her leg. The snake, meanwhile, is simultaneously trying to prevent the toad from getting away while eating it. The snake twists itself upside down and wraps its body around a piece of wood to gain leverage while the toad manages to get on the opposite side of a small stalk of rabbitbrush.

“Look, it’s using that tree to pull itself free,” says Sage so wrapped up in the drama that the rabbitbrush has assumed immense proportions.

“That toad doesn’t stand a chance,” proclaims Patience.

“That’s an awfully big toad,” comments Seeker.

Seaweed can’t watch and walks away. The snake finally manages to swallow the toad’s foot and works its jaws up the toad’s body. The entire leg is inside the snake now. We all admit it’s just a matter of time. The toad continues to halfheartedly try to escape. The snake keeps working its jaws trying to somehow gain a purchase on the toad’s rear, which is too large for the snake’s mouth.

“That poor toad,” sympathizes Mud. “Shouldn’t we do something?”

“The snake has to eat too, you know,” says Yucca.

“I know, but it seems so cruel.”

“If a hawk swooped down and picked up the snake, would you feel bad for the snake?” asks Huckleberry.

“Well, no,” she confesses. “I don’t know. The whole thing is so confusing.”

Twenty, thirty minutes pass. Both animals struggle while we debate the ethical dilemma before us. As the snake reaches up for another bite, the toad suddenly pulls free and hops away with a mangled and bloody leg. Fatigued, she pauses at our feet. The snake is on her instantly. It tries to bite her, but can’t find a purchase and rests its head atop the immobile toad, both ectotherms exhausted from the struggle. Eventually the toad gathers energy and hops away. The snake, aware of our presence, slithers off, perhaps fearful it could become prey itself. How have we influenced the course of events? Would the snake have pursued the toad, or would it have given up anyway? Will the toad die of her injuries? What’s our role in all of this?

Unlike the larger Woodhouse toads, the red-spotted toads keep themselves well hidden during the day. We wait until evening when the toads

emerge from their root and rock refuges along the creek. Tadpoles nervously crowd the pools. Many have already sprouted legs in a feverish race to reach adulthood before the water dries up. As darkness approaches, the high-pitched croaking of red-spotted toads fills the air like dozens of ringing telephones. In contrast, the Woodhouse toad sounds like a baby crying. The small pools burst with red-spotted toads jumping on top of each other, not bothering with trivial details such as gender in their frenzy. Soon toads hop over from neighboring pools to join in, and nary a female in sight, as if someone blew a whistle and announced, "Orgy at the pool." The toads will continue to mate and lay eggs through summer, as long as there is water.

Later, Seaweed reads her essay, an intense and powerful piece about her freshman year at college. She describes the chaos of her dorm room through vodka-hazed eyes. Hung over, she stood naked in front of a mirror and examined her waif-thin body. She recounted her battlescars, twelve lines under her left breast, eleven under her right, fifty-six on her thigh, and words in bold capital letters—**FUCKMEHURTMELOVEME**—all incised with an Xacto knife. She poured rubbing alcohol over the fresh wounds to accentuate the pain. After the latest self-mutilation, she grew disgusted and ran outside in her robe clutching her cigarettes and knife. She found refuge under a tree and began caving into a sapling with her knife. Suddenly she realized what she was doing to the tree and to herself.

We sit in stunned silence when she finishes reading. Finally Metta reaches over and touches Seaweed on the knee.

"Are you all right?" she asks.

"Yeah. I've been working on it this whole time. The hardest part was reliving it when I was writing it. But it's been really cathartic. Every day that I'm out here, I just feel stronger. Thanks for listening."

Eating disorder—no doubt. She's still a finicky eater, although she has started eating breakfast and is putting on weight. Cigarettes—that would explain the constant out of breath on any hill. But self-mutilation? She sports two pierced ears, not lobes but entire ears, a pierced eyebrow, tongue, and bellybutton. I had wondered why she always wore long pants. However, the next day, she is wearing shorts. I steal a quick glance at her leg and notice that words are indeed imperfectly embossed on her thigh. I begin to see her in a new light. It's as if she radiates confidence and strength. Sharing her story, her secret and her shame, she no longer has anything to hide. Her vulnerability engenders respect.

WHITE RIM

A hard sandstone formed by barrier islands, White Rim marks the close of the Permian Age when ninety-five percent of all known animal species were wiped out in the most severe of the mass extinctions (thus far).

If the development of civilization has such a far-reaching similarity to the development of the individual and if it employs the same methods, may we not be justified in reaching the diagnosis that, under the influence of cultural urges, some civilization—or some epochs of civilization—possibly the whole of mankind—have become neurotic?

—Sigmund Freud

We leave Twin Corral early and cruise along the old roadbed at a good clip. The miles flow by as we hike along the Moenkopi bench while the river drops farther and farther below, cutting a narrow canyon through the dark-red formation. Everyone has quieted down and discovered that hiking doesn't require constant banter. The mining track stays even with the Chinle, and we stroll past hunks of petrified wood. Entire logs of stone erode out from the loose clay. Each piece is another marvel, a rock so beautiful and so completely useless that people load it into their pickups and place it around their patios. Luckily no one could possibly get a truck or even an ATV in here. We pass an entire petrified tree trunk lying on the ground. Unlike the solid, black petrified wood, this is composed of thousands of beige and white splinters.

"Is this all chert?" Sage asks as we examine a log.

"Essentially. Just like chert, the petrified wood is primarily silica. The logs were buried by mud or volcanic ash, and as they decomposed, their cells were replaced by silica. That's why you see the tree rings, bark, and knots. Water that is slightly high in pH can retain silica, but when the pH changes by encountering volcanic ash, for example, the silica precipitates out."

We hike past a spring surrounded with fresh bighorn tracks and fill our water bottles with the clear water. We break for lunch in the shade of vibrant orange blocks of Wingate. Although we still have a week left, everyone is running low on food. Seeker is down to one granola bar per day for lunch.

"I'd rather not eat for a week than go back a day early," he proclaims when others start talking about returning to civilization. We discover a fifty-year-old stash of blasting caps and tins of army food tucked into the crease of a boulder.

"Hey, do you think these are still good?" asks Bobofet, holding up an olive green tin of cheese.

"Only one way to find out," I shrug.

Bobofet pries open the can and tastes the orange substance inside. "Not bad. Anyone got any crackers?"

"This one says crackers on it," says Sage holding up another tin.

However, the tin has rusted, and water has seeped in turning the crackers moldy.

While Patience searches for a route down, I stroll along the cliff edge picking up and examining various pieces of petrified wood. I enjoy looking at these rocks. Each one is distinct with its own color scheme and pattern. Black and streaked with red, the centers often display a spiderweb of quartz crystals. I like their heft, the way they feel in my hand. I pop a piece in my mouth to heighten the colors. Black flares into grey, fades to white. Soon my hands are filled with treasures I am loathe to discard. I resist the temptation to slip them into my pocket knowing my proprietorship is temporary. Years ago after I'd filled my bookcase, table, shelves, and a box under my desk, I resolved to only keep rocks that would fit in my pocket. Nevertheless, when I reexamined these rocks at home, they seemed to have lost their luster. My memory of them was sharper than the actual object.

I see a piece of red chert and instinctively reach down, exchanging the petrified wood in my hand for an arrowhead. I look around. A strange place to find an arrowhead. A wide-open bench, extends forward and back as far as I can see. The Wingate rises sheer on one side and a three-hundred-foot cliff drops down on the other. Not exactly a place one would hang out and camp and make arrowheads—no water for one thing. Did a hunter drop it while he was walking along the rim, looking for a route down like we are? This spot is above the only reasonable route to the river. Or was this narrow constriction of the bench pinched between the Wingate and the cliff, a natural trap where a few hunters working together could drive game toward an ambush or even over the cliff?

Patience finds the route, and we drop off the bench. After slogging through the river, we pitch camp at a sandy wash at the mouth of Happy Canyon. The wind picks up as we cook dinner. The minute the wind dies down, the gnats take up the assault as if angered by the missed opportunity. The gnats leave a ring of small red welts along our hairlines. Then another

gust of wind drives sand into every pore, into eyes, ears, and food. Metta takes refuge under her sarong.

"I don't mean to complain, but it's times like this when I can't help thinking I'd rather be somewhere else. It occurs to me sometimes that I don't like backpacking. This isn't fun," says a muffled voice. "Do you ever find you don't like backpacking?" she asks.

"I can think of no greater pleasure than shlepping a sixty-pound pack for untold miles across a barren wasteland," I reply. "Still, it beats sitting in a cubical in front of a computer screen."

"With a nice latte and croissant," I add wistfully as another blast of wind pelts us with sand.

"It's times like this when I'm hungry and grumpy and miserable and it's windy and they're sand and bugs, or I'm cold and wet, that I find I'm truly present in the moment. I find that I'm grounded and really focused, and I have to simply attend to the task at hand. A bit twisted, I suppose," I say.

The wind continues all night. I scrunch down in my sleeping bag trying to avoid the sand, but then I get hot and claustrophobic. I drift in and out of dreams about cliff-climbing horses and cowboys drinking warm Budweiser and women tragically out of reach. I wake up thinking I've taken the wrong path in life.

The students have just finished reading Marshall McLuhan and Paulo Friere. We discuss how to relate their theories to environmental education.

"What is it about being outdoors that engenders liberation? What is the message of the medium of environmental education?" I ask.

"You learn to think for yourself," says Seeker.

"You see that everything is connected," adds Sage.

"Actions have consequences," says Yucca.

"Resources are finite," says Huckleberry.

"Community is important, if someone doesn't have enough food or gets sick, you have to take care of them," says Seaweed.

"You see what you're studying and can interact with it and ask questions," adds Patience.

"Learning doesn't stop when you leave the classroom," says Bobofet.

Mud says she has learned more out here than all her years at college. I'd like to take that as a compliment, but I know it's not me. It's the place—the magic of the rocks and springtime in the desert. It's being removed from the confines of institutional learning. Here the mind can wonder and ask questions, propose answers. Free of distractions, we learn about ourselves in ways that are impossible at school. Through direct sensory experience, we are able

to follow Bertrand Russell's dictum of achieving knowledge through experience, rather than knowledge by acquaintance.

