Attitudes Toward Water Resource Development, Use, and Control and the Rural-urban Differential in the Bear River Basin

James Lane Gillings
Utah State University

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ATTITUDES TOWARD WATER RESOURCE DEVELOPMENT, USE, AND CONTROL AND THE RURAL-URBAN DIFFERENTIAL IN THE BEAR RIVER BASIN

JAMES LANE GILLINGS

1969
ATTITUDES TOWARD WATER RESOURCE DEVELOPMENT, USE, AND CONTROL
AND THE RURAL-URBAN DIFFERENTIAL IN THE BEAR RIVER BASIN

by

James Lane Gillings

A dissertation submitted in partial fulfillment of the requirements for the degree
OF
DOCTOR OF PHILOSOPHY
IN
Sociology

Approved:

Wade H. Andrews
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UTAH STATE UNIVERSITY
Logan, Utah
1969
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# ABSTRACT

The problem of rural-urban differences in various aspects of life is a significant concern in the contemporary society. This dissertation aims to explore the factors contributing to these differences, focusing on [specific aspects or areas of study]. The research is designed to provide insights into the desirability of education, use of credit, natural resources management, and political differences between rural and urban areas. The hypotheses are formulated to investigate the relationship between these factors and the outcomes observed in rural and urban environments.

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A difference was found between the rural and the urban groups regarding their expressed attitudes concerning natural resource development, use, and control. Differences between the rural and the urban groups were also found in regard to attitudes toward the political institution. No significant differences were found regarding the attitudes toward educational and economic institutions.

No significant relationship was found between the attitudes toward natural resources and attitudes toward the three social institutions. The uniformity of behavior related to natural resources indicated that there is possibly a different sociological institution relating to the area of natural resources—at least within the Mormon sub-culture studied.
ABSTRACT

Attitudes Toward Water Resources Development, Use and Control and the Rural-Urban Differential in the Bear River Basin

by

James Lane Gillings, Doctor of Philosophy
Utah State University, 1969

Major Professor: Dr. Wade H. Andrews
Department: Sociology

The rural-urban differential was investigated in its relationship to certain expressed attitudes relating to natural resource development, use, and control. The rural-urban differential was also investigated as a variable affecting expressed attitudes toward the educational, economic, and political institutions. The two sets of expressed attitudes were then correlated to each other.

A difference was found between the rural and the urban groups regarding their expressed attitudes concerning natural resource development, use, and control. Differences between the rural and the urban groups were also found in regard to attitudes toward the political institution. No significant differences were found regarding the attitudes towards economic and educational institutions.

No significant relationship was found between the attitudes toward natural resources and attitudes toward the three social institutions. The uniformity of behavior related to natural resources indicated that there is possibly a different sociological institution relating to the area of natural resources—at least within the Mormon sub-culture studied.
Methodology included computer reduction of data and computation of non-parametric statistics. These included Chi-square analysis, coefficient of contingency, and Kendall's coefficient of concordance.

The purpose of this study is to identify some pertinent sociological variables in the field of water resources and to explore their relationships. One such variable is attitudes about water resources held by individuals. Another variable is rural-urban residence of these individuals. This study asks the general question: to what extent are these variables related?

Still another variable is attitude towards traditional institutions held by individuals who express opinions about water resources. The question is asked: to what extent are individual's attitudes about traditional institutions related to their attitudes toward water resources? And if there is such a relationship, is rural-urban residence a significant factor?

Answers to these questions will be helpful to the growing body of sociological knowledge in the field of natural resources. Definitive studies of sociological variables including the rural-urban variable appear to be extremely limited in relation to water resources. Furthermore, by its emphasis upon water as a total resource rather than upon water for recreational use, and by its use of the rural-urban and other social variables, this study can lead to further definitive research in this developing area of sociology.

The Problem

The problem investigated was two-fold. One portion dealt with rural-urban differences relating to differences in attitudes about
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INTRODUCTION

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The Problem

The problem investigated was two-fold. One portion dealt with rural-urban differences relating to differences in attitudes about
natural resources. The specific attitudes towards natural resources which were studied concerned natural resource development, use, and control: public versus private control, preferred use of water, land, and forest resources, and opinions about flood protection and water pollution problems. The second portion dealt with attitudes towards sociological institutions.

Limitations

The limitations of this study can be grouped into five categories, problems in: data reduction, representativeness and size of the sample, comprehensiveness of the interview schedule, adequacy of the returns, and statistical problems.

The first limitation is due to the attempt to balance rapid data reduction with obtaining enough usable data. This study was designed for a new area of work making exploration necessary to obtain as much data as was possible within certain time limits. This required many open ended questions with consequent problems for data reduction.

The problems concerning size and extent of the sample are two-fold. First, the study as originally designed was limited to residents of the Bear River drainage area, excluding dwellers of major urban centers. It was designed to obtain a representative sample from those people who are in the area directly affected by the proposed Bear River project: In an attempt to overcome this limitation, a metropolitan urban sample was then interviewed to give a base for comparison to this rural group. A second sample limitation is that caused by research economics. Larger sample populations within local areas would have been helpful in some data reduction situations. However, limitation of funds required some limitations of sample size.

Similarly the interview schedule, even though extensive, could not
be expected to be totally comprehensive. Thus, certain variables were not included, among which are attitude scales relating to family and religious orientation. This limits some of the institutional aspects of the study. In addition, some inadequacies of the returns occurred because several interviewers were used, involving some variation in interpretations of questions.

The statistical interpretations are limited in two ways. One of these is the problem of some incomplete or no answer responses. The other problem is that the data is largely non-parametric and, thus, has limited statistical treatment possibilities.

Definitions of Terms

For the purposes of this study, the following definitions of terms are used:

Attitude: The term attitude is defined as "...a person's preference for one or another side of a controversial matter in the public domain..." (Berelson and Steiner, 1964:557). This term is used interchangeably with expressed value and value (Berelson and Steiner, 1964:558).1

Sub-culture: The "variation of a culture, including both general and specialized elements, and adjusted to a subdivision of a society." (Himes, 1968:489) The specific concept used in this study defines subculture as "...an ethnic enclave...or a region..." (Yinger, 1960:626).

Mormon sub-culture: The "Mormon sub-culture" area is defined by

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1For further discussion concerning values, the reader is directed to Catton (1959) and Akler (1956).
O'Dea as being "centered in Utah, with Church headquarters in Salt Lake City: the Mormon area spreads over into Idaho, Oregon, Wyoming, Colorado, Arizona, New Mexico, and Nevada (1957:1)." In this area, a majority in some areas and a significant number in others of the population belongs to the Mormon or Latter Day Saint, Church.

Expressed attitudes: The term "expressed attitude" is also used in a synonymous manner with values and beliefs.

Opinions and attitudes are presumably adapted to beliefs, which are deep-seated, but are usually more consciously cognitive in their content... Opinions are sometimes called values or sentiments. There are, however, no hard-and-fast boundaries for the terms, so one man's opinion may be another man's attitude and still another man's belief. (Berelson and Steiner, 1964: 558)

Therefore, these terms are used interchangeably. The prefix, expressed, refers specifically to the respondents' replies to certain questions and scales designed to measure values. Thus, the specific definition used for expressed attitude is that which deals with certain responses to specific questions and scales. The basic definition of value upon which this is based is the "relative worth or preference...of an idea, experience, action, person, group, or object. (Himes, 1968:490)

Rural-Urban Differential: The term rural-urban differential is used to indicate the differences between the rural and urban sectors of the sub-culture being studied.

Rural: For the purpose of this study, the term rural refers to five specific counties. These are two Utah counties, Box Elder and Cache, and three Idaho counties, Bear Lake, Caribou, and Franklin. Classification by population size is not used as the criteria for differentiating between rural and urban (Thompson and Lewis, 1964: 129-132). Instead, the use of a sociocultural taxonomy is used.
Stewart (1958:152) states that "the infinite variety of culture does not lend itself to easy classification in clear cut types" and he also states (1958:156) it is best to use an "...approximation to a socio-cultural taxonomy."

For the subregion of this study the most important single point of division between rural and urban is the primary use of water. The areas where the primary use of water is for agriculture are termed rural. Where industry is the most common use, after culinary, of water the area is considered to be urban.

The second most important criterion for determining the rural-urban differential is that of occupation. "The distinctive rural pattern of life is more closely linked to an agricultural occupation than to mere residence in a rural area" (Horton and Hunt, 1963:474). Therefore, one factor used in dividing the rural and urban segments has been that agricultural and agricultural oriented economic bases have been considered rural.

In addition, other differentiating items are also used to establish the difference between rural and urban. These include descriptive characteristics of the communities where the rural community is described as "open-country, village and hamlet, suburban" with functions such as "farming, extraction--mining, logging, fishing--storage and processing, residential (suburban)" (Himes, 1968:149). This contrasts to the modern urban community which is classified as a "metropolis, city, town" with functions of "industrial-financial, trading-financial, political, cultural--university, museum, observatory, laboratory--resory" (Himes, 1968:149). In addition, certain patterns of behavior--such as common ties and close social interaction--
are inferred from the type of community (Hillery, 1955:111-123). This method of differentiating between rural and urban is treated at length in a paper by Mottura (1967). He favors this method instead of size of population as a basis for differentiation.

**Water rights:** For the purposes of this study, water rights is used in its most general manner, that understood by the respondents to mean their rights to water. Both Utah and Idaho have basically the same water rights system (Trelease, Bloomenthal, and Gerand, 1965:5). The phrase "water rights" may also be interpreted as meaning *appropriative water rights.*

---

2In the United States, two basically different systems of water rights predominate. One of these, appropriative, developed after the pattern of the so-called Colorado Doctrine. "An appropriation has been defined as 'the intent to take, accompanied by some open physical demonstration of the intent, and for some valuable use'" (Chandler, 1918:39). The type of water right allows movement of the water out of its own run-off basin. The other major system of water rights does not allow this exporting of water, nor does it allow outsiders to take water from the local dwellers, either by appropriation or sale. This system, riparian water rights, is the original pattern followed in the United States under common law.

According to the common law doctrine of riparian rights in the law of waters, each owner along a stream is entitled to have the waters thereof flow in the natural channel, unpolluted in quality and undiminished in quantity. (Chandler, 1918:9)

The latter system of water rights is also used in the arid west, primarily in California, Oregon, and Washington. These states, along with Mississippi, use what is termed the California Doctrine. However, the *appropriative system* is a definite outgrowth "...of the occupancy of the public domain during the mining period and is not accepted outside the western mining and irrigation states." (Chandler, 1918:1) Both systems have been upheld in the courts since the latter part of the nineteenth century. For more discussion concerning Western water rights, see: Martz (1951), Watson (1948), Harding (1940), Wiel (1911), and Hutchins and Jensen (1965).
Review of Literature

In the following review of literature, several sub-sections are presented. This is done to provide specific orientation to certain areas being studied. The sub-sections are: (1) Attitudes and institutions, (2) general rural-urban differences, (3) political differences, (4) the desirability of using credit for purchase, (5) educational attainment differences, (6) natural resource use differences, and (7) miscellaneous items which relate to the study but are not directly involved in one of these. This review of literature deals primarily with attitudes, both expressed and inferred.

Attitudes and Institutions

Attitudinal analysis and the institutional aspects of water resources are central elements of the investigation. The purpose of this section of the review of literature, therefore, is to provide an overview of the type of research being done in reference to attitudes and institutions. These works also provide a theoretical perspective for the attitude and institutional aspects of this study.

The study of attitudes, and similar elements of opinions, belief, and values, is applied to many different aspects of sociology. Comparisons of different groups is commonly accomplished by studying the value patterns of the various groups such as is a part of this study. An example of this is the work by Zurcher, Meadow, and Zurcher (1965) where three groups--Mexican, Mexican-American, and Anglo-American--were compared. Another example of this is a study made by Fendrich (1967) where he compared reference group relationships through perceived attitudes. He did this to add theoretical solidarity to the general research area of racial attitudes and their relationship to overt behavior.
Other applications of attitude studies relate to single group investigations. One of these (Zeitlin, 1966), sampling Cuban workers, investigates the relationships between economic insecurity and political attitudes. Other political attitudes are often studied. An example of this was a study by Laulicht and Paul (1963) concerning Canadian attitudes on disarmament and defense.

Values are also studied in themselves instead of relating them to other factors. This approach is generally related to their use in other research or in relation to theory. An example of this is Fallding's (1965) work concerning what values are and where they fit in the overall sociological pattern. He gives definitions, descriptions, theoretical relationships, and other criteria which distinguish among five different types of values. In addition, he gives some observations on the requirements for their empirical study. Catton (1959) approached the subject of values through their relationship to theory. He proposed a "theory of value" in this particular work.

Social institutions are also studied from many approaches as illustrated in the following works. One type of study is the analysis of the various institutions themselves. An example of this is Albrecht's (1968) study of art as a social institution. Another approach is to study the role of institutions as they relate to some other aspect of sociology for example by Eisenstadt (1964) in a paper concerning the interrelationship of two institutions. Another research approach is the study of the promotion of institutional change or institutional formation through research and/or activism. This has been done by various sociologists, among them are Etzkowitz and Schaflander (1968) who propose that this is a duty of the sociologist. Another example is
pointed out in Gouldner's (1968) article which says that the movement from a value-free doctrine of social sciences to a partisan doctrine of the kind proposed by Etzkowitz and Schaflander has run away with itself.