The students have finally accepted that "Is it required?" is no longer a relevant question. I refuse to give grades, permitting the students to take responsibility for their own education. Given free license to screw off with no repercussions, they don't.

"This is the first quarter I've actually attended all my classes," says Mud, a graduating senior.

"I think before we can address the problems in our educational system, we have to ask, 'what's our purpose in being here on earth'," says Sage, shifting gears.

"Is our purpose to try and live sustainably or to make a lot of money?" asks Seeker.

"Our educational system is training us to be corporate consumers who spend our lives going from one cubicle to the next," adds Huckleberry.

"Why are we even in college?" asks Yucca.

"So we can get into grad school and get good jobs. How else are you going to survive in the real world?" asks Seaweed.

"So like, this isn't the real world?" says Seeker, throwing his hands skyward.

"Not really, this is just a fantasy. None of us are going to live out here. We all have to go back," she continues.

"Can't we just live here forever?" asks Mud.

"You can just leave me out here," adds Patience.

"Dude, there's gotta be fish in that river. If we could catch fish we could just stay here," says Yucca.

"Except that we'd run out of canyon."

"What'd ya mean?"

"Lake Powell, remember."

"We can't just keep going?"

"Nope, the canyon is flooded downstream."

"Civilization is just an experiment, a thin veneer placed over nature, a religious belief system we all must subscribe to in order for it to work. But if we stop believing in it, it will collapse," says Metta.

After class Huckleberry and I sit on the riverbank and watch a white-faced ibis probing its long, blue bill quickly into the mud and roots for small crustaceans and worms. The ibis sports a white mask, a glossy brown body, dark iridescent green wings, and bright red legs. This waterfowl seems rather incongruous in the desert, but it looks like it's finding plenty to eat.

Somehow our conversation turns toward change, and how could it not, sitting by the river. Huckleberry confesses that he fears change, "I stay in the

same pattern I've always been in. It's my way of fighting impermanence. All my life I've been told, this is how things would be, then they would change." He breaks off a reed and tosses it into the water.

"I really liked going to church. My dad thought it was stupid to have to say the Lord's Prayer, but he was listening to the words. I didn't care about the words; it was the ritual of saying them again each time. Then they'd go and change the priests on us and each one would do it differently. How can you have ritual without consistency?" he continues. "I like the ritual of packing up and hiking every other day. I like packing my pack the same way each time. It's something I can count on."

Seeker and Bobofet pass by and wade into the middle of the river. Barechested and holding spears carved from willow, they stare intently at the water. A trio of whitefish scuttles up the river.

"Get it Seeker," cries Bobofet.

Seeker stands poised. "I just don't know if it's necessary."

"It's never necessary, Dude."

"I don't know."

"Dude, I'll help you eat it."

"You do it."

"Dude, I can't. You just gotta do it."

I'll let them work out the morality on their own. Although I consider mentioning minimum impact, I think it's important for people, especially young men, to kill and eat their own food. To realize and fulfill the dreadful violence we are capable of. To feel remorse, regret, guilt for the taking of a life. To give thanks, to understand, even symbolically, that our food is alive, that we are sustained by living beings.

Two ravens caw, soar, and chase each other among the cliffs. One gurgles, like only a raven can, and the other responds. I've noticed that ravens will make different sounds to communicate different things, distress, play, teasing, hunger, anger. In fact, ravens may have a greater variety of sounds than any animal besides humans.

One raven goes into a barrel roll while the other tries to catch it from below. According to raven researcher, Bernd Heinrich, "Acrobatic flight may also serve to show off and attract mates by weeding out poor flyers and lazy birds." This pair keeps disappearing into one particular crack in the cliff on the south side. I suspect they are planning a nest there if they haven't already built it. Like their cousins, the jays, ravens mate for life and will suffer bereavement at the loss of a mate.

I almost always see ravens in pairs, although sometimes they appear in small groups caroling on the air currents, hanging motionlessly on updrafts,

or chasing each other. Biologists point to this play behavior as a sign of intelligence and an ability to adapt to different habitats.

An immature golden eagle soars overhead. A raven shoots out of the cliff quickly overtaking the eagle and begins to attack it. Feathers rise off the eagle as the raven berates it and drives it from its nesting territory.

In Norse mythology, the god Odin had two ravens called Thought and Memory who kept him abreast on world events.

After many days of hiking, my feet are sore and blistered. My body wants to rest, to remain in one place, yet Happy Canyon summons me. Mountains provide perspective while canyons lead to introspection, a focusing down and inward. A mountain is to achieve, to look out, to ask "why?" A canyon brings us home, soulward, asks "how?" Mountains pull me up, canyons pull me in, deeper until they either spit me out or trap me.

Each curve of the canyon draws me deeper into the earth's labia where the under sea walls glow with a diffused light. Dried mud on the stream bed curls up like papyrus. The opposite walls zigzag in and out as if playing keep away with each other, never quite touching, teasing each other with their proximity like uncertain lovers. Now only an arm's length apart, the walls begin to close, threatening to suture this jagged incision in the earth's surface. I run my fingers along the scalloped sandstone awakening ghosts of rushing floods that polished and sculpted the canyon and left tree trunks wedged in the chasm high above.

I can hear the wind, but only a slight mummer of air can be detected down in the canyon. A hundred feet up, wind-blown sand trickles down from the undulating strip of sky. The canyon lies in perpetual shadow except in those rare spots where it's penetrated by a beam of sunshine like the 4:00 P.M. light in a French cathedral.

The quality of the late afternoon light that fades too quickly evokes lost loves. I cannot pause, stop, replay those moments any more than I can pause the approaching sunset. A canyon wren laughs mockingly at my attempts to capture this moment, this place. I cannot stop; I must see what is around the next bend, and yet I want to scale the walls, behold it all from above. I want to know it all, every secret cave, every curve. I want to know where the waters come from. I want to wrap my arms around this land and hold it inside my heart forever. But I cannot. It slides through my grasp as the light shifts its glow, and my heart nearly bursts for yearning.

Returning to camp I see all the women sitting around a small fire. Over the fire sits a pot filled with brown liquid and what looks and smells like dirty socks. "Mountain mahogany," Mud explains, "It's supposed to make a red dye."

The women twist cordage out of yucca as they chat. They move over, clearing a spot for me to join them. I pull a soggy yucca leaf from a pot of hot water and begin to separate it into thin strips.

“We were just saying how cool it is that we really feel at home in our bodies and at home being in nature right now,” says Sage, showing me how to hold two strips between my thumb and forefinger while twisting with my other hand.

“Things that were once a big deal are nothing now. Remember how when we first got to the Dirty Devil, we kept using a stick to see how deep the water was? Now we just splash on through,” adds Patience.

“Yeah, I can see when we get back, we’ll go out hiking and come to some big hill and we’ll just scramble right up it. We won’t even have our packs on!” exclaims Seaweed.

“Last quarter I’d be up on the upper campus and have to pee and then think I’d have to run and find a bathroom. Now I can just pee anywhere; it’s no big deal,” says Mud.

“Yeah, like, I’m totally relaxed sitting here in the sand with a smelly T-shirt and dirty hands,” adds Patience.

Sage examines my work. “You can even weave in a rock or something and make a necklace or bracelet. See I drilled a hole through this piece of sandstone with a stick.”

“Do you guys think landscape affects our self-perception? Do we view ourselves differently in the city?” asks Metta.

“Oh totally. I haven’t even looked in a mirror for . . . well, since Capitol Reef. And that was weird,” says Seaweed, pulling out another yucca leaf.

“Yeah in the backcountry we have no mirrors, no anti-perspirant, no hot showers. Our clothes are dirty, we smell, our hair is all tangled and unwashed. How can anyone love us?” laughs Sage.

“My face is covered with bug bites, and look, my hands and legs are full of scratches and cuts,” says Patience, sticking out a leg. “My lips are all cracked, and my skin is so dry it flakes off like the rock. But I feel stronger and more self-confident than ever before.”

“Yeah, there’s something about mirrors that totally undermines your self-image,” adds Seaweed.

“Out here, I don’t care what I look like,” says Mud, stirring the pot.

“You’re beautiful, Sister,” says Sage, rising and tying her necklace around Mud’s throat.

“Everyone has this glow to them. Their eyes shine bright,” adds Metta.

Gradually the others arrive, and Mud reads us her story. It began as a nature memory—the first time she’d been alone in nature, a hike she took by herself. As she rewrote the story, she began to realize why she’d gone on

the hike. It was something she didn't want to remember, didn't want to write, yet there it was. Gradually, she realized the flight into nature resulted from having to tell her parents she'd been sexually abused by her brother when she was eight. This became her story.

While not everyone harbors such tragic stories, I'm surprised how many of these normal college students do. When Patience mentioned she had an ear infection and wasn't able to hear until she was six years old, I realized that all of us are in some way scarred. Yet we regard scars as ugly, something to be hidden and paved over. We shrink away from someone as tortured as a juniper—warped, old, providing little shade and bitter berries. We seek pastoral, unblemished soulscapes. We hide our mistakes, our age, our contorted, tormented selves under Panglossian veneers of false happiness. We become sterile, plastic trees growing under fluorescent lights in the Mall of America.

However, in the desert, weathering evokes beauty. The absence of rock mystifies and captures the imagination more than the actual sandstone. It's the holes, the ellipses, the arches, and the pillars—possible only through emptiness—which give this place such character.

And so it is with the landscape of the psyche. Just as the juniper is more intriguing as it dies, it is our wounds that make us human. Are not our own deep fissures, cracks, and mysterious alcoves part of who we are, part of our own wildness? What happens when we forsake our empty spaces? Undoubtedly, inhabiting a world of strip mines, clear-cuts, strip malls, and industrial waste effects us psychologically, and we begin to mirror the landscape we inhabit. The question I wish to raise is the converse. How much of our dysfunctional relationship with nature is due to the impoverishment of our *internal* landscape?

ORGAN ROCK SHALE

A deep magenta, chocolate pudding sort of formation. It creates crumbing ledges, drip castle statues, and buttes. It's often topped with an unwieldy wedge of White Rim Sandstone much too large for its foundation, which gives the statues an encephalic appearance.