Institutions are also commonly studied according to the actions of people in relation to the various sociological aspects of one or more institutions. Some of these are cross-institutional studies such as Freedman and Coombs (1966) study which relates child spacing—an aspect of the family institution—to family economic position. Another example of this cross-comparison is the work by Marx (1967) which studies the relationship of religion to militant politics. Similarly Kamerschen (1968) compared literacy—a function of the educational institution—to socioeconomic development.

Institutions are also studied by the investigation of certain phenomena within the structure of the institution. Olsen (1968) did an analysis of certain variables within the political institution and evaluated them in regard to political development. A different type of study but yet one of this category was Scott's (1968) investigation into the economic aspects of trade-centers and their populations.

Another approach to institutional research is to compare various institutional aspects to problems of society. Studies like that of Voss (1966) compare socio-economic status to deviant behavior.

An institution may be approached by a number of people dealing with various aspects. One social science journal (Sigel, 1965) devoted an entire issue to the aspect of political socialization. This included interrelationships with the family and educational institutions and the resultant inter-actions.
Rural-Urban Differences

Comparative differences on the basis of rural and urban sub-cultures are included in this study. That there are still differences existing between the rural and urban segments of the United States culture is pointed out by many. However, others indicate that the existence of these differences is not as great as it once was. Spaulding (1959) cautions that there is a decreasing rural-urban difference which is supported by Gross' statement that rural areas are not all the same, nor should rural life be considered polar to urban life (Gross, 1948: 256).

After examining the works of eighteen writers, Dewey (1960:63) concludes that rural-urban differences are not important. His major justification for this conclusion is that the various writers did not agree in definition and that the rural-urban dichotomy does not concur with other classical dichotomies such as that of Ferdinand Tonnies', Gemeinschaft-Gesellschaft, Howard Becker's "sacred-secular," Robert Redfield's "folk-urban," and other classical dichotomies. In addition, Dewey indicates that:

Howard Becker has stated emphatically that, whatever the referents of "sacred-secular" and similar (but not identical) terms are, they surely are not the same as these denoted by the words "rural" and "urban".

Fava also holds that the rural-urban differential is unimportant (1963:3).

From these statements, it can be inferred that absolute differences and ideal types of rural and urban do not exist.

Stewart supports this problem in dealing with the pure type. He says that the rural area defined by size of population is no longer valid (1958:152). He adds:
A definition which calls a large peasant settlement "urban" and a small mining town or midwestern wheat farmer "rural" is clearly inappropriate for sociology. In general, urban outlook and settlements are highly correlated within an otherwise homogeneous environment. ... The infinite variety of culture does not lend itself to easy classification in clear-cut types (1958:155).

Berelson and Steiner add:

... in the United States, the spread of machinery to the farm, the automobile, and the mass media of communication are diminishing the traditional social difference between city and country (1964:607).

However, it is still possible that many of the points of sameness are due to the traditional rural life of the United States. Tomars indicates this in his statement that "the American way of life is in many of its basic manifestations, still the rural American way: (1943:378). Berelson and Steiner point out that:

Even now there are clear differences between country and city in political performance in moral temper, in the sense of control over one's fate, and probably in religious affiliation (1964:570).

Berelson and Steiner give special mention to the development of opinion, attitudes, and beliefs. They say "There are two conditions of residence that affect the development of OAB's: geographical region and urban-rural location" (1964:570).

Schnore (1966) admits to a substantial rural-urban differential, as do his critics, even though they do not give it great importance. He says:

Rural-urban divergences in the United States are still substantial and well worth studying, despite the apparent fact that they are diminishing. Rural-urban types of community display patterned differences, while place of residence and place of origin are fundamental characteristics of individuals that permit the analyst to predict human behavior (1966:131-143).
In reviewing the many introductory and general texts in rural and urban sociology, the existence of the rural-urban differential is commonly accepted by those authors discussing it. However, the most current texts have modified the traditional stand concerning extreme differences. Horton and Hunt state that "all the historic rural-urban differences are shrinking. To a substantial degree, rural life is becoming urbanized, as historically urban patterns have spread into rural areas" (1963:459). This change toward urbanization was being discussed as a trend two decades ago. Kolb and Brunner wrote in 1946 that "...the great flow and ebb of millions of country people into the cities and back has made profound changes in rural-urban relationship" (1946:355). What was being discussed as changing then has now been accepted as changed today. However, that differences exist is still accepted.

Current works in rural sociology continue to emphasize the rural-urban differential, but they give strong indication that it is modifying to a great extent. Larson and Rogers write that:

Rural-urban differences in values are decreasing as America moves in the direction of a mass society. The many linkages between farm and non-farm sectors of American society...result in an interchange of values between rural and urban people. The breakdown of isolation, one characteristic of rural life, aids the trend toward a mass society in which (1) mass communication passes the same ideas along to everyone in a society at the same time, and (2) the population displays more standardized values.

While the U. S. is moving in the direction of a mass society, there are still important rural-urban value differences. One group considers the existence of it real rural-urban differential.

For further discussion concerning the importance of the rural-urban continuum, the reader is directed to: Bealer (1966) and Ford (1966).
differences that stem from historical, occupational, and ecological differentials. Actually, much of what can be stated about rural-urban values differences must be accepted in a rather cautious way due to the lack of adequate research findings on this topic (Copp, 1964:54).

According to Taylor and Jones, the current movement toward a common rural-urban norm or removal of the differential, is actually nothing more than a re-unification of norms. Before the industrial revolution, there was even less of a differential than there is today. During the eighteenth century, the "...American cities were in physical proximity to the countryside. They were virtually indistinguishable from the hinterland on a sociopsychological basis" (1964:55). Taylor and Jones go on to show that the rural-urban differences were most pronounced in the nineteenth century (1964:55). Then "...by the twentieth century, city life began to dominate all American life. Although urban behavior patterns prevailed, many survivals of the earlier rural culture remained" (1964:59). They summarize with the statement that "rural-urban differences in America are rapidly diminishing in the second half of the twentieth century in the face of advancing urbanized social organization" (1964:64).

In summarizing the general literature concerning the rural-urban differential, the following conclusions are drawn: 4

(1) There is a still existing rural-urban differential.

(2) There is a movement to unification of the rural-urban norms.

(3) There are various ideas concerning the importance of the rural-urban differential. One group considers the existence of it real

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4For further information see Nelson (1952:24), Loomis and Beegle (1957:24-25), Bertrand (1958: Chapter 3), Sanderson (1942: Chapter 28), and other general texts in Rural Sociology as well as most introductory texts in Sociology.
but unimportant. The other group considers the difference not only real but important.

**Political Differences**

In the area of political differences, the rural-urban differential has long been considered to be very valid. However, as indicated by Haer this was not originated from research but rather based upon non-organized observations. Haer says that:

> Although few rigorous studies have supported the idea of rural conservatism, the wealth of commonsense observations to that effect and the finding stemming from indirect approaches to the problem lead one to believe that there is sufficient reason for the testing of such a hypothesis (1952:344).

Beers conjectures that this conservatism might better be likened to isolationism. In an article concerned with a review of national opinion polls, he concludes that the rural dwellers, specifically the farmer, do not on any "...issue of national interest...alone present a solid front of opinion either pro or contra" (1953:11). He does indicate that the farmer tends to be somewhat isolationist and less in favor of government programs except those directly affecting the farmer (1953:7).

Carl C. Taylor contradicts this with "...the insurgency of farming areas of the nation which have sometimes been called 'isolationist' have related to rural farming issues and not to international issues" (1944:663).

Taylor and Jones support the concept of a rural-urban difference in politics. They say this is changing.

In general, the rural-urban differences in political attitudes are becoming less pronounced. As farms become mechanized and as rural farm and rural non-farm people become absorbed into the general population, the cultural universals of the nation are more similarly interpreted (1964:446).
Sanderson wrote, a quarter of a century ago, that "in the field of politics and government, there is a long history of conflict between rural and urban interests. . ." (1942:670).

In summarizing the literature dealing with the political aspects of the rural-urban differential, the following conclusions are drawn:

(1) There is a difference between the rural and the urban, the rural being more conservative.

(2) The difference is decreasing.

The Use of Credit

In the current literature concerning the rural-urban differential, most conclusions concerning the desirability of credit purchasing must be drawn from assumptions and not from clear-cut studies. Rural sociologists and agricultural economists have made numerous studies concerning credit purchasing in the rural setting. Unfortunately, little of this work relates to the rural-urban differential.

One of the few comparative studies was made by Whitney (1947:55). He concluded, over twenty years ago, that the use of credit decreases and cash purchasing increases as the population density increases. This probably is no longer a totally valid statement due to the recent liberalization of "credit card" practices. This may be totally related to the seasonal income of the farmer and some other rural dwellers. On the other hand, this may be due to the rural dweller looking to property rather than to position or profession for status.

Stinchcombe supports this latter stand with: "Property is far more important in rural stratification than in urban stratification, where occupational position predominates" (1961:165).

This high regard toward property, which is strong in the Mormon sub-culture being studied, may lead to a more liberal outlook toward
credit purchase. This may be due to a desire to show property ownership as an item of status which in turn makes expansion of holdings necessary. In addition, the Mormon sub-culture has a strong orientation toward agrarian pursuits with the attendant seasonal income which in turn requires a seasonal use of credit and the incurring of debts each year.

This desire for property may be related to Bernice Goldsteins's and Robert L. Eichorn's question: "Is it possible, then, that the modern remnant of the protestant ethic still contains the need to feel mastery and control over one's life, but are no longer accompanied by rational economic behavior?" (1961:564).

There are, on the other hand, some indications that a liberal credit orientation is not totally or even partially representative of the rural dweller. John Gillin writes that in the Northeastern United States "...hard work and thrift are still given special emphasis in rural sub-cultures." Even though this is a different region than that being studied, it may have some implication because the Mormon sub-culture originated in the Northeast and still largely parallels it (1964:223).

In summarizing the literature dealing with the rural-urban differential in relation to the desirability of credit purchase, the following conclusions are drawn:

(1) There is some difference between the rural and the urban populations in reference to attitudes concerning credit purchasing.

(2) There are no clear cut patterns of liberal or conservative but...
it is possible that the rural dweller may be more liberal toward credit purchasing.

Desirability of Education

In the United States the rural dweller has traditionally been less in favor of educational advancements. "Since farming is less professionalized, . . . schooling is generally thought to be less essential than in many urban-centered occupations" (Loomis and Beagle, 1957:260). Burchinal supports this with a study on farm, small town and city boys. He found that the farm-oriented boy had lower aspirations toward more education than the other-oriented boys (Burchinal, 1961:120). This is also supported by Middleton and Gregg in a study of public high school seniors in Florida. They concluded "... that rural youths have lower occupational and educational aspirations than young people in the cities..." (1959:353)

These lacks of aspirations may be directly related to the rural experience. The rural dweller in the United States has long had less education than the urban dweller (Bertrand, 1958:227-228).

Andrews and Sardo (1965:32) found that there was significant difference in education levels among rural dwellers in Colorado. Those who migrated to the city had a much higher level of education than the static dwellers (8). They also found that further education was the single most important factor in migration.

In general, we find that the rural dweller has a lower educational attainment (Roger, 1960:233) but in certain areas of the nation there is little, if any, clear-cut differential. The Mormon sub-cultural area being studied is one of these. In both the Utah and Idaho segments of the sub-culture, there are practically no differences between the rural and
urban educational attainments (Bertrand, 1958:228-229). Consequently, it may be assumed that if attainment of education is related to expressed attitude toward the desirability of education then this particular area will have little rural-urban differential.

Nelson (1955:411) states that "...the comparatively poor educational status of rural..." dwellers is the result of community values. He goes on to say that "...the present generation of farm youth is also shown at a disadvantage when compared with urban. Because their parents had not received high school education they are less likely..." to consider it essential. If this is the case, then it is probable that the norm in the Mormon sub-culture is in favor of education.6

Taylor and Jones write that there is a definite difference between the rural and the urban aspirations and attitudes toward education. However, they point out that where the rural and the urban dweller are educated in the same schools they gain somewhat the same norm. An example of this was a study made upon two schools, one rural - one urban, in Minnesota. "In the urban school, neither town nor country students aspired to farming as an occupation" (Taylor and Jones, 1964:375).

Slocum (1962:415) supports these findings. He writes: "The rural-urban gap has been narrowed...and from all prospects will eventually be closed." He credits this change to lack of isolation and the unification of schools.7

In the Mormon sub-culture this gap may already have been closed.

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6Smith (1959:359) states that "...it is apparent that...Mormons are remarkably similar wherever they are found." This tends to support this argument.

7See also Slocum's (1967) work concerning aspirations of high school students.
Over a quarter century ago, Reed Bradford wrote concerning a rural community in the Mormon sub-culture:

If a criticism might be given of the schools in Salem, it would be that their educational program is adjusted to the needs of an urban center rather than to those of a rural farming community (Sanderson, 1942: 783). 8

In summarizing the literature dealing with the rural-urban differential relating to attitudes toward education the following conclusions are drawn:

1. The rural-urban differential is rapidly being eliminated.
2. The rural dwelling segment of the population is less in favor of education than the urban. However, in the Mormon sub-culture there is little, if any, difference.

Natural Resources


Research about the more general area of natural resources include Burch (1962, 1966), Hines (1963), Ingman (1963), Taves, Hathaway, and Bultena (1960), South, Hansbrough, and Bertrand (1965), Slocum and Empey (1954), Bultena (1967), Copp (1964), Hendee, Steinburn, and Catton (1967), Christianson and Folkman (1967), and Jones, Taylor, and Bertrand (1965).