You cannot save a place you do not know and love, you cannot behave ethically toward something you do not know and love, and you cannot behave ethically toward a planet as an abstract proposition.

—Aldo Leopold

Today's hike takes us eighteen miles downstream. Luckily it's not too hot, and we knock off the miles despite a few grumblings here and there. A few miles below Happy Canyon, the Dirty Devil opens to wide sloping benches covered with tamarisk and rabbitbrush. The river alternates between sheer cliffs and low rounded hills covered in cheatgrass. We leave the abundant flowers and thick soil crust behind as we pass into another grazing allotment, the first since before Robbers Roost.

Two fighter jets roar through the canyon filling the sky. I look up. This has happened often enough that I'm no longer scared shitless. I know it's a couple of flyboys on a quick joyride detouring off radar. I glance up, shake my head and dismiss the intrusion. Yes, there's another world out there, an insane world, racing by at eight hundred miles per hour. But I feel less and less a part of it. It's become an abstraction. This river, these rocks, these brethren frolicking in the water, the trees, swallows and ravens, this is The World. How quickly we adapt to the old ways. Yet in three days we'll be driving to Salt Lake City.

The next morning I draw a long line in the damp sand to represent the Colorado River. I add a few more lines to indicate the Colorado's tributaries, the San Juan, the Little Colorado, the Escalante, the Dirty Devil, and the Green (which isn't really a tributary since it has more water than the Colorado). Earlier, I collected all the students' water bottles and grouped them along the line in the sand. When the thirsty students have gathered, I let them choose a state within the Colorado's watershed to represent: Wyoming, Colorado, New Mexico, Utah, Arizona, Nevada, and California.

“We’ll add Mexico since it also has a claim on the water. The year is 1922 and the other states are worried about California’s rapid growth. Remember the Doctrine of Prior Appropriation?” I ask.

Blank looks. “Uh, no.”

“Remember during the Homestead Act when you guys all got parcels,” prompts Metta.

“Oh yeah, first come, first serve,” says Bobofet.

“That’s such a playground mentality,” says Sage.

“California is using the water from the river, and thereby establishing water rights. The other states are worried that there won’t be any water left by the time they need it. We have to figure out how to divide the river’s water between these eight political entities. After prolonged debate, we decide to split the Colorado River between upper and lower basin states, Arizona, Nevada, and California form the lower basin, and the others are in the upper basin.”

“What about Mexico?” asks Yucca, standing at the river’s terminus.

“We’re not worried about you right now.”

“Yeah, nobody cares about Mexico,” he says sulkily.

“So, each basin gets 7.5 million acre-feet. The lower basin gets an additional million as a signing bonus to placate California and Arizona.”

“What’s a million acre-feet?” asks Patience.

“An acre-foot is a measurement of water—the amount of water it takes to cover one acre of land one foot deep. Can anybody see any problems with this approach to split the basin?”

“Yeah, it doesn’t really solve anything,” says Mud.

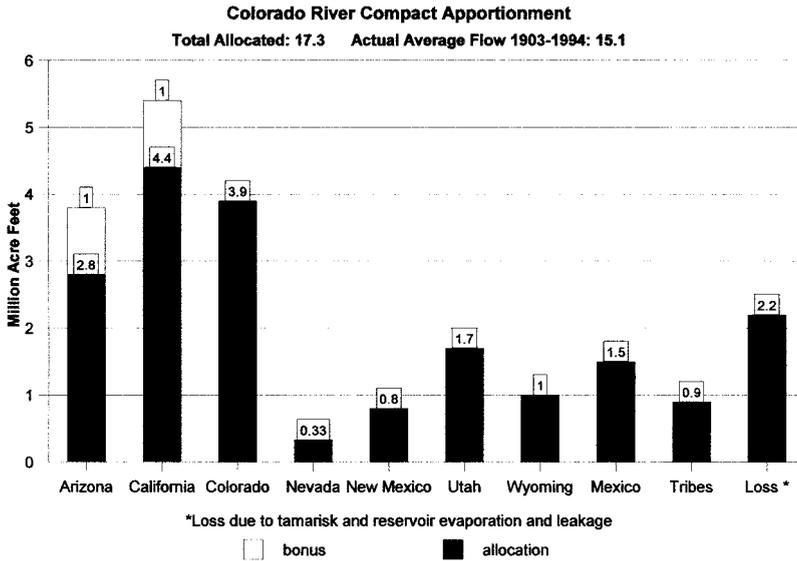
“Yep, Arizona refuses to sign the compact and ends up in an eleven-year court battle with California. Finally in 1952 the Supreme Court decides that California gets 4.4 million acre-feet, Arizona gets 2.8 million, and Nevada gets 300,000.” I hand Sage five empty water bottles, Patience three bottles, and Huckleberry one. “Each liter represents one million acre-feet,” I add.

“How come Nevada gets screwed?” demands Huckleberry.

“The allocation is based upon an amount of irrigable land. Political power also plays a factor. It takes until 1948 for the upper basin states to work out their own allocation. They come up with percentages that, using 7.5 million acre-feet, translate to the Colorado receiving 3.9 million. Metta gets four water bottles. Utah gets one and seven-tenths, and two water bottles go to Seeker. Wyoming and Bobofet get one. New Mexico and Mud end up with 800,000 acre-feet. So now each state has its water allocation?”

“What about Mexico?” insists Yucca.

“Oh right. In 1944 Mexico received 1.5 million acre-feet as result of a treaty. So you get two bottles. Our total allocation is 16.4 million acre-feet. I have here the Colorado River.” I hold up our two water jugs. “In order of



priority, Mexico is guaranteed 1.5 million.” I fill Yucca’s water bottles. “The next in line are the Indian tribes which have senior water rights. Only the tribes along the lower Colorado have established their claims so far, and they get 900,000 acre-feet.” I fill my water bottle nearly full. “Now the lower basin is guaranteed 7.5 million by the Colorado River Compact, and 1990 was the first year that the lower basin used it all. So California gets 4.4 million.” I fill Sage’s bottles. “But they are actually using 5.2 million so we’ll fill them all full. Then Arizona and Nevada. Counting the tribes, Mexico, and California’s excess, we’re at 10.7 million. Now we’ll fill Colorado’s since they’re growing fast and using lots of water.” I pour the remaining water into Metta’s bottles.

“Oops all out. What happened?”

“The river’s over allocated?” suggests Mud.

“Yep, although we’ve allocated 17.3 million acre-feet, the river’s natural flow from 1906 to 1994 averaged only 15.1 million. And that has varied from 4.4 million to 22 million. During the drought from 1954 to 1963, the Colorado averaged only 11.8 million acre-feet. And of course there’s evaporation from reservoirs, leakage through the sandstone, and tamarisk transpiration, all of which account for another 2.2 million acre-feet.”

“Does that mean the river gets dried up?” asks Seaweed.

I nod. “Some years no water from the Colorado reaches the Gulf of Mexico.”

“That’s nuts,” says Seeker.

“Dude, can I like, get some water?” Bobofet holds his water bottle out to Sage.

“So what about us?” asks Mud, representing New Mexico.

“Well, so far the upper basin states aren’t using all their allotment, and California has promised to scale back. On the other hand, several Indian tribes including the Navajo haven’t asserted their water rights yet. So how do we solve this problem?”

“Use less water,” suggests Huckleberry.

“Well, that would be the obvious solution, but what else?”

“Renegotiate the compact,” demands Mud.

“Yeah, they are just now beginning to do that. But if you wanted to make sure everyone got their water, especially in a dry year, what would you do?”

“Build dams!” exclaims Bobofet.

“Exactly. One of the catalysts for the compact was the federal government’s plan to build a giant dam near Las Vegas. When it was built in the thirties, it was the largest man-made structure on earth. Boulder Dam, later renamed Hoover dam, created Lake Mead and allowed the lower basin states to store their water and generate massive amounts of electricity for southern California,” I say, placing a rock in the sand across the lower Colorado.

“This marked the beginning of the great dam building era. The Bureau of Reclamation built dams all along the Colorado and Green Rivers, turning the Colorado River into a giant plumbing system.”

Beginning at the Mexican border, I stick rocks in the sand at Imperial, Lake Havasu, Lake Mohave, in Arizona. At Navajo Reservoir on the San Juan River. At Glen Canyon on the Colorado. At Flaming Gorge and Fountenelle on the Green, and Curecanti on the Gunnison. The Colorado River Basin hosts twenty-nine dams, storing 72 million acre-feet, six times the river’s annual flow. Several more proposed dams were never built, including Junction Dam at the confluence of the Colorado and the Green. This would have backed water 109 miles up the Green and 93 miles up the Colorado, flooding Canyonlands National Park and Moab.

Authorized by Congress in 1956, the Colorado River Storage Project (CRSP) used river basin accounting to justify building large cash register dams to generate hydro power to pay for various irrigation projects. CRSP authorized some of the most destructive dams in the country, Flaming Gorge, Curecanti, Navajo, and Glen Canyon, the lynchpin in the system. However, a smaller dam at the confluence of the Green and Yampa in Dinosaur National Monument captured all the attention when CRSP moved through Congress. David Brower and the Sierra Club successfully led a nationwide fight to save Dinosaur National Monument from flooding.

The environmental groups felt they scored a major victory when Congress agreed to drop Dinosaur from the CRSP. But once David Brower visited Glen Canyon and saw what would be lost, he continued to lobby Stewart Udall, Secretary of the Interior, to stop the project.

Stewart Udall, however, was from Arizona. The Glen Canyon Dam would be built just a few miles upstream from Lee's Ferry, the demarcation between the upper and lower basins. A giant reservoir at Glen Canyon would insure that the lower basin would always get their allotted water even in times of drought. The dam would also generate cheap electricity for the growing Southwest.