Because the focus of sociological research dealing with natural resource development is relatively young, there is not a large body of sociological literature dealing with it. The rural-urban differential is even more limited. However, in dealing with the Mormon sub-culture some inference can be made from works dealing with other aspects.

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8See also O'Dea (1954:149).
Arrington points out that among the Mormons, natural resources were publicly owned in the second half of the nineteenth century. Failure to properly use the natural resource brought forth strong sanctions. This strict control was directly opposed to the common concept that property was to be exploited. Concerning this latter concept, Arrington (1951:351) writes:

This dominating conception of property as a right to which no corresponding obligation was attached led to what is now referred to as the era of "rugged individualism" in American history. It resulted in un-paralleled waste of natural resources, in undemocratic inequality of wealth, and in a spirit of selfish aggrandizement that appalled many sensitive citizens.

As O'Dea points out, the Mormon sub-culture did not follow this wastefulness. Many of the early Mormon communities "organized" the use of water for irrigation in a very early part of the settlement procedure. O'Dea writes:

The region where all this intense and well-planned exploration and settlement took place was one of abundant land but all of it lay under low rainfall. The control of water would obviously be vital to the success of Mormon efforts, a problem to be solved by irrigation, a mode of water distribution which the Saints (Mormons) had had no direct experience before their emigration (1954:87).

This use of irrigation waters was not peculiar to only the rural segments of the population. O'Dea (1954:89) writes that "a cooperative system of water control was devised both for construction and for ownership in Salt Lake City. . . ."

This type of system is still very prevalent in the Mormon sub-culture—and it is not only rural in orientation. Vogt and O'Dea (1953:198-205) show, in their post-World War II study comparing two New Mexico communities, one was settled by a group of Mormons and the other by a group of Texas homesteaders, that irrigation is still an important
facet of the Mormon sub-culture.

The laws of both Utah and Idaho reflect the early public control of natural resources in the Mormon sub-culture. Brigham Young made this policy very definite with his policy statement: "There shall be no private ownership of... streams... nor timber... [for] these belong to the people..." (Arrington, 1966:52) This also included mineral rights (Arrington, 1966:52). The current laws in Utah and Idaho include the doctrines of beneficial use of water, or loss of water rights, and water being in the public domain. According to Hutchins and Jensen (1965:7-8), this is a direct outgrowth of the early Mormon development. They go on to state that the "...theme of essential beneficial use is reiterated over and over again in the many water rights decisions of the Utah Supreme Court (Hutchins and Jensen, 1965:7-8: Trelease, Bloomenthal, and Gerard, 1965:29; Martz, 1951:273).9

The Idaho courts have also followed this pattern of beneficial use.10

This near-reverence for water has not been universal in the arid portions of the United States. In some areas water development has not always proceeded at a universal pace. Wilford C. Bailey, in a study made concerning relocation of communities following construction of Falcon Dam, writes:

The extreme drought experienced in the area during the construction of the dam contributed to the difficulty

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9See also various decisions of the Supreme Court of Utah including: Hammon vs. Johnson, 1937, 94 Utah 20, 2d 894; Hagne vs. Nephi Irrigation Company, 16 Utah 421, (1898), and Becker vs. The Marble Creek Irrigation Company, et al., 15 Utah 225, (1897), as quoted by Watson (1948).

10Martz (1951:219-221) quotes in Albrethsen vs. Wood River Land Co., Supreme Court of Idaho, 1924. 40 Idaho 49, 231 p. 418, that the Supreme Court of Idaho has stated that beneficial use of water must be made or it will be lost.
in solving the problems. The river flow fell to an all-
time low and no large floods came down the river. This
permitted the construction to proceed at a fast pace. At
the same time the drought tended to remove the feeling that
there was any necessity to push arrangements to move into
new homes (1955:256).

This apparent disregard for resource development is common through-
out the United States. Vogt and O'Dea point out that even though the
"Texas homesteader" group in their study practiced water conservation
upon returning to the Rio Grand Valley, they did not practice this to
nearly as great an extent as the Mormons when still in New Mexico (1953).

Walter Firey (1960:183) points out that over one-third of the twentieth
century had passed before the Texas homesteader water users even began the
same level of control as was developed in the Mormon sub-culture nearly
a century earlier.

Lively (1951:3) writes, concerning the general attitude toward
natural resource conservation, that "...the traditional attitude of the
American Public is, to say the least, one of indifference toward ...
conservation..." However, he goes on to add that "...some variation
in this attitude may be distinguished as one moves from group to group."
He contrasts the rural dweller to the urban group who hold different attitudes,
sometimes opposing ones. Even though he is referring primarily to the
forest conservation situation, this may be equated to water conservation
and use:

While Lively writes of a rural-urban difference in attitudes toward
conservation, the Mormon sub-culture is probably without this difference,
at least regarding water, because of the long tradition toward water
conservation.

Turning to other aspects of natural resources it is found that the
stated attitudes regarding natural resources in the Mormon sub-culture have
generally been toward public control. As was pointed out above, the early Mormon leaders believed and practiced public control of natural resources. Anderson (1966:383-386) gives an insight to this public control which before Utah statehood meant Church (Mormon) control in describing the construction of a dam and irrigation system at Enterprise, Utah. He points out that a local man was considered somewhat eccentric when he proposed the project. However, after he appealed to local Mormon church officials the project was initiated.

The various laws dealing with various aspects of natural resource development are somewhat in conflict in portions of the Mormon sub-culture. The Taylor Grazing Act of 1934 gave priority, on Federal Lands, to camping (recreation) over grazing (Martz, 1951:925). The courts in Texas have held that priorities of water use place recreation last while irrigation follows behind domestic and municipal use (Trelease, Bloomenthal, and Gerand, 1965:57). Even though Utah has not spelled out all priorities in the appellate courts as has Texas, the statute dealing with water appropriation carries a

. . .proviso that: "...in times of scarcity, while priority of appropriation shall give the better right as between those using water for the same purpose, the use for domestic purposes, without unnecessary waste, shall have preference over use for any other purpose except domestic use." (Hutchines and Jensen, 1965:35)

Another pertinent law is the Withdrawal Act of 1910. This federal legislation controls use of certain federal lands. It specifically prohibits certain types of mineral exploration (Martz, 1951:475-476), thus, placing natural resources in the public sector. Additional public control, use, and development of natural resources is covered by various flood control, flood protection, reclamation, and pollution allotment acts (Martz, 1951:1020-1024).
In the category of federal irrigation projects the priorities of water are, as expected, given to irrigation. However, the Sale of Surplus Water legislation allows for non-irrigation use, giving hydro-electric power the second priority (Martz, 1941:1020-1024). This does not concur with the priority level given hydro-electric generation in Texas, where it follows mining which in turn follows irrigation (Trelease, Bloomenthal, and Gerand, 1965:57).

In the Mormon sub-culture mining was long considered to be a negative thing. This was because it was transitory, not providing for an on-going cultural situation. Therefore, early mineral development was generally carried forth by "gentiles" or non-Mormons. Regarding the 1850's and 1960's Arrington writes:

Church policy with respect to mining . . . was based upon the proposition that the building of the kingdom required the orderly, balanced development of local resources by a unified people for the support of a permanent society. Mining and the "gold fever" were not allowed to dominate the thoughts and activities of the Latter Day Saints (1966:241).

Arrington (1966:243-244) goes on to point out that it was decided that Mormon development was finally accepted but under the control of the public (Church) leaders (1966:242). This eventually aided in the Mormon economy being somewhat absorbed in the national economy.

Interest of the general public in natural resources is becoming very evident as various non-professional publications appear concerning many different issues relating to natural resource areas. Examples of these are works on the control of pollution (Goldman, 1967) and the various Sierra Club publications such as their collected papers concerning the desecration of wilderness areas by exploiters (Kilgore, 1966).

In summarizing the literature dealing with attitudes toward natural
resource use, the following conclusions are drawn:

(1) Water is of great importance to the Mormon sub-culture.

(2) Conservation of water is practiced and encouraged.

(3) As the prime water use in the Mormon sub-culture has been for irrigation, it follows that irrigation usage is still of great importance.

(4) The Mormon sub-culture favors public control of natural resources.

Other Rural-Urban Differences

In reviewing the literature pertaining to the rural-urban differential, various items of difference have been encountered that do not pertain directly to this study. They do, however, add to the general background information in the area of the rural-urban differential.

Fava points out that the industrial type of urban society has a highly differentiated value system (Fava, 1968:620). This contrasts with the traditional rural system which is highly homogeneous (Berelson and Steiner, 1964:466).

Leevy (1940:948-953) adds to the body of knowledge relating to the rural-urban differential with a study on activity. He found that the urban dweller is more active in the economic, recreational, and political sectors of society. He found that, in these sectors, the rural dweller was less active but was more active in the religious sector.

Forsyth (1941:234) found, in a rural-urban study, that in a rural college that the rural students were pro-rural, whereas the urban students were pro-urban. He also found that the southern rural Negroes were pro-urban. Middleton and Gregg (1959:347) found in an aspiration study that "...males from urban communities were more likely to have high occupational and educational aspirations than those from rural areas.

In a study by Scheff (1964:21) dealing with the legal disposition of mental health problems, there were differences in the handling of court
commitment cases. In the urban courts, the procedures were largely ceremonial. In the rural courts the procedures were based on much more than the testimony of the appropriate medical officer. Scheff terms this latter as being rational procedure instead of ceremonial.

In a community study of the Navajo, Shepardson and Hammond (1964: 1049) found that, as in many rural communities, the degree of persistence was greater than the degree of change.

In a study on the values and behavior of girls, Duvall and Motz (1945: 263) found there is a difference between rural and urban girls. Landis (1949) also found a difference between rural and urban girls. He found the former to be more practical minded and the latter to be more aesthetic minded.

Goldkind (1961:61), in a study made on settlement types, found great differences between the rural and urban types in Costa Rica.

Ellenberg and Lowe (1968) compared "style" of health care in rural and urban areas. In this study they found there are some very definite differences between the rural and the urban sectors of the population.

Occupational choices between farming and professional-executive alternatives were studied by Porter, Haller, and Sewell (1968). This study showed a sharp differential between various occupations as picked by a group of Wisconsin farm boys. It showed certain variables were closely related to occupational choice and that aspirations and the later attainments were also closely related to these variables.

In summarizing the miscellaneous literature dealing with the rural-urban differential, the following conclusions are drawn:

(1) There is evidence in many areas of the rural-urban differential.

(2) The rural-urban differential extends to many segments of the social system.
Summary

This chapter has been concerned with introducing and justifying the problem with describing the current status of rural-urban research, and pointing out the limitations concerning the study. In addition, pertinent definitions have been set forth and the relevant literature has been reviewed.

Traditional middle range theory is used to provide the basis for hypothesis development. The general hypotheses are created following the pattern used by Hans L. Zetterberg (1965:17). Hypotheses are often not directly testable from empirical data and, therefore, these hypotheses are in turn tested through sub-hypotheses or specific hypotheses. Zetterberg also points out that this use of theory is to "... summarize and inspire, not descriptive studies, but verificational studies—studies constructed to test specific hypotheses (Zetterberg, 1965:28-29)." The second, termed grounded theory (Glaser and Strauss, 1966:1), is used to generate partial theory, which is the level of theory commonly called middle range theory (Zetterberg, 1965:17).

It has been shown in Chapter One that there is evidence of rural-urban differences in many segments of the social system. Furthermore, there is evidence of rural-urban differences in relation to political attitudes, to attitudes on the use of credit, and to attitudes about the desirability of education. It follows then, that if rural-urban differences have been established by previous research in relation to certain types of attitudes, then similar rural-urban differences in the Bear River drainage area may reasonably be expected to occur. Yet, it has also been shown that residents of the Bear River drainage area are predominantly participants in the Mormon subculture. Members of a subculture are expected to share many values and hold many attitudes in common. Thus, it is to be expected that the values of the subculture are universally shared.
CHAPTER II
HYPOTHESES

Introduction

Traditional middle range theory is used to provide the basis for hypothesis development. The general hypotheses are created following the pattern used by Hans L. Zetterberg (1965:17). Hypotheses are often not directly testable from empirical data and, therefore, these hypotheses are in turn tested through sub-hypotheses or specific hypotheses. Zetterberg also points out that this use of theory is to "... summarize and inspire, not descriptive studies, but verificational studies--studies constructed to test specific hypotheses (Zetterberg, 1965:28-29)." The second, termed grounded theory (Glaser and Strauss, 1966:1), is used to generate partial theory, which is the level of theory commonly called middle range theory (Zetterberg, 1965:17).

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by all individuals? Or can it be expected that, in spite of many common values, rural-urban differences are great enough to reveal distinguishable differences in attitudes?

In order to answer these questions, a general hypothesis has been formulated stating that there are distinguishable rural-urban differences in attitudes among persons in the Bear River drainage area. Furthermore, upon the basis of evidence presented in Chapter One, these differences may reasonably be expected to relate to the degree of conservatism of the rural people. Thus, the general hypothesis may be stated as follows:

Hypothesis One:

The rural sector of the subculture will be more conservative in certain attitudes than the urban sector of this same subculture.