Visiting Glen Canyon after construction on the dam had already begun, Udall became enamored with the canyon country and pushed for a series of parks along the Colorado, perhaps to mollify his conscience for vigorously supporting Glen Canyon Dam. He proposed enlarging Rainbow Bridge National Monument to 274,000 acres, lobbied for protection of the Escalante country, and helped create Canyonlands National Park in 1964. Udall sought what he viewed as a balance between power generation, recreation, and wilderness. Yet in 1963 Udall announced the proposal to build two dams in the Grand Canyon. Conservation groups again led by David Brower and the Sierra Club beat back the proposals to build dams at either end of the Grand Canyon. Congress approved a \$1.3 billion Colorado River Basin project, which prohibited future construction of dams between Glen Canyon and Hoover dams and instead sanctioned the construction of a coal-fired power plant at Page, Arizona. The Navajo power plant uses coal strip-mined from the Navajo reservation and, as the country's single largest source of particulate pollution, is responsible for the haze that visitors to the Grand Canyon now experience.

Years later Udall told me that approving Glen Canyon Dam was the biggest mistake he had ever made. Even Barry Goldwater, upon retirement, stated that if he could have changed one vote in his entire Senate career, it would have been the one approving Glen Canyon Dam.

The numbers behind Glen Canyon Dam are as staggering as the edifice itself. It stands 710 feet high and contains 10 million tons of concrete, enough to build a highway across the U.S. At 186 miles long, Lake Powell is the world's longest reservoir; it boasts 2,000 miles of shoreline and contains 33 million acre-feet of water, twice the annual flow of the entire Colorado.

In the spring of 1963, construction was completed on the dam, and the reservoir began to fill, a process that would take seventeen more years. By 1966 Glen Canyon Dam was generating one million, three hundred thousand kilowatts, enough to supply a city of one million.

While the dam was being constructed, teams of archaeologists scoured the canyons cataloging rock art and Anasazi ruins, desperately trying to salvage all the artifacts before they were inundated. The teams recorded more than two thousand archeological sites, including multi-story dwellings, kivas, and villages. Undoubtedly, the hurried survey bypassed hundreds more. Some of the sites were unique, such as a masonry dam, stone-lined ditches, and agricultural terraces, rare evidence of Anasazi irrigation.

The free-flowing Colorado had also created a particular set of conditions to which dozens of species had evolved suburb adaptations. The dam changed that, flooding out the heart of the river system and isolating aquatic populations up and downstream. Eight fish species were pushed to the brink of extinction.

Not just archeological sites and valuable habitat were lost, but something even more precious. As one of the last to float through Glen Canyon, even as the concrete was being poured, Ed Abbey stated, "The canyonlands did have a heart, a living heart, and that heart was Glen Canyon and the wild Colorado." Of the one hundred and forty-nine miles that were once Glen Canyon Wallace Stegner wrote, "As beautiful as any of the canyons, it is almost absolutely serene, an interlude for a pastoral flute. . . . Its walls are the monolithic Navajo sandstone, sometimes smooth and vertical, rounding off to domes at the rims, sometimes undercut by great arched caves, sometimes fantastically eroded by slit side canyons, alcoves, grottoes green with redbud and maidenhair and with springs of sweet water."

Buried forever beneath the mud are places like Cathedral in the Desert and Music Temple, named by John Wesley Powell because, "When 'Old Shady' sings us a song at night we are pleased to find that this hollow in the rock is filled with sweet sounds. It was doubtless made for an academy of music by its storm-born architects so we name it Music Temple." Powell and his men were so taken with Music Temple that they stayed an extra day, despite their low rations.

On his first voyage down the Colorado, Powell wrote, "On the walls, and back many miles into the country, [a] number of monument-shaped buttes are observed. So we have a curious ensemble of wonderful features—carved walls, royal arches, glens, alcove gulches, mounds and monuments. From which of these features shall we select a name? We decide to call it Glen Canyon."

Bestowing the Major's name upon the reservoir may be the ultimate insult to a man who spent the last thirty years of his life fighting against the megalomaniacal attempt to turn the arid West into a hydraulic empire that consolidates power into the hands of a few wealthy industrialists.

From the Mormons, Powell saw how cooperative irrigation could be used more efficiently than competition based on prior appropriation, which he felt would turn agriculture into a monopoly dominated by a few wealthy capitalists. Powell realized that not only was irrigation essential for settlement in the arid West, but that it was beyond the individual's capabilities. This left three possibilities: private capital, which would monopolize and control the water; government control and distribution; or community cooperation. He advocated the third option in bills to Congress that would provide for the establishment of irrigation districts capable of self-government and communal water rights.

Powell advised against the prevailing land settlement patterns of arbitrary and indiscriminate homesteading. Instead he suggested that the land should be classified as to what purpose it best serves and that settlement be dictated by the nature of the terrain. Instead of a rectangular grid of forty acre parcels, "Powell proposed surveys based on the topography, letting farms be as irregular as they had to be to give everyone a water frontage and a patch of irrigable soil," wrote Wallace Stegner. Powell believed the West should be settled along watersheds controlled by cooperative communities.

All this appeared in Powell's *Report on the Lands of the Arid Region of the United States*. Released in 1878, the report boldly indicated that most of the West was in fact arid, and thus largely uninhabitable. Perhaps only twenty percent could support irrigated agriculture. This was not what western politicians and economic boosters wanted to hear.

Stegner summarized Powell's report, "Embodied in the scant two hundred pages of his manuscript—actually in the first two chapters of it—was a complete revolution in the system of land survey, land policy, land tenure, and farming methods in the West, and a denial of almost every cherished fantasy and myth associated with the Westward migration and the American dream of the Garden of the World. Powell was not only challenging political forces who used popular myths for a screen, he was challenging the myths themselves, and they were as rooted as the beliefs of religion."

In 1889 Powell persuaded the Interior Department to close all lands west of the hundredth meridian to settlement until he completed his study of the potentially irrigable lands. This infuriated western politicians, who wanted development to proceed as rapidly as possible. Congress overturned the withdrawal the following year. In 1893 at a meeting of irrigation boosters, Powell warned, "There is not water enough in all the arid region to irrigate the lands which the Government has already disposed of." Despite the heckling, he continued, "You are piling up a heritage of conflict and litigation over water rights for there is not sufficient water to supply the land."

They ignored him and persuaded Congress to create the Bureau of Reclamation.

Originally conceived to help farmers develop irrigation, the Bureau, as it became known, developed a personality and life of its own and quickly became the nation's premier dam building entity. Smaller irrigation projects were subsumed for the glory of large hydro facilities.

A natural outlet for boosterism, the Bureau also dabbled in image making. Bureau officials thought calling it a lake rather than Powell Reservoir would sound more attractive to tourists they hoped would flock to the area. And flock they did. When Glen Canyon Dam was authorized in 1956, the U.S. Geological Survey listed the region as the most isolated in the contiguous U.S., containing the fewest people, roads, and towns. Now Lake Powell receives more than 3.5 million visitors every year.

In addition to flooding an entire canyon system, placing a dam just above the Grand Canyon has created a host of environmental effects downstream. Glen Canyon Dam functions as a giant silt trap. The world's siltiest river, seventeen times siltier than the Big Muddy, the Colorado contains eleven tons of silt for every acre-foot of water. The Colorado and San Juan rivers contribute 66 million tons of silt annually to Lake Powell, burying Stanton's dredge beneath hundreds of feet of sediment. Bureau engineers estimate Lake Powell will completely fill with silt in seven hundred years and Glen Canyon Dam will become a monumental waterfall. Other estimates place the reservoir's life span at as little as a hundred and fifty years. Furthermore, the sediment contains naturally occurring heavy metals that build up, move through the water table, and bioaccumulate in fish and birds. Because of these toxins, the EPA recommends limiting consumption of fish taken from Lake Powell.

More immediate, however, is the loss of that silt downstream. Drawn from the depths of the reservoir, the river emerges from the dam cold and clear, perfect for exotic trout, but deadly for native fish adapted to warm, muddy water.

The dam allows the Colorado River to be turned on and off like a spigot to meet peak power demands, wreaking havoc downstream where river levels fluctuate as much as thirteen feet. Prior to Glen Canyon Dam, the river ran warm and muddy with huge seasonal fluctuations. Once the floodgates closed, the seasonal fluctuations were replaced with daily fluctuations in response to the electrical demands of the Southwest. When the air conditioners in L.A. and Phoenix come on, the river level skyrockets and then nearly dries up at night when the demand for electricity drops. The Grand Canyon's riparian area supports more than five thousand species, nearly all of which are stressed by the wildly fluctuating water levels. The daily fluctuations also destroy

precious beaches and sandbars. After much negotiation and pressure from the multi-million dollar rafting industry, in 1993 the Bureau began moderating the water level and leaving more water in the river continuously.

Then in the spring of 1996, a remarkable event took place: an artificially created flood. Recognizing that the river was more than just a plumbing system to delivery water and electricity, the Department of Interior agreed to open up the floodgates, bypass the generators, and create a flood through the Grand Canyon to mimic the normal spring runoff. This week-long flood sacrificed millions of dollars in lost electrical generation to restore beaches and habitat, such as backwaters and lagoons crucial for imperiled species. However, the much-heralded flood turned out to be a temporary Band-Aid, as more than eighty percent of the new beaches collapsed back into the river within the year.

Nevertheless, the Bureau's hold on the river had begun to crack. In October the floodgates of public consciousness were thrown wide open when the newly formed Glen Canyon Institute began serious talks with Bureau engineers and officials about decommissioning the dam. After a three-decade hiatus, David Brower was now on the board of directors of the Sierra Club, and soon the Sierra Club voted to endorse the proposal to drain Lake Powell. Representative James Hansen of Utah held congressional hearings to put an end to this crackpot idea. Instead, the hearings attracted public attention and support for the proposal. Dan Beard, former chief of the Bureau, even praised the notion of draining Lake Powell.

Dave Wegner, architect of the artificial flood and a twenty-two-year veteran of the Bureau, now works for the Glen Canyon Institute, conducting a Citizens Environmental Assessment to study the environmental costs of Glen Canyon Dam and restoration options. "If you want to restore the Grand Canyon ecosystem, removing the dam is the only long term solution," stated Wegner.

While physical removal of the dam is daunting, decommissioning would allow the river to bypass the dam, resulting in nearly half a million acre-feet flowing to the Gulf of California and restoring Colorado River Delta, as well as Glen Canyon. The river would also gain the nearly one million acre-feet lost to evaporation and leakage from Lake Powell every year. Delivered to California, that lost water is worth nearly a billion dollars.