It has also been pointed out in Chapter One that conservation and use of water is of great importance to the Mormon subculture and that this subculture favors public control of natural resources. Yet are there differences in their attitudes towards water in spite of an assumed similarity in shared values? More specifically, are there differences in such attitudes among residents of the Bear River drainage area? If, in spite of shared values among members of the Mormon subculture, rural-urban differences in certain attitudes are revealed by tests of the general hypothesis stated above, it may be reasonably expected that rural-urban differences in attitudes towards water will also occur. Thus a second general hypothesis has been formulated as follows. It is stated in the negative in order to distinguish it more readily from the first hypothesis.

Hypothesis Two:

There will be no significant difference between the rural dweller and the urban dweller within the Bear River drainage area in expressed attitudes toward natural resource development, use, and control.
Specific hypotheses are used to test the general hypotheses.¹

**Specific Hypotheses for General Hypothesis One:**

In order to test the difference between rural and urban sectors of the study area in certain attitudes, there must be a specification of the attitudes to be included. Consequently, three sub-hypotheses are presented which will accomplish this purpose:

**Hypothesis One Sub-One:** The rural dweller will be more politically conservative than the urban dweller when his expressed attitudes are measured on a political-economic value scale.

**Hypothesis One Sub-Two:** The rural dweller will be less conservative (more favorable toward the use of credit) when his expressed attitudes are measured on a value scale relating to credit.

**Hypothesis One Sub-Three:** The rural dweller will be more conservative than the urban dweller when his expressed attitudes are measured on a value scale relating to the desirability or education.

**Specific Hypotheses for the Testing of General Hypothesis Two:**

In order to test the second hypothesis, the general term "natural resource development, use, and control" must be operationalized or made more specific. Consequently, seven sub-hypotheses have been formulated which accomplish this purpose.

¹The two step hypothesis methodology (Zetterberg, 1965) uses a number of sub-hypotheses to evaluate a general hypothesis. The general hypothesis is supported or rejected by the specific sub-hypotheses, however, there is no quantitative commulat ion for proof. The evaluation is based solely on the patterns shown by the sub-hypothesis evaluations.
Hypothesis Two Sub-One: There will be a significant difference between the rural dweller and the urban dweller when the choice for water resource use is between irrigation and industry. The rural dweller will prefer irrigation use to a greater degree than will the urban dweller.

Hypothesis Two Sub-Two: There will be no significant difference between the rural dweller and the urban dweller when choice of control or use of a natural resource is between public or private sector. Both groups will favor public control or use.

Hypothesis Two Sub-Three: There will be a significant difference between the rural dweller and the urban dweller when the choices for water use are between irrigation and recreation. The rural dweller will be more in favor of irrigation.

Hypothesis Two Sub-Four: There will be no significant difference between the rural dweller and the urban dweller when the choice of control concerning surplus waters is between public and private control. Both groups will favor public control.

Hypothesis Two Sub-Five: There will be no significant difference between the rural dweller and the urban dweller concerning proposed water development where water rights are guaranteed. Both groups will favor development.

Hypothesis Two Sub-Six: There will be no significant difference between the rural dweller and the urban dweller regarding local pollution problems. Both groups will consider there are local pollution problems.

Hypothesis Two Sub-Seven: There will be a significant difference between the rural dweller and the urban dweller concerning the use of land for mining or recreation. The rural dweller will prefer mining to recreation and will do so more than the urban dweller.
CHAPTER III

METHODOLOGY

Introduction

Within this chapter six separate sections are considered. They are: (1) the interview schedule; (2) the sampling procedure; (3) the methods of interviewing; (4) the data reduction; (5) the types of statistical methods used; and (6) the method of theory generation.

Interview Schedule

The data used for this particular study was collected as a part of the information gathered for the parent project (see Acknowledgements). Parts pertaining to the particular problems being studied, natural resource development, etc., were new. Most of the other parts were taken from previous studies. The entire schedule is reproduced in Appendix A.

From the interview schedule certain items were taken for the benefit of this study. There were included three general institutional related attitude scales and specific questions relating to natural resource development. The scale development is dealt with in Appendix B.

The natural resource questions are dealt with as separate items with no attempt made to place them in scalar form.

Sample Method

As defined earlier and used in this study, the urban population included the interviews taken in the metropolitan area of Ogden. The rural population for this study is that which was included in the five counties with farm and small town residents. In these areas the method of sampling used is basically a map segment technique. (Cochran, 1963: 18-48). The maps used for this type of sampling are detailed enough to
give indication of individual residential units in open country areas and city blocks in towns.

The geographical boundaries of the area to be sampled were drawn on the maps. Then the enclosed area was divided into a number of equal housing unit segments. In the open country areas, the segments included approximately six housing units. In the town and city areas an attempt was made to include about the same number of houses in each segment. This had to be estimated for each segment. The segments were given numbers from left to right. The segments to be sampled were then chosen using a table of random numbers. Alternate segments were also chosen at this time to overcome map problems such as no houses in the segments and blocks which were indicated on the maps but which did not actually exist. From these segments was drawn a sample of three interviews per segment in the metropolitan city, urban area, and in the small towns.

In the open country portion of the rural counties, an attempt was made to interview all heads of households residing in the segment. This was done to insure an adequate sample of farmers, particularly irrigation farmers.

Within the non-farm segments, the number of households was counted by the interviewer. This total then was divided by three. Using the method of drawing numbers, the first household was chosen by counting from an arbitrary entry point which was common to all segments. From the

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1 The maps were obtained from various sources. Where density of population was high enough to warrant city lot breakdowns, assessors' maps were used. In sparsely populated areas, United States Geological Survey maps were employed. In some rural communities the interviewers made roughly drawn maps.
first dwelling the interviewer then added the segment increment (the re-
sults of his previous calculation - the total dwellings divided by three) to find the second, then the third household. Alternate households were obtained by taking the original plus one in all cases. However, alternates were not used unless the original household head could not be contacted at any time.

The use of alternates probably introduced some bias to the sample. However, funding and time prevented total interviewing of the sample area. This lack of contact was due to one of three factors. The first was the inability to make contact with the selected household. The second was the refusal of the household to be interviewed. The third, and least common, was the head of household not being available or able to be interviewed--due to mental incapability, sickness, etc. In a few cases the non-availability was due to shift work or other time factors. This type of bias was reduced by having the interviewers work from early morning to late evening. Thus, an attempt was made to straddle the most common work periods.

**Interviewing**

As has been mentioned before, the interview schedule was directly administered. After picking the area and the household to be interviewed, the interviewer administered the schedule. The interviewer, not the respondent, filled out the schedule as he asked the questions. In the desire for consistancy and accuracy, the interviewers were trained with the intent of always interviewing in the same manner. Spot checks by supervisors were made and the schedules were field edited both by the interviewers and the supervisors. The normal interview time was about an hour. This did not include movements between interviews nor the time taken to arrange appointments if appointments were necessary.
Group meetings of the interviewers and supervisors were held often with the intent of solving problems and maintaining consistency.

**Data Reduction**

The interview schedule was not pre-coded before beginning the field work. This was due to two reasons. The first reason was a necessity to begin the interviewing at once. The second reason was a desire to code according to what data were obtained and to fit the code to this data. Many open ended questions were used.

The development of the code was carried out along with the actual coding process. This was primarily due to the large number of open end questions. Upon finishing the coding, during which the data was transferred to code sheets, the code sheets were used to punch standard IBM cards.²

These cards were then verified and listed. The listings were then checked for internal consistency, especially for items exceeding their parameters.

Upon verifying and listing, missing cards were replaced and duplicate or master decks were prepared. These master decks were then stored separately to provide for lost cards, damaged cards, and other problems.

After establishing finished card decks the analysis of data was begun using various electronic data reduction equipment. Primary statistic reduction was accomplished with two IBM computers. Certain portions of the data reduction such as occupational counts and other

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²Storage on tape was not considered for three reasons. One, there were only limited tape capabilities available when the coding began. Two, verification is much easier on punch card than tape. Three, partial use of the data was expected and realized so that a prohibitively large number of tapes would have been necessitated.
problems relating to what may be termed accounting procedures were done
on an IBM 1620 computer. However, the slower cycle time and limited
storage capacity of this machine prevented its use for more sophisticated
statistics. For most statistical reductions an IBM 360/44 computer was
used. In both cases the software development, available machine
capacity, and developed programs created certain limitations as to
statistics reduction and interpretation.

The various programs used were QUEST (Hurst, 1968:QUEST), TABLEX
(Lewis, 1967), SOCONE\(^3\), BASIC (Hurst, 1967:BASIC), and FACTA (Hurst, 1967:
FACTA).

The first two of these programs utilized raw data. From these data,
matrices (contingency tables) are generated. The QUEST program was used
for most of the matrix construction utilized in this study. This was
because it had larger matrix capabilities and it was in permanent computer
library storage which greatly reduced computation time. Even though this
program, like TABLEX, computes percentages and Chi squares the only
utilization made was the basic cross-tabulation ability which generates
matrices. Some, limited use was made of the recoding, reclassification,
and grouped data capabilities of the program.

The SOCONE program was used for all percentage, Chi square, and
contingency coefficient calculations. This program was specifically
modified for this study to provide contingency coefficients, corrected
contingency coefficients, and total percentages. During its original
adaptation it was modified to provide row and column percentages, in

\(^3\)This program was adapted by Biundo and further modified by
Gillings. The original work was by Veldman (1967:332-337).
addition to the basic program which computes the expected cell values, degrees of freedom, Chi square values, and probability.

The BASIC program was used to compute analysis of variance upon the generated matrices of contingency coefficients.

The FACTA program was used to test the validity of various scales. It uses the principle component method of factor analysis in the first stages with the centroid method based upon the first step. Only the principle component portion of the program was used for the purposes of the project of which this study is a part.

After accomplishing the various statistical reductions utilizing the computers, the results were spot checked for computation accuracy and all statistics were checked for limitations concerning non-machine accuracy. Such problems as undersized expected cell frequencies and too small of samples were revised and re-computed.

The raw scores which were obtained from summatng the individual responses on the various value scales were converted to index scores. This was done to facilitate handling of the material through using a common 0.00 to 1.00 base index and to provide a small enough matrix size to overcome the problems of inadequate expected cell frequencies as mentioned above. This was accomplished by using a zero score for the lowest response on all questions. The highest response on five answer questions was four and on four answer questions was three. Then the individual score was divided by the highest possible score. The highest possible score was computed by multiplying the number of questions of the scale by the highest possible score on one individual question. Thus, a five item scale (such as constituted by Items 23-27 of the original interview schedule, Appendix A) with possible highest responses of four would
have a possible scale score of twenty. (If the individual score was eighteen then the index score would be 0.90.) Incomplete scales were scored as no answer responses and were not used in computations.

After establishing index scores the responses were then grouped in three categories. This was done to prevent dichotomizing and still retain small enough contingency tables to effectively evaluate using the above mentioned statistics. The categories were arbitrarily established upon the 0.00 to 1.00 continuum at one-third intervals. Thus, the low category ranged from 0.00 through 0.33, the moderate category ranged from 0.34 through 0.66, and the high category from 0.67 through 1.00. Taking the study as a whole, both ends of the continuum had one or more responses.

Statistical Methods

In reducing the raw data five basic types of statistical methods were used. The most basic method used was the simple computation of percentages. This was done to aid in the interpretation and description of the various responses. To establish association the Chi-square test was used. To determine the degree of association contingency coefficients (C) were computed. To analyze the matrices generated from the contingency coefficient, Kendall's coefficient of concordance (W) and analysis of variances were both used.

The rational in using these statistics is based upon the fact that while the value scales are measurable statistics the majority of the data

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4The procedural formula for the index score conversion is: \( Is = \frac{Si}{Sp} \)

Where: \( Is \) = Index Score, \( Si \) = Individual Raw Score, and \( Sp \) = Possible Raw Score. In the above example this would be \( Is = 18/20 = 0.90 \). For further information see: Adler and Roessler (1967: Chapter 14).
used was neither orderable nor measurable, thus, non-parametric. Therefore, the need for correlation must be met by using some type of matrix reduction. These types of reduction are based upon the matrix provided in the contingency tables. For the measurable (value scales) to unordered countable comparisons two other statistics would have been applicable. These are biserial correlation and \textit{eta} correlation. However, the former is only usable where one variable is a dichotomy and both require one variable to be measurable. (Peatman, 1963:143-146). Thus, to maintain consistency\footnote{Consistency in data handling has been shown to be of paramount importance. Therefore, the statistics used were held to a single type where similar applications were necessitated. In addition, certain checks were incorporated into the methodological procedures. For a comprehensive coverage of the problems and procedures of quality assurance of statistical treated data see: Zarkovich (1966).} contingency coefficients were used. This was done because it can be used with both measurable to unordered countable comparisons and between unordered countable comparison. (Peatman, 1963:134-139).

The methods for computing the Chi-square and contingency coefficients statistics were after those described by Peatman (Peatman, 1963:134-139). The method for correcting C (contingency co-efficient) to corrected contingency co-efficient ($\overline{C}$) was computed following McCormick (1941:206-207). Allowances for adequate contingency table cell size followed Siegal (1956:178). Thus, no Chi-square values were computed upon rows or columns in which any one cell was less than one (1.00) in expected frequency. The rows or columns were either combined or not included in the computations. No contingency table was accepted for use where over twenty per cent of the cells contained less than five (5.00) in expected frequency. When
the tables could not be reduced by combinations or other methods and the expected frequencies were still below the acceptable, low rows and/or columns were not included in the Chi-square computations. This follows the method of matrix reduction used by Willeke (Willeke, 1968:147) who quoted Ray Funkhouser on this aspect of the use of the Chi-square test.