The legions of motorboats that dump the equivalent of an Exxon Valdez oil spill into Lake Powell every four years would be gone, but there would still be an enormous mess to clean up. One can only imagine how many beer cans, lawn chairs, and car batteries lie at the bottom of Lake Powell. And the accumulated silt. Would it take centuries or just a few good floods to scour the canyon of monumental hubris?

Nature, however, may not wait for us to complete all the studies, build the popular support and political will to drain Lake Powell. In June of 1983, high runoff, not predicted in the computer models, caught the Bureau off guard. To keep the water from cresting over the dam and wiping out the power plant below, Bureau officials opened up the spillway tunnels that run through the canyon walls around the dam. Although the spillway tunnels were designed to handle 138,000 cubic feet per second, they began to degrade at 10,000 cubic feet per second. The water came crashing through the tunnels ripping out the concrete lining and disgorging huge pieces of concrete and rebar. Bureau employees managed to close the spillways before the river eroded into the sandstone and undermined the dam's foundation. For seven weeks Bureau officials sweated as the lake level kept increasing. Floaters in the Grand Canyon were even evacuated by helicopter. The reservoir finally peaked just seven feet below the crest of the dam.

Is a river a living being, a dynamic system? Or simply the water's response to gravity? Regardless, the river is, and our response to it says something about ourselves. Perhaps this is the best reason for restoring Glen Canyon. What does it say about us as a people, if we are able to admit to making a colossal mistake and then use our ingenuity and creativity to restore the river?

However, a shift in consciousness, may still be a long ways off. Congress recently appropriated funding for the Animas-La Plata Project or A-LP. A-LP would consist of damming the Animas River, a free flowing tributary of the San Juan, and pumping the water five hundred feet up a ridge to another reservoir. From there the water would be pumped another five hundred feet over Red Mesa to irrigate alfalfa and grain crops. The last of the dinosaur dams, A-LP was first authorized in 1968 and has limped along ever since despite a \$710 million price tag and the impact upon two endangered fish.

For the past six weeks we've followed this river from its origins to its fate. From desiccated badlands to cottonwood Eden, from spectacular slots to grandiose vistas. We've held our noses at the rotting cow carcasses and rolled joyously in its silky mud. Its waters quench our thirst, cook our food, loosen our boots. At what point did revulsion become love? The river flowed patiently while we changed. It remained constant, ever changing, while we moved toward consistency.

Ten years is an absurdly short time to try and know anything. Especially something as complex as a river. I thought I knew where the channel was, but it always changed. I thought I could predict quicksand and found myself mired. I thought I could read the river and found I was illiterate.

Sometimes when I sit and listen patiently without asking questions, seeking no answers, I can almost discern fragments of the language of rivers. A language older than humanity, a language that the heron wades into, a language spoken by water and rock. A language spoken so slowly that a human lifetime measures one sentence.

INUNDATION

“1. To overwhelm or cover with or as with a flood. 2. An over-spreading or overwhelming in superfluous abundance.”

Attitudes change through example rather than arguments. The uncompromising attempt to live one's highest ideals openly and consistently is therefore the most effective social action one can take. To live in opposition to the principles one proclaims is also the surest way to destroy them as social options. If, to avoid betraying one's conscience, a person must walk out on society, then by all means let him walk out.

—Jim Corbett

A few bends beyond Hatch Canyon, we climb up on the Cedar Mesa bench and hike in a straight line while the river loops and twists below, cutting deeper into the cross-bedded sandstone. We break in the shade of an enormous solitary juniper, the only tree in sight. As we pass mudstone pinnacles topped with blocks of white sandstone, the students debate whether these can be considered twin monoliths. Huckleberry contends that the term “monolith” precludes plurality. Yet there they are—twin monoliths.

The mesa finally sinks to the river, and we thrash through a dense stand of tamarisk to reach the water. After forty days and forty nights in the wilderness, we come to the end of our journey. We've witnessed the abuses of overgrazing, explored the terrible legacy of mining, assessed the impacts of roads and motorized recreation, yet none of it has stopped us. But now our progress is stymied. All along we knew it must end here.

We never spoke of it, for to give it voice would give it power. We kept our sorrow at bay by keeping it silent and out of sight. Now it lies before us. Metta gathers everyone in a circle on our final river crossing. Holding hands in the middle of the river, we feel the current push against our legs, the current that we first beheld as a tiny creek laden with cow shit on the other side of Interstate 70, a lifetime ago.

A short and final walk along the river brings us to the road and van. After dropping my pack, I take a short walk downstream. The water deepens as Lake Powell backs up to meet the incoming river. After a few bends, the downstream flow ceases and slack water begins. On the canyon walls,

about four feet up, a salt-encrusted bathtub ring marks the lake's high water.

Returning, I pass Seaweed standing by the bank of the river singing, "As I went down in the river to pray, studying about that good old way. And who shall wear the robe and crown, good Lord show me the way. Oh sisters, let's go down, let's go down, come on down in the river to pray."

Sitting on a contorted slab of sandstone, I gaze north, upriver, from where we've come. The Cedar Mesa forms a nearly flat, continuous bench clear back to Hatch Canyon. Remnants of White Rim and Organ Rock point skyward. The wide open canyon peels back revealing the layered Moenkopi. Above it, the sheer cliffs of the Wingate shed boulders onto the colorful Chinle slopes. Along the skyline poke the domes of the Navajo, the formation we started in three weeks ago.

Stereotypical white puffs of clouds hover in a cartoon blue sky. The shadows of the clouds move across the landscape, borne on a stiff breeze from the south. I gaze down at the sinuous river bounded by dense green forests of tamarisk. The pink and white fronds wave in the breeze like eunuchs' fans.

Why are there so many tamarisks here? Lack of floods? Because it's closer to a source area (Lake Powell), and we are watching it march upriver? Could the fluctuating lake levels have anything to do with it? Perhaps after the high water receded, tamarisks moved in and became established before anything else had a chance.

Come evening, I suggest that everyone go sit by themselves, watch dusk, and reflect. An animate dark cloud rolls overhead.

"Oooh, that looks evil," declares Seaweed.

"Only people are evil; clouds can only be clouds," says Sage.

Nevertheless, the grey foreboding mass of water vapor bubbles, boils, and rolls like a stampede of sky-dwelling buffalo. Each of us in our own spot watches the cloud fill the canyon. Pipistrelle bats dart and click up and down the watercourse. In the diminishing light, I peer northward; I feel I should know something. A beam of light from the setting sun shoots into the west. The cloud drops a brief sprinkle over the red sandstone monoliths and passes, revealing the Great Bear. Punctuated by Venus below, a crescent moon dangles over the canyon wall like a question mark.

Metta lights the remaining votive candles, and we form a circle around a circle of candles. Everyone is quiet and reflective. The students talk of the inner changes they have experienced over the past six weeks. They express their love and awe of this river.

"Something shifted last week. All through high school, I felt like I was falling, not really knowing when I would land, and sometimes I didn't even

know if I was falling. I just felt like I wasn't connected to anything. Last week I was sitting looking up at this cliff, and I was, like, holy shit. Everything just fell into place, and I stopped falling. I realized I'd been falling all these years, and I just stopped," says Bobofet.

"I couldn't just pretend that I'd go back as the same person. It's not like a ten-day trip. I couldn't just put myself on a shelf and come back to it. I had to deal with myself and my issues. I couldn't just forget for ten days. It was right there in front of me all the time," says Seaweed.

"I came out here in a state for turmoil within myself, and it's not that I've figured anything out, but the turmoil is gone," says Yucca.

"I've gotten really into bird watching, which surprises me because it's everything I don't like: getting up early, being quiet, being patient, looking at small things in detail. I called my mom during resupply and said, 'Guess what, Mom? I love bird watching.' And she said, 'You?'" says Patience.

"I feel a greater connection to myself, but it's the land that helped me get there," nods Mud, concurring. "On our first trip, I couldn't wait to get back, take a shower and eat ice cream. But, you know, once I got those things, it was like, okay, so what? It wasn't what I had built up in my mind. It didn't satisfy me at all. Now I don't want to leave," she adds.

"I was down by the river today, and I noticed that the lump on my hip is gone," says Sage excitedly. "I've never felt so empowered," she adds.

"I'm not sure what it was I needed, but this was definitely it. I can now go back and recognize the bullshit for what it is and hopefully not get caught up in it. I realize how much I don't need," says Huckleberry. "I know this place better than where I've lived all my life," he adds.

"I came here looking for clarity," says Seeker. "But all I found was this muddy river full of silt and goo and worms and stuff."

"How do you go back? How do you take this with you?" Sage asks.

"How do you stay sane in an insane world?" asks Huckleberry.

"Is the inability to cope in an insane world a mark of sanity?" inquires Metta.

I'm a teacher; I'm supposed to have answers. I don't even know what questions to ask. The curtain is drawn, the veil lifted. Now that we know real from unreal, sacred from profane, are we condemned to a life of disenchantment and duality? We leave this place and our community behind; we leave the magic and beauty we've created and inhabited and return to a world so infatuated with itself that it excludes all that it has not created. A world where magic and beauty are commodities and fetishes. We return with eyes intense and glowing, eyes wide with wonder and lined with wisdom, eyes so clear you can see the shadows of water striders in them. Others will take one look at us and know we've been to the center of the earth and drunk the elixir.

We will stand confused on Concourse B, berated by smells, noxious perfumes, canned air, plastic. We will be beset by CNN and news of another war; we will stand at the snack counter overwhelmed by choices and impatient clerks. We will climb into cars and hurl ourselves through space at unforgiving speeds. The lights will dim the stars. Without the constellations to guide our dreams, we will become lost in a world of fantasy that everyone regards as real. Caught in the consumer web our eyes will fade and gloss over. We will forget the magic but remember a place where it resides. And that memory will haunt us, forever.

In the morning, I walk out to the cliff edge to greet the sunrise. The others soon join me for this final soak in beauty.

We load up the truck and drive into Hite Marina for gas. After three weeks in the backcountry my senses are wide open. It seems insane to be speeding along at twenty miles per hour. I glimpse a loggerhead shrike and a kestrel. They pass by all too quickly. My emotions are raw and immediate. I react instantly to every input. I feel the gravel crunch under the tires as if it were grinding into my own skin.