The Chi-square computation program used to compute the Chi-square values also provide the exact level of probability. However, this was converted to the nearest common level of significance and the Chi-square value itself was then checked using standard tables (Beyer, 1966:233-239, 240,256). The 0.05 level of significance was generally used as the point of acceptance or rejection of the hypotheses.  

The Kendall's coefficient of concordance (W) was computed following Siegel (Siegel, 1956:229-239). This statistical tool was used "... to measure the intensity of rank correlation." (Kendall, 1963:233-238). The bases for the ranks used are the matrices generated from the contingency coefficients (as shown in Tables 16 and 17). This statistical tool is primarily designed for data which is partially non-parametric in origin and that is the basis for its use.

As a further test of the existence or non-existence of significant variance among the factors in the generated matrices of contingency coefficients, the analysis of variance test was applied to the matrices. This was done on the basis that, even though, this was non-parametric

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6For further discussion concerning the 0.05 level of significance see Adler and Roessler (19 :176); Hagood and Price (1957:323-331); Skipper (1967:16-19); and Labovitz (1968:320-322). The various positions have been taken into consideration and in all situations the 0.05 level has not always been used as the cut-off point.
data in origin, there is a rankable situation within the matrices (Ostler, 1963:278-362 and Haggard, 1958). The actual contingency coefficients were used as a basis for the analysis of variance in order to provide the highest possible sensitivity.

General Attitudes

General Hypothesis One states: The rural sector of this particular sub-ethnic will be more conservative than the urban sector of the same sub-ethnic. In order to establish such a relationship several specific sub-hypotheses have been formulated. (The bases for these are the three previously mentioned attitude scales).

Political-Economic Differences

Hypothesis One Sub-One states: The rural dweller will be more politically conservative than the urban dweller when his expressed attitudes are measured on a political-economic value scale. To test this hypothesis the place of residence, rural or urban, was compared to...
CHAPTER IV

GENERAL RURAL-URBAN DIFFERENTIALS

Introduction

Within this chapter the general rural-urban differences are treated. These differences, dealing with political-economic position, attitudes concerning credit buying, and attitudes toward education, are dealt with using the statistical methods described in Chapter III.

These methods were applied to the rural and urban sectors of the sample. Thus, the contingency tables are all of the two-by-three type. The dichotomous rural-urban classification provides the two-portion variables while the three-portion variables are filled by the three categories of the grouped index scores relating to the attitude scales.¹

General Attitudes

General Hypothesis One states: The rural sector of this particular sub-culture will be more conservative than the urban sector of the same sub-culture. In order to establish such a relationship several specific sub-hypotheses have been formulated.² (The bases for these are the three previously mentioned attitude scales).

Political-Economic Differences

Hypothesis One Sub-One states: The rural dweller will be more politically conservative than the urban dweller when his expressed attitudes are measured on a political-economic value scale. To test this hypothesis the place of residence, rural or urban, was compared to

¹Refer to Chapter III
²Refer to Chapter III
the scale dealing with political economic attitudes. Table 1 shows the
relationship between these two variables.

### TABLE 1

POLITICAL-ECONOMIC ATTITUDES BY RURAL-URBAN RESIDENCE

<table>
<thead>
<tr>
<th>Residence</th>
<th>Political-Economic Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conservative</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Urban</td>
<td>67</td>
</tr>
<tr>
<td>Rural</td>
<td>355</td>
</tr>
<tr>
<td>TOTAL</td>
<td>422</td>
</tr>
</tbody>
</table>

*Not included in Chi-square Computation

No answer responses = 82

Chi-square = 3.831, df = 1, $P = 0.05$, $C = 0.091$

When the Political-Economic scale index score of 0.0 to 1.0 was divided into three equal segments and labeled conservative, moderate, and liberal, it was found that very few of the respondents fell into the liberal end of the scale for either rural or urban populations. This result required that the analysis determine whether there were significant differences between the rural and urban population on the basis of the remaining two categories.

As stated in the chapter dealing with methodology, the 0.05 level is used as the acceptable level of significance. The hypothesis is thus accepted. Thus, it is stated that there is a significant difference in the distribution between the rural and urban segments of the population relating to more or less conservatism in the political-economic attitudes being studied.
Table 1 shows us that the distribution between the rural and urban portions of the population places a higher than expected amount of rural dwellers in the politically conservative category. Conversely, it is found that there are more than the expected number of moderates in the urban portion of the sampled population. The liberal group was practically non-existent. There were 35.4 per cent in the urban group that fell in the conservative category while for the rural group 43.1 per cent were reported as falling in this category.

These findings support the hypothesis (Number One) that there will be a significant political attitude difference between the rural and urban portion of the population and that the rural will be more conservative. This supports the statement of Haer that "...the wealth of common-sense observations to that effect (rural conservatism) and the findings stemming from indirect approaches..." show probable cause for such belief (Haer, 1952:344). It also supports, to some degree, the statements by Beers that place farmers as conservatives. (Beers, 1953:11). However, it does not support Taylor and Jones who wrote that the "isolationism" of the farmer is related to only local issues, nor does it support the writings of Taylor and Jones that indicate a much less pronounced "...rural-urban difference in political attitudes..." (Taylor and Jones, 1964:446). The hypothesis is thus accepted.

Use of Credit

Sub-hypothesis One Sub-Two states: The rural dweller will be less conservative or more favorable toward the use of credit when his expressed attitudes are measured on a value scale relating to credit. To test this hypothesis, the place of residence, rural or urban, was compared to the scale measuring attitudes toward credit. Table 2 shows the relationship between these variables.
TABLE 2
ATTITUDES TOWARD USE OF CREDIT BY RURAL-URBAN RESIDENCE

<table>
<thead>
<tr>
<th>Residence</th>
<th>Use of Credit Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Against</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Urban</td>
<td>12</td>
</tr>
<tr>
<td>Rural</td>
<td>138</td>
</tr>
</tbody>
</table>

No answer responses = 9
Chi-square = 3.057, df = 2, P = 0.30, C = 0.075

In determining whether or not there is an adequate degree of association between the variables, the Chi-square value (3.057) is found to be too small to meet the required level of acceptance. Thus, the hypothesis is not considered valid. The row percentages in Table 2 also give little support to the hypothesis. Although there are some differences in the percentages—with the rural group being the more "highly in favor" of credit buying—there is not enough significance to accept the hypothesis as proven.

The above findings contradict what Whitney found concerning decreasing credit use with urbanization. (Whitney, 1947:55). However, this lack of differentiation supports the works of both Smith (Smith, 1959:359) and Armand L. Mauss (Mauss, 1966) who have found members of the Mormon sub-culture to be generally the same as the surrounding culture—whether rural or urban. This also is supported by Bradford in his evaluation of education in a rural community in Utah (Sanderson, 1942:783).

Both groups were predominantly moderate towards the use of credit. Sixty-three and two-tenths percent of urban dwellers and 57.6 percent of
the rural dwellers fell in the category. Thirty-five and two-tenths percent of the urban dwellers and 39.2 percent of the rural dwellers were favorable towards credit buying. Here as in the previous scale, there was a near lack in one category—unfavorable. Credit does not seem to parallel politics in this population.

The hypothesis is rejected.

Desirability of Education

Sub-hypothesis One Sub-Three states: The rural dweller will be more conservative than the urban dweller when his expressed attitudes are measured on a value scale relating to the desirability of education. To test this hypothesis the place of residence, rural or urban, was compared to the scale measuring desirability of education. Table 3 shows the relationships between these two variables.

In evaluating the existence of association, the Chi-square value is not significant. The hypothesis is not supported. In addition, the percentages are in a reversed direction from the hypothesis. The rural segment has a higher attitude favorability towards education than the urban (an interesting sidelight is that both groups are moderately or highly favorable toward education with only one person in the entire sample group opposing it).

Referring to the literature previously cited it is found that one of two possibilities was predictable. The first possibility, following Loomis and Beegle (Loomis and Beegle, 1957:24-26), Burchinal (Burchinal, 1961:120), Middleton and Gregg (Middleton and Gregg, 1959:353), and Nelson (Nelson, 1952:24) there is a difference between the rural and urban dweller regarding the desirability of education with the urban dweller
### TABLE 3
ATTITUDES TOWARD DESIRABILITY OF EDUCATION BY RURAL-URBAN RESIDENCE

<table>
<thead>
<tr>
<th>Residence</th>
<th>Desirability of Education Attitudes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Favorability</td>
</tr>
<tr>
<td></td>
<td>No.</td>
</tr>
<tr>
<td>Urban</td>
<td>97</td>
</tr>
<tr>
<td>Rural</td>
<td>504</td>
</tr>
<tr>
<td>TOTAL</td>
<td>601</td>
</tr>
</tbody>
</table>

*Not included in Chi-square computations
No answer responses = 4
Chi-square = 2.52, df = 1, P = 0.20, $C = 0.075$

being much more in favor of its desirability than the rural dweller.

The other possibility, according to the literature, is that little or no difference exists in attitudes concerning the desirability of education when comparing this to rural or urban residence. This possibility is shown by Taylor and Jones (Taylor and Jones, 1964:375), Bradford (Sanderson, 1942:783), Smith (Smith, 1959:359), Rogers (Rogers, 1960:223), Bertrand (Bertrand, 1958:228-229), and Slocum (Slocum, 1962:418). The second of these possibilities concurs with the present data. There is no significant difference when using the Chi-square test. Thus, the first possibility is not supported but the second of these possibilities is supported. Although the findings in Table 3 are not significant, still it found that the urban dweller is not more in favor of the desirability of education than the rural dweller. Instead, it is found that the rural dweller is more in favor of the desirability of education.
Upon examination of the row percentages, it is found that even though the urban dweller has one-tenth of one percent more of his possible responses in the "highly favorable" and "moderately favorable" categories, he is 6.2 percent lower in the "highly favorable" category. Thus, the rural dwellers showed a larger portion "highly favorable" towards education.

One further conclusion can be drawn from this table. There are obviously very few people in this area of the Mormon sub-culture who are unfavorable to the desirability of education. This is true of both the rural and the urban sectors of the sub-culture.

The hypothesis is rejected.

Summary

In ending this chapter dealing with the rural-urban differentials compared to general attitudes, the following conclusions are drawn.

(1) There are political differences between the rural and the urban portions of the population tested. These follow the hypothesized pattern of greater rural conservatism. The urban portion was more moderate than the rural portion; however, both portions are mostly moderate. With the exception of 0.4 percent of the rural dwellers, no respondents fell in the liberal category. Based upon the percentages alone, it is very evident that liberalism in politics has not invaded this portion of the sub-culture.³

(2) There are no significant differences between the rural and the urban portions of the tested population in regard to credit buying. Both

³voting trends in the 1960 and 1964 presidential elections generally show this for the rural area of this study. (Long, 1968:220, 238)
portions are predominantly moderate in their attitudes. Favorable attitudes toward credit purchasing are much stronger than unfavorable attitudes.

3) There is no significant difference between the rural and the urban portions of the tested population in regard to the desirability of education. Thus, the hypothesis of more conservative attitudes was not supported. Some of the literature was supported by this. However, the rural group was represented to a greater extent in the very favorable group than was the urban group. This was counter to all expectations according to the literature.
CHAPTER V

NATURAL RESOURCE ATTITUDES AND RURAL-URBAN DIFFERENCES

Introduction

Inasmuch as the first general hypothesis is not supported by tests of all of the sub-hypotheses, it cannot be generalized that rural-urban attitudes tend to be significantly different among residents of the Bear River drainage area. Thus, if differences in political attitudes between rural and urban dwellers are significant while differences in attitudes toward credit use and towards desirability of education are insignificant, it cannot reasonably be expected that there will be widespread differences in attitudes toward water development, use, and control.

Thus, the original expression of the second hypothesis seems to be tenable at this point. This general hypothesis stated that there will be no significant difference between the rural and the urban dweller in regard to natural resource development, use, and control. The following sub-hypotheses deal with items of support relating to natural resource development and are used to test the general hypothesis.

Natural Resource Attitudes

Use for Industry or Agriculture

Hypothesis Two Sub-One states: There will be a significant difference between the rural dweller and the urban dweller when the chance for water resource use is between irrigation and industry. It is further stated that the rural dweller will prefer the irrigation use to a greater degree than will the urban dweller. Table 4 shows the relationships between the rural and the urban sectors when questions regarding whether industry or
irrigation should have priority use of water. 

Upon examination of Table 4, it is found that there is no significant difference between the rural and urban sectors concerning the priority use of water. Therefore, the hypothesis is not supported. Upon examination of the row percentages, it is further shown that the urban dweller category is not less in favor of irrigation, but actually has a slightly larger proportion in favor of irrigation use. Therefore, both the test for significance and examination of the row percentages invalidate the hypothesis. The hypothesis is rejected.

<table>
<thead>
<tr>
<th>Residence</th>
<th>Priority Use of Water</th>
<th>Industry</th>
<th>Irrigation</th>
<th>Joint etc.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>Row%</td>
<td>No.</td>
<td>Row%</td>
</tr>
<tr>
<td>Urban</td>
<td></td>
<td>9</td>
<td>4.6</td>
<td>176</td>
<td>90.8</td>
</tr>
<tr>
<td>Rural</td>
<td></td>
<td>45</td>
<td>5.1</td>
<td>792</td>
<td>89.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>54</td>
<td></td>
<td>968</td>
<td></td>
</tr>
</tbody>
</table>

No answer responses = 14
Chi-square = 0.445, df = 2, P = 0.80, C = 0.029

Public-Private Control of Certain Natural Resource Areas

Hypothesis Two Sub-Two states: There are no significant differences between the rural dweller and the urban dweller when choice of control or use of a natural resource is between public or private sectors. It is further stated that both groups will favor public use or control. Three

1The questions upon which this analysis was based are in Appendix A and the scales are discussed in Appendix B.
questions from the interview schedule were used to test this hypothesis.

The first question deals with the priority of public land for forest versus grazing uses. Grazing on public forest lands is part of the private operations of livestock farmers. Table 5 shows the relationships of these priorities to the rural and urban dwellers. (The lands referred to are publicly owned national forest land). In the geographic area being studied there is practically no private ownership of large forest tracts for forestry purposes. In addition, private tree farming or other forest product utilization is practically non-existent.

The second question deals with the priority use of public held land. The lands are largely those held by the Bureau of Land Management and the United States Forest Service. Priority alternatives given are use for private agriculture versus public use. Table 6 shows the relationships of these priorities to the rural and urban dwellers.

The third question deals with the control of land which has problems with erosion and excessive runoff. The alternatives offered are private user controls and public controls of the effected lands. Table 7 shows the relationships between the rural and urban dwellers and these alternatives.

Upon examination of the tables, it is obvious that the null hypothesis is not held to be valid. In all three cases, there is a high significance of difference shown between the rural and the urban dweller.

On the first item comparing the priority of use between forestry and grazing (Table 5) the rural group shows a high percentage favoring grazing with over fifty percent wanting this only and another 22 percent favoring both forest and grazing use. Although the proportions were not as great, the urban group shows a slightly higher preference for grazing with 38.6% favoring grazing use compared to 36.5% for forestry use, with 24.6% wanting
joint use. The high significance of difference is accounted for by the high proportion of the rural group in favor of grazing combined with a correspondingly smaller percentage in favor of forestry uses. This test makes the hypothesis of no difference invalid.

For the second item comparing attitudes toward priority in use of public lands between private agriculture and public use (Table 6) the significance of difference is at the 0.001 level. In this test, the hypothesis of no difference is again proven invalid. The second part of the hypothesis is valid in that the urban dweller prefers public use lands. With 50.8% of the urban group in favor of public use compared to 22.8% for strictly private use, it is obvious that the urban dwellers greatly favor public use. In addition, the rural dweller prefers public use, also, but, not with such a great difference as is indicated by the 44.9% for public use compared to 40.4% for private use. The high significance is accounted for by these differences. This test makes the hypothesis

TABLE 5
PRIORITY BETWEEN FOREST AND GRAZING USE BY RURAL-URBAN RESIDENCE

<table>
<thead>
<tr>
<th>Residence</th>
<th>Priority of Use</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Forest</td>
<td>Grazing</td>
<td>Joint</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>Row%</td>
<td>No.</td>
<td>Row%</td>
<td>No.</td>
</tr>
<tr>
<td>Urban</td>
<td>71</td>
<td>36.5</td>
<td>75</td>
<td>38.6</td>
<td>48</td>
</tr>
<tr>
<td>Rural</td>
<td>224</td>
<td>26.5</td>
<td>432</td>
<td>51.2</td>
<td>187</td>
</tr>
<tr>
<td>TOTAL</td>
<td>295</td>
<td></td>
<td>507</td>
<td></td>
<td>235</td>
</tr>
</tbody>
</table>

No answer responses = 58
Chi-square = 11.138, df = 2, P= 0.001, C = 0.150

In summarizing the tests of this hypothesis it has been shown that it has been shown that there is a difference. This was based upon three
TABLE 6

PRIORITY USE OF PUBLIC LANDS BETWEEN AGRICULTURE AND PUBLIC BY RURAL-URBAN RESIDENCY

<table>
<thead>
<tr>
<th>Residence</th>
<th>Priority of Use</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private</td>
<td>Public</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>44</td>
<td>22.8</td>
</tr>
<tr>
<td>Rural</td>
<td>358</td>
<td>40.0</td>
</tr>
<tr>
<td>Total</td>
<td>401</td>
<td></td>
</tr>
</tbody>
</table>

No answer responses = 15
Chi-square = 27.127, df = 2, P = 0.001, C = 0.229

invalid insofar as the rural-urban difference is concerned but upholds the portion favoring public use and control.

Comparing the desires for public or private controls of a water runoff problem area (Table 7), the significance of difference is 0.01 and, thus, the null hypothesis is upheld as the rural and the urban dweller both highly favor public control. The urban group (86.6% for public control) has a significantly higher favoritism for public control than does the rural group (77.1% for public control). This supports the first part of the hypothesis in that it has been shown that there is a significant difference between the rural and the urban dweller regarding control and use of lands. It supports the second test in that it supports the second part of the hypothesis.

In summarizing the tests of this hypothesis it has been shown that the hypothesis is not supported in the portion concerning the existence of a rural-urban differential relating to attitudes toward public control. It has been shown that there is a difference. This was based upon three
tests. The second part of the hypothesis, that favoring private or public control, or use was upheld by two tests (Tables 6 and 7). The third test (Table 5) did not uphold this. The first part of the hypothesis was rejected. The second part is accepted.

**TABLE 7**

**ATTITUDES TOWARD PUBLIC OR PRIVATE CONTROL OF PUBLIC LANDS BY RURAL-URBAN RESIDENCE**

<table>
<thead>
<tr>
<th>Residence</th>
<th>Control of Lands</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public No. Row%</td>
<td>Private No. Row%</td>
<td>Joint etc. No. Row%</td>
<td>Total No. Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>168 86.6</td>
<td>14 7.2</td>
<td>12 6.2</td>
<td>194 100.0</td>
</tr>
<tr>
<td>Rural</td>
<td>688 77.1</td>
<td>131 14.7</td>
<td>73 8.2</td>
<td>892 100.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>856</td>
<td>145</td>
<td>85</td>
<td>1086</td>
</tr>
</tbody>
</table>

No answer responses = 9
Chi-square = 9.283, df = 2, P = 0.001, C = 0.136

**Priority of Water Use Between Irrigation and Recreation**

Hypothesis Two Sub-Three states: There will be a significant difference between the rural dweller and the urban dweller when choices of water use are between irrigation and recreation. It is further stated that the rural dweller is more in favor of irrigation use than the urban dweller.

To test this hypothesis a question concerning the priority of water use was evaluated. The alternatives given were priorities for irrigation and recreation. Table 8 shows these relationships.

Upon examination of the table, it is found that there is a highly significant difference (0.001) between the rural and the urban groups.
This supports the hypothesis. The second part of the hypothesis is also on the side of being supported; although very high percentages of both rural and urban dwellers were in favor of irrigation, rural respondents were slightly higher. Thus, the test supports the hypothesis, although both groups highly favor irrigation. This is probably indicative of both a water consciousness and a highly homogeneous population. The hypothesis is accepted—both the first and second parts.

**Private or Public Control of Surplus Waters**

Hypothesis Two Sub-Four states: There will be no significant difference between the rural dweller and the urban dweller when the choice of control concerning surplus waters is between public or private control. It further states that both groups will prefer public control.

**TABLE 8**

ATTITUDES TOWARD WATER USE BETWEEN IRRIGATION AND RECREATION BY RURAL-URBAN RESIDENCE

<table>
<thead>
<tr>
<th>Priority of Use</th>
<th>Irrigation</th>
<th>Recreation</th>
<th>Joint etc</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence</td>
<td>No.</td>
<td>Row%</td>
<td>No.</td>
<td>Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>176</td>
<td>90.7</td>
<td>5</td>
<td>2.6</td>
</tr>
<tr>
<td>Rural</td>
<td>841</td>
<td>96.0</td>
<td>14</td>
<td>1.6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1017</td>
<td>19</td>
<td>34</td>
<td>1070</td>
</tr>
</tbody>
</table>

No answer responses = 25

Chi-square = 10.584, df = 2, P = 0.001, C = 0.145

To test this hypothesis a question concerning whether there should be private or public control was asked. Table 9 shows the relationships between controls and the rural-urban differential.
TABLE 9
ATTITUDES TOWARD PUBLIC OR PRIVATE CONTROL
OF SURPLUS WATER BY RURAL-URBAN RESIDENCE

<table>
<thead>
<tr>
<th>Residence Type of Control of Surplus Waters</th>
<th>Public No. Row%</th>
<th>Private No. Row%</th>
<th>Joint etc. No. Row%</th>
<th>Total No. Row%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>178 91.7</td>
<td>12 6.2</td>
<td>4 2.1</td>
<td>194 100.0</td>
</tr>
<tr>
<td>Rural</td>
<td>716 80.4</td>
<td>116 13.0</td>
<td>59 6.6</td>
<td>891 100.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>894</td>
<td>128</td>
<td>63</td>
<td>1085</td>
</tr>
</tbody>
</table>

No answer responses = 10
Chi-square = 23.516, df = 2, P = 0.001, C = 0.213

Upon examination of the table distribution, it is found that the hypothesis is not supported in that there is a significant difference between the rural and the urban groups. In relation to the row percentages the urban group shows a greater amount of desire for public control (91.7% for the urban compared to 80.4% for the rural). However, the second part of the hypothesis is supported. Both groups, rural and urban, are strongly in favor of public control of surplus waters.

The first part of the hypothesis is rejected, the second part accepted.

Water Development with Guaranteed Rights

Hypothesis Two Sub-Five states: There will be no significant difference between the rural dweller and the urban dweller concerning proposed water development when rights are guaranteed. It further states that both groups will favor development.

To test this hypothesis two questions are evaluated. The first question asked whether or not development is favored if all water rights are
guaranteed. Table 10 shows the rural-urban differential compared to this question.

The second question used to test this hypothesis is a related question which asks whether or not a specific proposed project (the Bear River Project proposal of the U. S. Bureau of Reclamation) will negatively affect the respondent. Table 11 shows the relationships between this question and the rural-urban differential.

This latter question is used to make a comparison between a qualified or restricted, question—the former question—and a non-qualified, or non-restricted, question. In both cases, only those in the sample who knew of the project proposal were asked the question.

Upon examination of Table 10, it is found that there is a significant difference (0.001) between the rural and urban groups. This does not support the hypothesis. The urban group favors water development more (88.0 percent for the urban compared to 69.0 percent for the rural) even in this qualified condition. However, both groups are predominantly in favor of development which supports the second part of the hypothesis.

Upon examination of Table 11 it is again found that there is a very high significance (0.001) when comparing the rural dweller to the urban dweller. Both groups have approximately the same percentage (67.5 percent for the urban and 65.2 percent of rural) answering that they would not be negatively affected by the proposed project. However, the rural dweller shows a much higher proportion who answer yes that they fear they will be negatively affected (23.9 percent compared to 3.4 percent for the urban dweller). About three times the proportion (29.1 percent compared to 10.9 percent) of urban dwellers did not know whether or not they would be negatively affected than did the rural dwellers.
### Table 10

**Attitudes Toward Proposed Water Development with Rights Guaranteed by Rural-Urban Residence**

<table>
<thead>
<tr>
<th>Residence</th>
<th>Desire the Proposed Water Development</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes No. Row%</td>
<td>No No. Row%</td>
<td>Don't Know No. Row%</td>
<td>Total No. Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>103 88.0</td>
<td>1 0.9</td>
<td>13 11.7</td>
<td>117 100.0</td>
</tr>
<tr>
<td>Rural</td>
<td>504 69.0</td>
<td>119 16.3</td>
<td>107 14.7</td>
<td>730 100.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>607</td>
<td>120</td>
<td>120</td>
<td>847</td>
</tr>
</tbody>
</table>

No answer responses = 248 (Including ones with no knowledge of the project)

Chi-square = 22.953, df = 2, $P = 0.001$, $C = 0.236$

### Table 11

**Attitudes Toward Whether Respondents Consider They Will Be Negatively Affected by the Proposed Project by Rural-Urban Residence**

<table>
<thead>
<tr>
<th>Residence</th>
<th>Will be Negatively Affected</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes No. Row%</td>
<td>No No. Row%</td>
<td>Don't Know No. Row%</td>
<td>Total No. Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>4 3.4</td>
<td>79 67.5</td>
<td>34 29.1</td>
<td>117 100.0</td>
</tr>
<tr>
<td>Rural</td>
<td>175 23.9</td>
<td>477 65.2</td>
<td>80 10.9</td>
<td>732 100.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>179</td>
<td>556</td>
<td>114</td>
<td>849</td>
</tr>
</tbody>
</table>

No answer responses = 246 (Including ones with no knowledge of the project)

Chi-square = 44.866, df = 2, $P = 0.001$, $C = 0.327$

This second question also shows a significant difference between the urban and the rural groups. However, if the relatively small percentage of yes answers signifying that the proposal has harmful effects, can
be assumed to indicate a generally favorable non-negative, non-qualified response toward the proposed project, the hypothesis is again not supported regarding the rural-urban differential. As in the first test, the second part is then supported.

Both tests do not support the first part of the hypothesis. It is shown that there is a difference between the rural dweller and the urban dweller concerning the proposed project development; however, the second part is supported in that both groups predominately desire the proposed project development. The first part of the hypothesis is rejected. The second part is accepted.

Water Resource Pollution Problems

Hypothesis Two Sub-Six states: There will be no significant difference between the rural dweller and the urban dweller regarding local pollution problems. It further states that both groups will consider that there are local pollution problems.

To test this hypothesis, two questions are evaluated. The first question asks whether anything needs to be done about pollution in the region. Table 12 shows the relationships between the responses and the rural-urban differential.