I feel emotionally transparent, as if all the joy, pain, beauty, and loss of the world permeate every pore. I feel the exuberance of the rising sun, the stiffness of my body, the overwhelming loss of Glen Canyon, the paradox of life as a great blue heron flies over Lake Powell.

Suddenly I perceive the world with extreme clarity, in one of those rare instances, call it religious ecstasy or rapture or a psychedelic experience although it involves neither religion nor drugs but feels like both. My mind and soul are completely open to everything. I just want to absorb it all, experience it. Yet I am so afraid of losing it, knowing it will pass, that the doors will shut, and I will be calloused and functioning again.

Sometimes I think our greatest tragedy is that we continue to operate as if nothing is wrong. We live our lives, go to work, drive our cars, become obsessed with petty concerns while the world collapses around us.

But how should I live in this world? How can I justify any degree of participation in a system so destructive to life, land, people, children? Do I just ignore it and live my life? How can I go about changing it when I still buy gas?

The sight of Lake Powell always ties my stomach in knots. I oscillate between anger and nausea. I follow the porta-potty pumping truck down the highway to Hite. Inside the metal prefab building, painted NPS-puke-beige because of a mandate to blend into the natural surroundings, I scan the aisles. T-shirts, post cards, candy bars, beer—the usual. I find nothing palat-

able. I sense the total boredom and emptiness of the gas station clerk. Finally I buy juice and a muffin.

Tearing open the plastic wrapper and biting into the homogenized food product, I nearly retch. This muffin, a superficial attempt to mimic a baked good, is my only choice? Is this the world I inhabit, convenience stores, RVs, reservoirs? Something is wrong here. I kick the gas pump. "I hate this," I tell Metta, who nods sympathetically. "Not just this," I wave my hand vaguely at Hite, "but all this bullshit, the entire petroleum complex, roads, cars, Wallyworld."

While everyone is in the store satisfying their consumer urges, I walk to the phone to check my voice mail. I hesitate for a moment. Part of me wants to just draw my head in like a turtle and wait for the storm to pass, but out of force of habit, I pick up the phone. You always think that nothing changes on the outside, same old media B.S. We often joke in the backcountry, "What if there's been a nuclear war, and we don't know it." But we don't really expect anything to happen. Although, sometimes we wonder if someone has died without our permission.

Three weeks, three messages. The first is from my friend who tells me that sixteen kids and a teacher were killed at my old high school, Columbine. I hang up, forgetting the other messages. I have no desire to connect with anyone. I realize the futility of the attempt. How could I explain? Unable to converse on a superficial level, it would leave me feeling even more alienated.

I stare out at the squadron of houseboats mired at Hite. A concrete ramp descends into the stagnant brown waters of the reservoir. A Dodge pickup, not unlike the one I'm driving, backs a trailer with a power boat down the ramp. My last visit to the nameless suburb where I grew up replays through my mind. Just a few months ago I spent a week visiting my father and could hardly muster enough courage to venture beyond the house. I was actually frightened to drive anywhere. My fears were irrational; they stemmed from the transformation of a place I once knew into a homogeneous other.

I recall my attempt to walk up the new trail behind the house. I breathed in the chickadees and nuthatches and nearly felt safe. Once I reached the top of Plymouth Mountain, site of my first overnight backpacking trip, my pulse quickened. Bulldozers and graders were scraping new building sites below. When we moved here, we put our mailbox next to eleven others. Now one acre plots barely contain multi-decked monoliths with four car garages sprouting like enormous fungi over secret boyhood meadows and ridges where I had spent countless adolescent hours wandering the creeks, fighting through oak brambles, and pondering my existence. For years my family and other residents fought a proposed gravel pit on Plymouth Mountain. The

issue was finally resolved when the county purchased the land and developed it into open space with picnic shelters and bike paths. The giant parking lot is full all weekend. "All pets must be on a leash."

One Saturday a woman berated my brother for letting his dog run free. She told him there were mountain lions and bears that would eat his dog. My brother shook his head, "Not anymore."

Dad suggested we go to dinner at a new seafood restaurant next to Colorado's largest shopping mall. We pulled out of our driveway onto a wide strip of blacktop that replaced the two miles of muddy, rutted dirt that my brother and I once walked every day from the school bus stop.

We passed the crumbling farmhouse where old Willie Couch was born. Willie was in his nineties when he died ten years ago. He lived on the small ranch behind us before it was subdivided. He told us stories of how his mother had to bake biscuits to keep the Indians from burning down the house. He used to drive his cows into Denver to sell, a two-day trip. When he died, it took half an hour to reach the outskirts of town. In five minutes we will be on the interstate and it's now impossible to tell where the edge of town even is.

When we reached the main canyon, we turned and drove through what was once the Ken-Caryl ranch, one of the largest along the Front Range. It was sold to Johns-Manville (my father's employer) who took a piece for their corporate headquarters (visible from our house) and sold the rest to real estate companies. We wound through wide streets of two hundred thousand dollar pastel tract homes, developments with names like Quail Run and Oak Meadows. Just before we boarded the interstate, we passed what used to be a prairie dog town. Then it became a gravel pit. Now a temporary real estate office announced new home sites.

Where, not many years ago, buffalo literally roamed, the interstate transports thousands from suburbs to office parks, passing countless subdivisions and malls. Highlands Ranch once formed a levee against suburban creep, until it too was sold and subdivided as Denver spills into Colorado Springs.

We exited onto a wide four-lane boulevard of convenience stores, multi-plex shoe stores, automotive toy rentals, office supply salons, tanning and pizza booths, and video groceries. My head spun in a state of consumer vertigo. One store simply proclaimed, "MORE OF EVERYTHING." Each boulevard was an exact replica of the one running parallel to it a mile to the west, like those pictures you see of someone looking into a mirror with another mirror and another and another. I felt as if a noose was closing around my neck. Not until we returned home was I able to take a full breath again.

In high school each of these fields had a name; during the outing with my dad, I recognized nothing. All landmarks were gone. The swales had

become cull-de-sacs, the creeks turned into highways, the cottonwoods made into Costco. The cattle trails had been paved into bike paths, and the hills transformed into car dealerships. Yet no one seemed to mind, after all, there was an REI nearby.

This happened so fast and so haphazardly that this nameless suburb now contained more than fifty thousand. Fifty thousand souls and no place to call home other than “southeast unincorporated Jefferson County.”

Although, it’s been nearly twenty years since I last stepped inside Columbine High School, I can picture the classrooms, the desks, the halls, the library sunken into the middle of the school like a giant fishbowl. I recall all of the teachers I had. I think about hatred. Columbine was (still is) a homogenous suburb, white, upper-middle class.

I think of the trouble we caused, the violence, the vandalism, the drinking and drugs. We thought we were tough; we thought we were badass. The most hideous and destructive thing we could imagine was doing donuts on a wet football field. We felt confined in a place with just houses, subdivisions of four thousand units and four basic floor plans broken only by the occasional strip mall. We would venture into Denver, Littleton, or Englewood, places where we could feel a heartbeat. More often we drove west. We drove out into the fields, past signs warning of a new Safeway on this site. We drove into the empty places and built bonfires, tapped kegs of beer, and railed at the stars. We had names for these places, Land of the Lost, The Rocks, The Hideout. Not very imaginative names, but names nonetheless. We may have been drunk, but we could more or less feel our feet on the ground. Still, we watched with each passing month, the bulldozers pull it out from under us. Eighteen years ago we had those fields, those rocks, places we could call our own. Now they were gone.

Last March I stumbled upon one of these old empty places quite accidentally. It was different now, and I didn’t recognize it at first. I sat at an outdoor table drinking a latté and staring out at a vast parking lot. Then it dawned on me where I was. A group of high school kids streamed into the Bagel Shoppe. Did they feel the same alienation I felt, staring out at this soulless expanse of strip malls and fast food? Where do they go to howl their angst?

We drive across the steel bridge spanning the Dirty Devil. Sorrow wells up unexpectedly, and tears fill my eyes. I pull off the road by the bridge, get out, and gaze down at the flooded river, placid and green. A McDonald’s cup sits upended at the cliff edge.

The students remove their Walkmans and filter out of the van.

“This isn’t the Dirty Devil,” says Mud matter-of-factly.

“It’s green!” proclaims Yucca.

“Where’s our river?” demands Patience.

Sage and Seaweed burst into tears at the sight of the lake backed up. “What did they do to our river,” Sage sobs.

I have no answer. I want to drop to my knees and plead, “Dear Lord, forgive us, and may this never happen again.”

We stand arm in arm in silent witness.

A motorboat towing a water skier passes beneath us. The skier loses a ski and goes down. The boat circles back for him idling for a moment beneath the bridge and then speeds away, skier in tow once again. One by one we turn from the scene unable to look any longer, unable to confront the sadness welling up in our hearts. The students load into the van. I look inside; everyone is in tears. For once I am at a loss for words. Metta reminds us that today is Memorial Day. Bobofet takes out a pen and walks over to the sign on the bridge that reads “Dirty Devil River” and writes “R.I.P.”

A snowy egret passes under the bridge and wings upriver.

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preface THE RIM

The epigram is taken from Walt Whitman's poem *Starting From Paumanok (Leaves of Grass)*. New York: The New American Library, 1960). Although a lesser-known work, *The Journey Home* by Edward Abbey (New York: Dutton, 1978) is a fine collection of essays on the American West. Abbey is perhaps best known for *The Monkey Wrench Gang* (New York: Lippincott, 1975).

ı MANCOS SHALE

My descriptions of the geographic formations throughout this book are primarily derived from Donald L. Baars, *The Colorado Plateau: A Geologic History* (Albuquerque: University of New Mexico Press, 1983) and William Lee Stokes, *Geology of Utah* (Salt Lake City: Utah Museum of Natural History, 1986). For a more accessible introduction to Utah geology see the *Roadside Geology of Utah* by Halka Chronic (Missoula: Mountain Press, 1990).