The second question asks if there are any stream pollution problems on the Bear River or its tributaries. The relationships of the responses to this question are shown in Table 13. (These two questions were included in the interview schedules of only 962 of the respondents. One county was not included.)

Upon examination of Table 12, it is found that the null hypothesis of no significant difference and is not supported. There is a significant difference (0.001) between the rural dweller and the urban dweller. However,
the second part of the hypothesis is supported in that both groups believe something must be done about pollution in the region.

The urban respondents are much more in favor of doing so (73.8 percent of the urban group are in favor compared to 50.7 percent of the rural group).

<table>
<thead>
<tr>
<th>Residence</th>
<th>Yes</th>
<th>No</th>
<th>Don't Know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Row%</td>
<td>No.</td>
<td>Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>138</td>
<td>73.8</td>
<td>27</td>
<td>14.4</td>
</tr>
<tr>
<td>Rural</td>
<td>393</td>
<td>50.7</td>
<td>260</td>
<td>33.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>531</td>
<td></td>
<td>287</td>
<td></td>
</tr>
</tbody>
</table>

No answer responses = 137 (Including ones without question in schedule)

Chi-square = 34.581, df = 2, P = 0.001, C = 0.272

Upon examination of Table 13, it is found that the hypothesis is again not supported. There is a significant difference between the rural and the urban groups. The second part of the hypothesis is also not upheld in this test. The urban group generally does not consider the Bear River polluted (21.6 percent indicates there is pollution compared to 39.5 percent indicating there is no pollution). The rural group does consider that there is pollution. (The table shows 40.4 percent of the rural group indicates there is pollution compared to 27.0 percent indicating there is no pollution).

This second test also does not support either part of the hypothesis.
Therefore, combining both tests the hypothesis is rejected—both the first and second parts.

**TABLE 13**

BELIEF IN THE EXISTENCE OF POLLUTION PROBLEMS ON BEAR RIVER TRIBUTARIES BY RURAL-URBAN RESIDENCE

<table>
<thead>
<tr>
<th>Residence</th>
<th>Yes</th>
<th>No</th>
<th>Don't Know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Row%</td>
<td>No.</td>
<td>Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>40</td>
<td>21.6</td>
<td>73</td>
<td>39.5</td>
</tr>
<tr>
<td>Rural</td>
<td>313</td>
<td>40.4</td>
<td>209</td>
<td>27.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>353</td>
<td></td>
<td>282</td>
<td></td>
</tr>
</tbody>
</table>

No answer responses = 136 (Including ones without question in schedule)
Chi-square = 24.039, df = 2, P = 0.001,  C = 0.229

Use for Mining or Recreation

Hypothesis Two Sub-Seven states: There will be a significant difference between the rural dweller and the urban dweller concerning the use of land for mining or recreation. It further states that the urban dweller will prefer recreation to mining and will do so more than the rural dweller. This question was another showing the structure of attitudes toward resources use. To test this hypothesis a question was asked concerning whether mining would take priority over recreation if the mining destroyed the recreation area. The relationships between the responses to this question and the rural-urban differential are shown in Table 14.

Upon examination of Table 14, it is found that there is a very significant difference (0.001) between the rural dweller and the urban dweller. This supports the hypothesis. However, the second part of the
hypothesis is not supported. Even though the urban dweller shows greater favoritism toward recreation than the rural dweller (29.0 percent of the urban compared to 13.0 percent of the rural), both groups report more in favor of mining than recreation. The rural group being much more in favor (73.7 percent) than the urban group (44.6 percent). Thus, the second part of the hypothesis is not supported in part in that most urban dwellers prefer mining to recreational use, but urbanites do have a larger proportion preferring recreation than do rural respondents.

The first part of the hypothesis is accepted but the second part is not.

TABLE 14

<table>
<thead>
<tr>
<th>Residence</th>
<th>Land Use Choices</th>
<th>Both Uses, etc.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mining No. Row%</td>
<td>Recreation No. Row%</td>
<td>No. Row%</td>
</tr>
<tr>
<td>Urban</td>
<td>86 44.6</td>
<td>56 29.0</td>
<td>51 26.4</td>
</tr>
<tr>
<td>Rural</td>
<td>651 73.7</td>
<td>115 13.0</td>
<td>117 13.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>737</td>
<td>171</td>
<td>168</td>
</tr>
</tbody>
</table>

No answer responses = 19
Chi-square = 61.755, df = 2, P = 0.001, C = 0.340

The General Hypothesis

The general hypothesis (Hypothesis Two) states: There will be no significant difference between the rural dweller and the urban dweller within this sub-culture when his expressed attitudes are measured relating generally to development, use, and control.
To test this hypothesis the seven sub-hypotheses were submitted and tested. On the basis of the results of the tests of these items under the sub-hypotheses, the general null hypothesis of no significant difference between rural and urban is rejected.

**Summary**

Within this chapter one general null hypothesis and seven sub-hypotheses were tested. In all cases it was found that there is a significant difference between rural and urban sectors in attitudes toward natural resource development, use, and control. The attitudes tested were related to water use; use for mining, recreation, grazing, and forest; pollution; and erosion and flood control.

It was also found that the most desired use of water is for irrigation; mining should take precedence over recreation; grazing should take precedence over forest use of land; and erosion and flood protection should be under public control. It was also found that the overall attitudes toward the Bear River Project were that the project should be constructed, providing water rights are safeguarded.
CHAPTER VI

INSTITUTIONAL ATTITUDE RELATIONSHIPS

COMPARSED WITH NATURAL RESOURCE DEVELOPMENT AND CONTROL

Introduction

This chapter has a dual objective. The first is to explore the relationships between the general institutionally associated attitudes previously analyzed and the specific natural resource attitudes. The second deals with the development of middle range theory and to create a partial, or middle range theory concerning these attitudes.

The reason for establishing this theory is to aid in future analysis and predictions concerning natural resource development, use and control.

The first step of the procedure is to analyze the relationships between various portions of the data. The second step is to then elaborate on this analysis as suggested by the Glaser and Strauss approach. To begin this first step, the contingency coefficients were arrayed in matrices (Tables 15, 16, and 17). Then tests for relationships were applied. Next the matrices were examined to find specific groupings, differences, or other relations. To better evaluate these various relationships, the contingency coefficients were ranked. This use of rankings simplifies the establishment of groupings and gives a relative position of each individual item. These groupings passed upon the items relating to certain natural resource aspects, are used to indicate patterns or lack of patterns for the basic establishment of relations. These groups are: items relating to water use (70, 113, and 117); land use (114, 115, and 116); government control versus private control (118 and 119); development of the Bear River (136 and 137); and pollution problem (144-A and 144-B). Finally, the various findings were channelled through the elaboration process.
The sample population is treated here in the separate rural and urban segments as well as a single unit. The relationships between the general attitudes and specific natural resource attitudes have been tested within the framework of these three units—the rural, urban, and total groups. The groups are used to provide a comparison and to explore the possibilities of different attitude relationships due to sub-cultural groupings.

Following the construction of the matrices both analysis of variance and Kendall's coefficient of concordance (W) were computed. In both cases the three general institution related attitudes were used as the different treatments of the data. In addition, the rural and urban groups were compared against each other using Kendall's coefficients of concordance (W) to test for overall relationship. The analysis of variance was computed upon the actual contingency coefficients. This was done to retain the highest sensitivity possible. The coefficients of concordance were computed upon the ranks of the twelve natural resource related attitudes in relation to the three general attitudes. The ranks were also used for individual item relationship analysis.

**Analysis of Rural Comparisons**

The first portion of the sample population to be evaluated regarding general attitudes to natural resource attitude comparisons is the rural segment. These relationships are shown in Table 15.

Upon examination of this table, it is found that the scale measuring attitudes toward credit purchasing has the highest mean correlation with the twelve natural resource items when comparing the corrected contingency coefficients. Its mean as shown in Table 15-A of 0.149 is followed in rank by the 0.112 mean for the scale measuring attitudes on political conservatism—liberalism. The scale measuring attitudes toward education ranks third with a mean of 0.098.
When examining the analysis of variance results, it is found as shown in Table 15-A that the f-test has a value of 1.94. This is not significant using the criteria of the 0.05 level of acceptance which requires a value of 3.92. In addition, the Kendall coefficient of concordance test has a W value of 0.450, resulting in a Chi-square value of 14.843 which is not significant. Therefore it is concluded that no one single general attitude item is a significantly better predictor of natural resource related attitudes.

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Measuring (Attitudes toward education)</th>
<th>Scale Measuring (Attitudes on credit purchasing)</th>
<th>Political Conservation-Liberalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 70</td>
<td>0.105</td>
<td>0.127</td>
<td>0.018</td>
</tr>
<tr>
<td>Item 113</td>
<td>0.159</td>
<td>0.193</td>
<td>0.025</td>
</tr>
<tr>
<td>Item 114</td>
<td>0.123</td>
<td>0.153</td>
<td>0.140</td>
</tr>
<tr>
<td>Item 115</td>
<td>0.085</td>
<td>0.102</td>
<td>0.077</td>
</tr>
<tr>
<td>Item 116</td>
<td>0.051</td>
<td>0.089</td>
<td>0.000</td>
</tr>
<tr>
<td>Item 117</td>
<td>0.047</td>
<td>0.165</td>
<td>0.086</td>
</tr>
<tr>
<td>Item 118</td>
<td>0.061</td>
<td>0.104</td>
<td>0.145</td>
</tr>
<tr>
<td>Item 119</td>
<td>0.222</td>
<td>0.114</td>
<td>0.123</td>
</tr>
<tr>
<td>Item 136</td>
<td>0.111</td>
<td>0.206</td>
<td>0.115</td>
</tr>
<tr>
<td>Item 137</td>
<td>0.060</td>
<td>0.149</td>
<td>0.121</td>
</tr>
<tr>
<td>Item 144-A</td>
<td>0.085</td>
<td>0.156</td>
<td>0.143</td>
</tr>
<tr>
<td>Item 144-B</td>
<td>0.070</td>
<td>0.223</td>
<td>0.157</td>
</tr>
</tbody>
</table>

*Schedule Question Items:

Item 70: Type of water use
Item 113: Irrigation vs. Industry
Item 114: Forest vs. grazing
Item 115: Lands use, public vs. private
Item 116: Mining vs. recreation
Item 117: Irrigation vs. recreation
Item 118: Flood damage control, public vs. private
Item 119: Surplus water use, public vs. private
Item 136: Development of Bear River with rights assured
Item 137: Will Bear River Project help
Item 144-A: Need regional pollution control
Item 144-B: Bear River pollution problems
### TABLE 15
CONTINGENCY COEFFICIENTS FOR THE RURAL DWELLER GROUP CORRELATING THREE GENERAL ATTITUDE SCALE ITEMS WITH TWELVE SPECIFIC QUESTION ITEMS
(Rural Area)

<table>
<thead>
<tr>
<th>Specific Schedule Question Items*</th>
<th>General Scale Items</th>
<th>Scale Measuring</th>
<th>Scale Measuring</th>
<th>Scale Measuring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(Attitudes toward</td>
<td>(Attitudes toward</td>
<td>(Attitudes on</td>
</tr>
<tr>
<td></td>
<td></td>
<td>education)</td>
<td>credit purchasing)</td>
<td>Political Conserv-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>vatism-liberalism)</td>
</tr>
<tr>
<td>Item 70</td>
<td>0.105</td>
<td>0.127</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td>Item 113</td>
<td>0.159</td>
<td>0.195</td>
<td>0.025</td>
<td></td>
</tr>
<tr>
<td>Item 114</td>
<td>0.123</td>
<td>0.153</td>
<td>0.140</td>
<td></td>
</tr>
<tr>
<td>Item 115</td>
<td>0.085</td>
<td>0.102</td>
<td>0.077</td>
<td></td>
</tr>
<tr>
<td>Item 116</td>
<td>0.051</td>
<td>0.089</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Item 117</td>
<td>0.047</td>
<td>0.165</td>
<td>0.086</td>
<td></td>
</tr>
<tr>
<td>Item 118</td>
<td>0.061</td>
<td>0.104</td>
<td>0.145</td>
<td></td>
</tr>
<tr>
<td>Item 119</td>
<td>0.222</td>
<td>0.114</td>
<td>0.123</td>
<td></td>
</tr>
<tr>
<td>Item 136</td>
<td>0.111</td>
<td>0.206</td>
<td>0.115</td>
<td></td>
</tr>
<tr>
<td>Item 137</td>
<td>0.060</td>
<td>0.149</td>
<td>0.121</td>
<td></td>
</tr>
<tr>
<td>Item 144-A</td>
<td>0.085</td>
<td>0.156</td>
<td>0.343</td>
<td></td>
</tr>
<tr>
<td>Item 144-B</td>
<td>0.070</td>
<td>0.223</td>
<td>0.157</td>
<td></td>
</tr>
</tbody>
</table>

*Schedule Question Items:

- Item 70  Type of water use
- Item 113  Irrigation vs. Industry
- Item 114  Forest vs. grazing
- Item 115  Lands use, public vs. private
- Item 116  Mining vs. recreation
- Item 117  Irrigation vs. recreation
- Item 118  Flood damage control, public vs. private
- Item 119  Surplus water use, public vs. private
- Item 136  Development of Bear River with rights assured
- Item 137  Will Bear River Project hurt
- Item 144-A  Need regional pollution control
- Item 144-B  Bear River pollution problems
**TABLE 15-A**

*(STATISTICAL DATA FOR TABLE 15)*

**Analysis of Variance**

<table>
<thead>
<tr>
<th>Source of</th>
<th>Degree of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>35</td>
<td>0.154</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>2</td>
<td>0.016</td>
<td>0.008</td>
</tr>
<tr>
<td>Error</td>
<td>22</td>
<td>0.138</td>
<td>0.004</td>
</tr>
</tbody>
</table>

**Treatment Means**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Treatment Means</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Scale</td>
<td>0.098</td>
<td>0.019</td>
</tr>
<tr>
<td>Credit Scale</td>
<td>0.149</td>
<td>0.019</td>
</tr>
<tr>
<td>Political Scale</td>
<td>0.112</td>
<td>0.019</td>
</tr>
</tbody>
</table>

Expected Mean = 0.120  
Coefficient of Variance = 0.539

\[ f = 1.936 \text{ - Not significant} \]

**W - Kendall's Coefficient of Concordance**

\[ W = 0.450 \quad \text{Chi-square} = 14.843 \quad \text{df} = 11 \]

\[ p\text{-value} \text{ between 0.90 and 0.80 - Not significant} \]

**Analysis of Urban Comparisons**

The second portion of the sample population to be evaluated concerning comparison of general attitudes with natural resource attitudes is the urban segment. These relationships are shown in Table 16.