Captain John Macomb's pessimistic words used as the epigram are taken from Wallace Stegner's classic work, *Beyond the Hundredth Meridian* (New York: Penguin Books, 1992). My research about the Old Spanish Trail, slave trading, and other interesting tidbits about the San Rafael came from Joseph M. Bauman, Jr.'s *Stone House Lands: The San Rafael Reef* (Salt Lake City: University of Utah Press, 1987) with supplemental input from *The Redrock Chronicles* by T. H. Watkins (Baltimore: Johns Hopkins University Press, 2000), especially chapters one and ten.

Edward Abbey's finest work, *Desert Solitaire: A Season in the Wilderness* (New York: Ballantine Books, 1968), remains a classic of American nature writing. The quote from Henry David Thoreau is taken from the last essay he wrote, "Walking" (*The Portable Thoreau*, edited by Carl Bode [New York: The Viking Press, 1964]).

For the most accessible overview on the ecological effects of roads see "The Ecological Effects of Roads" by Reed Noss (*Roadrippers Handbook*, May 1995: 14–26). The *Roadrippers Handbook* and a vast array of other information about the effects of roads are available from Wildlands Center for Preventing Roads, POB 7516 Missoula, MT 59807; (406) 543-9551; www.wildlandscpr.org.

The journal *Conservation Biology* devoted an entire issue (February 2000, volume 14, number 1) to the ecological effects of roads. Sources used in this chapter came from the articles, "Factors Influencing the Effectiveness of Wildlife Underpasses in Banff National Park" by Anthony P. Clevenger and Nigel Waltho, and "Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities" by Stephen C. Trombulak and Christopher A. Frissell.

The snippet from Simon Ortiz's poem came from his collection, *Woven Stone* (Tucson: University of Arizona Press, 1992).

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 ï ï MORRISON

John Dewey produced an unbelievable body of work ranging from philosophy to education. The quotes in this chapter came from Dewey's *Experience and Education* (New York: The Macmillian Company, 1939).

For an excellent guide to the region's flowers see *Canyon Country Wildflowers* by Damian Fagan (Helena: Falcon Press, 1998).

The Southern Utah Wilderness Alliance (SUWA, 1471 South 1100 East, Salt Lake City, UT 84105, www.suwa.org) keeps tabs on development and threats to unprotected wilderness through their quarterly newsletter, *Redrock Wilderness*. Information tidbits on the San Rafael Swell came from Michael R. Kelsey's *Hiking and Exploring Utah's San Rafael Swell* (Provo: Kelsey Publishing, 1990).

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 ï ï ï SUMMERVILLE

The opening quotation came from an article by Edward Abbey that ignited a still-burning controversy over public lands gazing, "Even the Bad Guys Wear White Hats: Cowboys, Ranchers, and Ruin of the West" (*Harper's*, January 1986).

Western historians have devoted considerable attention to the Homestead Act. My research on this section came from Bernard DeVoto (Introduction to *Beyond the Hundredth Meridian*) as well as Stegner's *Beyond the Hundredth Meridian*. Patricia Nelson Limerick (*The Legacy of Conquest: The Unbroken Past of the American West* [New York: W. W. Norton, 1987]) presents a revisionist perspective of western history. *Beyond the Hundredth Meridian* and *The Legacy of Conquest* are essential reading for anyone seeking an understanding of western history and the forces that continue to shape public policy in the region.

The most exhaustive treatment of grazing can be found in *Waste of the West: Public Lands Ranching* by Lynn Jacobs (Tucson: Lynn Jacobs, 1991).

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 ï ∞ ENTRADA

The opening quotation came from an essay by Ralph Metzner ("The Psychopathology of the Human-Nature Relationship") found in the intriguing collection, *Ecopsychology* edited by Theodore Roszak, Mary E. Gomes, and Allen D. Kanner (San Francisco: Sierra Club Books, 1995).

While researching his final project, one of my students stumbled upon this revealing quotation from the Forest Service in *Contested Landscape: The Politics of Wilderness in Utah and the West*, edited by Doug Goodman and Daniel McCool (Salt Lake City: University of Utah Press, 1999).

∞ CARMEL

Orion magazine recently devoted an issue to the role of the naturalist. I found several articles engaging. The opening quotation came in an article by Barry Lopez ("The Naturalist." *Orion*, Autumn 2001).

Filled with short essays and essential facts on each species, *The Birder's Handbook: A Field Guide to the Natural History of North American Birds* by Paul R. Ehrlich, David S. Dobkin, and Darryl Wheye (New York: Simon and Schuster Inc., 1988) is a valuable companion for any bird watcher. For the serious student, I rec-

commend Frank B. Gill's *Ornithology* (New York: W. H. Freeman and Company, 1990), from which I gleaned much of the information in this chapter. For a thorough and accessible treatment of speciation and the biodiversity crisis see *The Diversity of Life* by E. O. Wilson (New York: W. W. Norton, 1992). While Darwin has taken a beating in recent years, a close reading of *The Origin of Species* (London: P. F. Collier, 1909) indicates that Darwin indeed struggled with the Linnaean construct of species as objects fixed in time.

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◦
V I W I N G A T E

The quotation from Mitchell Thomashow came from "A Biospheric Natural History" (*Orion*, Autumn 2001).

For information on the current status of bighorn sheep in Utah (both chapter six and twenty) I am indebted to Ron Hodson of the Utah Department of Natural Resources (personal communication).

Information about Pleistocene conditions came from *The Ice-Age History of Southwestern National Parks* by Scott A. Elias (Washington D.C.: Smithsonian Institution Press, 1997). Data on wild horses came from the Bureau of Land Management (Office of Public Affairs, Washington D.C. and Utah State Office, Salt Lake City), Wild Horse and Burro Freedom Alliance, and Drury Carr and Doug Hawes-Davis (personal communication) who shared the research for their film *El Caballo* (High Plains Films: Missoula, MT. www.highplains.org).

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V I I C H I N L E

My primary source on the uranium boom was *Uranium Frenzy* by Raye Ringholz (Logan: Utah State University Press, 2003). Charles Wilkinson's *Crossing the Next Meridian* (Washington D.C.: Island Press, 1992) provided additional information regarding the 1982 Mining Law. For a chilling portrait of the effects of nuclear testing, see *American Ground Zero: The Secret Nuclear War* by Carole Gallagher (Cambridge: MIT Press, 1993). Terry Tempest Williams presents a personal account of nuclear testing in *Refuge: An Unnatural History of Family and Place* (New York: Pantheon Books, 1991).

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V I I I M O E N K O P I

Gary Snyder has written numerous books that explore the human relationship to the wild. Of particular note are his collection of poems in *No Nature* (New York: Pantheon Books, 1992) and his collection of essays in *The Practice of the Wild* (New York: North Point Press, 1990). I found this particular epigram in *Ecopsychology*. Along with Snyder, Jack Turner (*The Abstract Wild* [Tucson: University of Arizona Press, 1996]) and William Cronon ("The Trouble with Wilderness, or Getting Back

to the Wrong Nature” in *The Great New Wilderness Debate*, J. Baird Callicott and Michael P. Nelson, editors. [Athens: University of Georgia Press, 1998]) have contributed much to our (post)modern conception of wilderness. Aldo Leopold’s *Sand County Almanac* (New York: Ballantine Books, 1966) remains an essential classic for anyone concerned with wilderness. All of the Leopold quotes scattered throughout this book came from *Sand County Almanac*.

Research specific to Utah wilderness came from the encyclopedic *Wilderness at the Edge*, compiled by the Utah Wilderness Coalition. For a succinct overview of Utah’s wilderness debate see Wallace Stegner’s Introduction to *Wilderness at the Edge* (Salt Lake City: Utah Wilderness Coalition, 1990). Both the *Redrock Chronicles* by T. H. Watkins and *Red: Passion and Patience in the Desert* by Terry Tempest Williams (New York: Pantheon Books, 2001) provide useful background to the Utah wilderness debate. Information specific to the San Rafael, including the quote for the Emery County Development Council came from *Stone House Lands* by Joseph M. Bauman, Jr.

IX WHITE RIM

The intriguing quotation from Freeman House were the opening lines from his speech “Forgetting and Remembering the Instruction of the Land: The Survival of Places, Peoples, and the More-than-human” (Rufus Putnum Lecture, Ohio University, Athens, OH, April 24, 1996). Specific data on school trust lands came from Cyrus McKell and Dave Harward, “State Trust Lands: Problem in Wilderness Designation,” in *Contested Landscape: The Politics of Wilderness in Utah and the West*.

X MOENKOPI

The opening quotation came from Robert Michael Pyle’s “The Rise and Fall of Natural History” (*Orion*, Autumn 2001). Research on Utah plant life can be found in *A Utah Flora*, Stanley L. Welsh et al., Great Basin Naturalist Memoirs, number 9 (Provo: Brigham Young University, 1987). Information on R.S. 2477 and other wilderness issues came from Southern Utah Wilderness Alliance (SUWA), specifically *Redrock Wilderness* 18, number 3 (Autumn 2001), *Redrock Wilderness* 17, number 1 (Spring 2000), *Southern Utah Wilderness Alliance Newsletter* 9, number 1 (Spring 1997), *Southern Utah Wilderness Alliance Newsletter* 8, number 4 (Winter 1991–1992).

XI CARMEL

I came across this passage from Cormac McCarthy in his novel *The Crossing* (New York: Alfred A. Knopf, 1994). The information on John Wesley Powell and passages from Clarence Dutton came from Stegner’s *Beyond the Hundredth Meridian*. Information on IPP and proposed development in the San Rafael came from Bauman’s *Stone House Lands* and Ray Wheeler (“The San Rafael Swell Wilderness” in *Wilderness at the Edge*).

The quotations from Everett Ruess came from W. L. Rusho’s *Everett Ruess: A Vagabond for Beauty* (Salt Lake City: Peregrine Smith Books, 1983).

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XII ASPHALT

The quotation from Neil Evernden came from his book *The Natural Alien*. (Toronto: The University of Toronto Press, 1985). Research on exotic species is a burgeoning field, with research conducted by universities and government agencies that provide information through various web sites. Information on tamarisk came from the following sources: “Ecology of Saltcedar—A Plea for Research” by Benjamin L. Everitt (*Environmental Geology* 3, 1980: 77–80), “Trees of Salt” by Josie Glausiusz (*Discover*, March 1996), and “Tackling Tamarisk” by Paul Larmer (*High Country News* 30, number 10, May 25, 1998).

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XIII UNCONFORMITY

This poignant quotation from Brigham Young is found in *Journal of Discourses* 6:94. I came across it in an essay by Hugh W. Nibley, “Stewardship of the Air” (*New Genesis: A Mormon Reader on Land and Community*, edited by Terry Tempest Williams, William B. Smart, and Gibbs M. Smith [Salt Lake City: Gibbs-Smith, 1998]). Nibley also provided the Spencer Kimball quotation originally from Kimball’s “The False Gods We Worship” (*Ensign*, 6 June 1976). Gleanings from the following constituted my research on Mormon history: *New Genesis*, Limerick’s *Legacy of Conquest*, Gallagher’s *American Ground Zero: The Secret Nuclear War*, *Singing Stone: A Natural History of the Escalante Canyons* by Thomas Lowe Fleischner (Salt Lake City: University of Utah Press, 1999), and *A River No More* by Phillip L. Fradkin (New York: Alfred A. Knopf, 1981). For an insightful examination of Mormon irrigation practices see Donald Worster’s *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Oxford University Press, 1985). For an unprejudiced account of Mormon history see Wallace Stegner’s *Mormon Country* (Lincoln: University of Nebraska Press, 1970). The Lyman Hafen quote comes from his essay “Sacred Ground” in *New Genesis*.

I am indebted to the staff of Capitol Reef National Park for providing valuable information over many years, including allowing me access to the park library. Research concerning the history of Fruita, Capitol Reef National Park, and the immediate vicinity came from Bradford J. Frye, *From Barrier to Crossroads: An Administrative History of Capitol Reef National Park, Utah* (Denver: U.S. Department of the Interior, 1998). The *Roadside History of Utah* by Cynthia Larsen Bennett (Missoula: Mountain Press, 1999) was also helpful. Park biologist, Dave Worthington shared his knowledge regarding bighorn sheep, and resource management specialist, Norm Herderson provided information on rainbow trout and aquatic resources. Information on chukars came from the Utah Department of Natural Resources.

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XIV CARMEL

The opening quotation came from *Red: Passion and Patience in the Desert* by Terry Tempest Williams. The Powell quotation came from his *The Exploration of the Colorado River and its Canyons* (New York: Dover, 1961). As we continue to spray the same class of pesticides as DDT, Rachel Carson’s *Silent Spring* (New York: Fawcett Crest, 1962) remains as important today as it was forty years ago.

XV NAVAJO REVISITED

The opening quotation came from an essay by William Kittredge, "Inside the Earth," in *Reclaiming the Native Home of Hope*, Robert B. Keiter, editor (Salt Lake City: University of Utah Press, 1998).

While a large body of work can be found on the Anasazi, information on the Fremont is relatively limited. My primary sources were *Exploring the Fremont* by David B. Madsen (Salt Lake City: University of Utah Press, 1989) and *Dwellers of the Rainbow: The Story of the Fremont Culture in the Capitol Reef Country* by Rose Houk (Torrey: Capitol Reef Natural History Association, 1988).

XVI MORE NAVAJO

Matt Warner, rather than the Sundance Kid, was Butch Cassidy's sidekick for most of Butch's outlaw career. Warner eventually went straight and became the sheriff of Price, Utah. While many books on Butch Cassidy have appeared in recent years, Charles Kelly's book *The Outlaw Trail: The Story of Butch Cassidy and the "Wild Bunch"* (New York: Bonanza Books, 1959) remains indispensable. Kelly interviewed many of the Wild Bunch while they were still alive, including Warner who provided valuable recollections. For information specific to Robbers Roost, I used Pearl Baker's *The Wild Bunch at Robbers Roost* (Lincoln: University of Nebraska Press, 1971). Despite numerous claims to the contrary, I found the research presented by Anne Meadows (*Digging Up Butch and Sundance* [Lincoln: University of Nebraska Press, 1996]) provided conclusive evidence that Butch Cassidy and the Sundance Kid indeed died in Bolivia.

Information on rock varnish came from a paper by R. I. Dorn and T. M. Oberlander ("Rock Varnish." *Progress in Physical Geography* 6). My principal sources on rock art were Polly Schaafsma, *Indian Rock Art of the Southwest* (Santa Fe: School of American Research, 1980) and Sally Cole, *Legacy on Stone: Rock Art of the Colorado Plateau and Four Corners Region* (Boulder: Johnson Books, 1990).

XVII NAVAJO

Information on corvids came from Tony Angell's *Ravens, Crows, Magpies and Jays* (Seattle: University of Washington Press, 1978). Research on scrub jays came from an article in the journal *Nature* by N. J. Emery and N. S. Clayton ("Effects of Experience and Social Context on Prospective Caching Strategies by Scrub Jays," *Nature* 414:22, November 2001). The most comprehensive research on biological soil crust can be found in a government document, Belnap, Jayne, et. al. *Biological Soil Crusts: Ecology and Management*, Technical Reference 1730-2, (Denver: U.S. Department of the Interior, 2001). Gary Snyder offers thought-provoking essays in *A Place in Space* (Washington D.C.: Counterpoint, 1995).

XVIII KAYENTA

The opening quotation came from Ken Carey's *Return to the Bird Tribes* (San Francisco: Harper San Francisco, 1988). The reference to "sympathy with intelligence" came from Thoreau and was used by Aldo Leopold.

Information on pothole ecology and insects came from Donald Stokes's *A Guide to Observing Insect Lives* (New York: Little Brown, 1983) and *A Naturalist's Guide to Canyon Country* by David Williams (Helena: Falcon, 2000), which also provides a good introduction to the region's natural history. Stegner's reference to the Dirty Devil came from the essay "A Wilderness Letter," *The Sound of Mountain Water* (New York: Dutton, 1980).

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XIX WINGATE

Information on Glen Canyon gold exploration came from *The Story That Stands Like a Dam* by Russell Martin (Salt Lake: University of Utah Press, 1989). Research on Pleistocene megafauna and extinctions came from Elias, *The Ice-Age History of Southwestern National Parks*, Paul S. Martin and H. E. Wright Jr., editors, *Pleistocene Extinctions: The Search for a Cause* (New Haven: Yale University Press, 1967); William K. Stevens, "New Suspect in Ancient Extinctions of the Pleistocene Megafauna: Disease," *New York Times* (Apr 29, 1997); and Hillary Maybell, "Climate Change Caused Extinction of Big Ice Age Mammals, Scientist Says," *National Geographic News* (Nov 12, 2001). For an exhaustive account of packrat middens, see *Packrat Middens: The Last 40,000 Years of Biotic Change*, edited by Julio C. Betancourt, Thomas R. VanDevender, and Paul S. Martin (Tucson: University of Arizona Press, 1990). Contemporary natural history data was found in Harper, et al. *Natural History of the Colorado Plateau and Great Basin*.

XX WHITE RIM

I encountered the Freud quotation in an essay by Paul Shepard ("Nature and Madness" in *Ecospsychology*). For further reading on education theory, I recommend *Pedagogy of the Oppressed* by Paulo Freire (New York: Continuing Publishing, 1984) and David W. Orr's *Earth in Mind* (Washington D.C.: Island Press, 1994). Unfortunately one of the most thought-provoking books on education, *Teaching as a Subversive Activity* by Neil Postman and Charles Weingartner (New York: Delacorte Press, 1969), is currently out of print. While not about education *per se*, I regard Marshall McLuhan's work, including *Understanding Media: The Extensions of Man* (New York: McGraw Hill, 1964), as highly relevant for anyone in the education field.

For a fascinating account of raven behavior see Bernd Heinrich's two books *Mind of the Raven* (New York: HarperCollins, 1999) and *Ravens in Winter* (New York: Simon and Schuster, 1989).

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XXI ORGAN ROCK SHALE

Much of my research specific to Glen Canyon Dam came from Martin (*The Story That Stands Like a Dam*). Two other books I found helpful were *Water in the West*, edited by Char Miller (Corvallis: Oregon State University Press, 2000) and its predecessor *Western Water Made Simple* (Washington D.C.: Island Press, 1987). Both of these books are collections of articles that originally appeared in *High Country News* (POB 1090, Paonia, CO 81428; www.hcn.org), a valuable source of current issues in the West. Specifically, sources in *Water in the West* included

articles by Florence Williams (“Government Tames Its Wild, Destructive Dam”), T. J. Wolf (“How Lake Powell Almost Broke Free of Glen Canyon”), and George Sibley (“Glen Canyon: Using a Dam to Heal a River” and “A Tale of Two Rivers: The Desert Empire and the Mountain). From *Western Water Made Simple* came information from Ed Marston’s piece, “Reworking the Colorado River Basin.”

I encountered several articles concerning the restoration of Glen Canyon, including “Reclaiming a Lost Canyon” by Greg Hanscom, *High Country News* (November 10, 1997). While the eclectic *Canyon Country Zephyr* out of Moab, Utah, is noted for its entertaining advertisements, it also tackles issues most publications would never touch. Thus far the *Zephyr* has devoted two issues to the restoration of Glen Canyon. My information comes from the following articles in the April–May 1998 issue (volume 10, number 1) “A Declaration of Independence for the Colorado River” by Richard J. Ingebretsen and “Environmental Integrity on the Colorado Plateau” by Dave Wegner. From the April–May issue 1997 (volume 9, number 1) came information from Ken Sleight, “Flooding Heaven,” and Jim Stiles, “Why We Should Drain Lake Powell.” For more information on the restoration of Glen Canyon contact the Glen Canyon Institute (POB 1925, Flagstaff, UT 86002; www.glencanyon.org).

For general reading on the Colorado River see Stegner’s *Beyond the Hundredth Meridian*, Charles Wilkinson’s *Fire on the Plateau* (Washington D.C.: Island Press, 1999), and *A River No More* by Phillip L. Fradkin. The two books that are indispensable to understanding western water issues are *Cadillac Desert: The American West and its Disappearing Water* by Marc Resner (New York: Penguin Books, 1993) and Donald Worster’s *Rivers of Empire: Water, Aridity, and the Growth of the American West*.

XXII INUNDATION

The opening quotation came from a most unusual book by Jim Corbett, *Goatwalking* (New York: Viking, 1991).