Upon examination of this table, it is found that the highest mean correlations are those relating the scale measuring attitudes toward credit purchase with the natural resource items. The mean of the contingency coefficients of this scale shown in Table 16-A (0.156) is closely followed by that of the other two items, with the scale measuring attitudes toward
education having a mean of 0.155 and the scale measuring attitudes toward political conservatism-liberalism having a mean of 0.150.

The f-test based on the analysis of variance test has a value of 1.92 which, as with the rural group, does not reach the 0.05 level of significance. In addition, the Kendall coefficient of concordance has a W value of 0.413 resulting in a Chi-square value of 13.629 which is not significant. Thus, it is concluded that there is no single general attitude for urban respondents which is a better predictor concerning natural resource attitudes.

<table>
<thead>
<tr>
<th>Item</th>
<th>(Attitudes toward credit purchasing)</th>
<th>(Attitudes toward Political Conservatism-Liberalism)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>0.264</td>
<td>0.111</td>
</tr>
<tr>
<td>113</td>
<td>0.203</td>
<td>0.096</td>
</tr>
<tr>
<td>114</td>
<td>0.242</td>
<td>0.136</td>
</tr>
<tr>
<td>115</td>
<td>0.123</td>
<td>0.183</td>
</tr>
<tr>
<td>116</td>
<td>0.162</td>
<td>0.044</td>
</tr>
<tr>
<td>117</td>
<td>0.054</td>
<td>0.166</td>
</tr>
<tr>
<td>118</td>
<td>0.120</td>
<td>0.224</td>
</tr>
<tr>
<td>119</td>
<td>0.124</td>
<td>0.131</td>
</tr>
<tr>
<td>136</td>
<td>0.148</td>
<td>0.071</td>
</tr>
<tr>
<td>137</td>
<td>0.223</td>
<td>0.077</td>
</tr>
<tr>
<td>144-A</td>
<td>0.053</td>
<td>0.238</td>
</tr>
<tr>
<td>144-B</td>
<td>0.140</td>
<td>0.238</td>
</tr>
<tr>
<td>Means</td>
<td>0.155</td>
<td>0.150</td>
</tr>
</tbody>
</table>

*Schedule Question Items:
- Item 70: Type of water use
- Item 113: Irrigation vs. Industry
- Item 114: Forest vs. Grazing
- Item 115: Land use, public vs. private
- Item 116: Mining vs. recreation
- Item 117: Irrigation vs. recreation
- Item 118: Flood damage control, public vs. private
- Item 119: Surplus water use, public vs. private
- Item 136: Development of Bear River with rights assured
- Item 137: Will Bear River Project hurt
- Item 144-A: Need regional pollution control
- Item 144-B: Bear River pollution problems
### TABLE 16
CONTINGENCY COEFFICIENTS FOR THE URBAN DWELLER GROUP CORRELATING THREE GENERAL ATTITUDE SCALE ITEMS WITH TWELVE SPECIFIC QUESTION ITEMS
(Urban Area)

<table>
<thead>
<tr>
<th>Specific Schedule Question Items*</th>
<th>General Scale Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Item 23 (Attitudes toward education)</td>
</tr>
<tr>
<td>Item 70</td>
<td>0.264</td>
</tr>
<tr>
<td>Item 113</td>
<td>0.203</td>
</tr>
<tr>
<td>Item 114</td>
<td>0.242</td>
</tr>
<tr>
<td>Item 115</td>
<td>0.123</td>
</tr>
<tr>
<td>Item 116</td>
<td>0.162</td>
</tr>
<tr>
<td>Item 117</td>
<td>0.054</td>
</tr>
<tr>
<td>Item 118</td>
<td>0.120</td>
</tr>
<tr>
<td>Item 119</td>
<td>0.124</td>
</tr>
<tr>
<td>Item 136</td>
<td>0.148</td>
</tr>
<tr>
<td>Item 137</td>
<td>0.223</td>
</tr>
<tr>
<td>Item 144-A</td>
<td>0.053</td>
</tr>
<tr>
<td>Item 144-B</td>
<td>0.140</td>
</tr>
<tr>
<td>Means</td>
<td>0.155</td>
</tr>
</tbody>
</table>

*Schedule Question Items:
- Item 70: Type of water use
- Item 113: Irrigation vs. Industry
- Item 114: Forest vs. Grazing
- Item 115: Land use, public vs. private
- Item 116: Mining vs. recreation
- Item 117: Irrigation vs. recreation
- Item 118: Flood damage control, public vs. private
- Item 119: Surplus water use, public vs. private
- Item 136: Development of Bear River with rights assured
- Item 137: Will Bear River Project hurt
- Item 144-A: Need regional pollution control
- Item 144-B: Bear River pollution problems
TABLE 16-A

(STATISTICAL DATA FOR TABLE 16)

Analysis of Variance

<table>
<thead>
<tr>
<th>Source of</th>
<th>Degree of Freedom</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td></td>
<td>35</td>
<td>0.204</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td>2</td>
<td>0.000+</td>
<td>0.000+</td>
</tr>
<tr>
<td>Error</td>
<td></td>
<td>22</td>
<td>0.204</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Treatment Means

<table>
<thead>
<tr>
<th></th>
<th>Treatment Means</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Scale</td>
<td>0.155</td>
<td>0.023</td>
</tr>
<tr>
<td>Credit Scale</td>
<td>0.156</td>
<td>0.023</td>
</tr>
<tr>
<td>Political Scale</td>
<td>0.150</td>
<td>0.023</td>
</tr>
</tbody>
</table>

Expected Mean = 0.154
Coefficient of Variance = 0.512

\[ f = 1.918 \quad \text{Not significant} \]

W - Kendall's Coefficient of Concordance

\[ W = 0.413 \quad \text{Chi-square = 13.629} \quad \text{df = 11} \]

\[ P \text{-was between 0.70 and 0.80} \quad \text{Not significant} \]

Total Comparisons

This section deals with the two preceding segments, rural and urban, of the sample population taken as one group. These relationships are shown in Table 17.

Upon examination of this Table, it is found that the scale measuring attitudes toward credit purchasing has a mean of 0.130 and has the highest rank. The scale measuring attitudes on political conservatism-liberalism with a mean of 0.125 ranks next. The scale measuring attitudes toward education ranks lowest with a mean of 0.082.
The f-test based on the analysis of variance has a value of 2.41 which is not significant at the 0.05 level of acceptance. In addition, the Kendall coefficient of concordance test computed on the ranks of the contingency coefficients has a W value of 0.431, resulting in a Chi-square value of 14.223 which is not significant.

<table>
<thead>
<tr>
<th>Specific Item</th>
<th>Scale Measuring (Attitudes toward education)</th>
<th>General Item</th>
<th>Scale Measuring (Attitudes toward credit purchasing)</th>
<th>Scale Measuring (Attitudes on Political Conservative-Liberalism)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 70</td>
<td>0.090</td>
<td></td>
<td>0.150</td>
<td>0.120</td>
</tr>
<tr>
<td>Item 113</td>
<td>0.096</td>
<td></td>
<td>0.167</td>
<td>0.032</td>
</tr>
<tr>
<td>Item 114</td>
<td>0.128</td>
<td></td>
<td>0.117</td>
<td>0.121</td>
</tr>
<tr>
<td>Item 115</td>
<td>0.083</td>
<td></td>
<td>0.087</td>
<td>0.054</td>
</tr>
<tr>
<td>Item 116</td>
<td>0.013</td>
<td></td>
<td>0.087</td>
<td>0.029</td>
</tr>
<tr>
<td>Item 117</td>
<td>0.041</td>
<td></td>
<td>0.115</td>
<td>0.114</td>
</tr>
<tr>
<td>Item 118</td>
<td>0.044</td>
<td></td>
<td>0.085</td>
<td>0.158</td>
</tr>
<tr>
<td>Item 119</td>
<td>0.201</td>
<td></td>
<td>0.103</td>
<td>0.127</td>
</tr>
<tr>
<td>Item 120</td>
<td>0.109</td>
<td></td>
<td>0.187</td>
<td>0.119</td>
</tr>
<tr>
<td>Item 121</td>
<td>0.056</td>
<td></td>
<td>0.121</td>
<td>0.134</td>
</tr>
<tr>
<td>Item 144-A</td>
<td>0.045</td>
<td></td>
<td>0.180</td>
<td>0.316</td>
</tr>
<tr>
<td>Item 144-B</td>
<td>0.082</td>
<td></td>
<td>0.198</td>
<td>0.177</td>
</tr>
<tr>
<td>Mean</td>
<td>0.082</td>
<td></td>
<td>0.130</td>
<td>0.123</td>
</tr>
</tbody>
</table>

- Item 70: Type of water use
- Item 113: Irrigation vs. Industry
- Item 114: Forest vs. grazing
- Item 115: Land use, public vs. private
- Item 116: Mining vs. recreation
- Item 117: Irrigation vs. recreation
- Item 118: Flood damage control, public vs. private
- Item 119: Surplus water use, public vs. private
- Item 126: Development of Bear River with rights assured
- Item 137: Will Bear River project hurt
- Item 144-A: Need regional pollution control
- Item 144-B: Bear River pollution problems
TABLE 17
CONTINGENCY COEFFICIENTS FOR ALL DWELLER GROUPS CORRELATING THREE GENERAL ITEMS WITH TWELVE SPECIFIC ITEMS

(Total Sample)

<table>
<thead>
<tr>
<th>Specific Items</th>
<th>General Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scale Measuring (Attitudes toward education)</td>
</tr>
<tr>
<td>Item 70</td>
<td>0.090</td>
</tr>
<tr>
<td>Item 113</td>
<td>0.096</td>
</tr>
<tr>
<td>Item 114</td>
<td>0.128</td>
</tr>
<tr>
<td>Item 115</td>
<td>0.083</td>
</tr>
<tr>
<td>Item 116</td>
<td>0.015</td>
</tr>
<tr>
<td>Item 117</td>
<td>0.041</td>
</tr>
<tr>
<td>Item 118</td>
<td>0.044</td>
</tr>
<tr>
<td>Item 119</td>
<td>0.201</td>
</tr>
<tr>
<td>Item 136</td>
<td>0.109</td>
</tr>
<tr>
<td>Item 137</td>
<td>0.054</td>
</tr>
<tr>
<td>Item 144-A</td>
<td>0.045</td>
</tr>
<tr>
<td>Item 144-B</td>
<td>0.082</td>
</tr>
<tr>
<td>Means</td>
<td>0.082</td>
</tr>
</tbody>
</table>

Item 70 Type of water use  
Item 113 Irrigation vs. Industry  
Item 114 Forest vs. grazing  
Item 115 Lands use, public vs. private  
Item 116 Mining vs. recreation  
Item 117 Irrigation vs. recreation  
Item 118 Flood damage control, public vs. private  
Item 119 Surplus water use, public vs. private  
Item 136 Development of Bear River with rights assured  
Item 137 Will Bear River project hurt  
Item 144-A Need regional pollution control  
Item 144-B Bear River pollution problems
### TABLE 17-A

*(STATISTICAL DATA FOR TABLE 17)*

#### Analysis of Variance

<table>
<thead>
<tr>
<th>Source of</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>35</td>
<td>0.129</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>1</td>
<td>0.164</td>
<td>0.008</td>
</tr>
<tr>
<td>Error</td>
<td>33</td>
<td>0.113</td>
<td>0.003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Treatment Means</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Scale</td>
<td>0.082</td>
<td>0.017</td>
</tr>
<tr>
<td>Credit Scale</td>
<td>0.130</td>
<td>0.017</td>
</tr>
<tr>
<td>Political Scale</td>
<td>0.125</td>
<td>0.017</td>
</tr>
</tbody>
</table>

Expected Mean = 0.112  
Coefficient of Variance = 0.520

\[ F = 2.406 \quad - \quad \text{Not significant} \]

**W - Kendall's Coefficient of Concordance**

\[ W = 0.431 \quad \text{Chi-square} = 14.223 \quad \text{df} = 11 \]

\[ P\text{-was between 0.70 and 0.80} - \quad \text{Not significant} \]

**Rural-Urban Relationship**

The contingency coefficients were ranked in their overall matrix positions. From this a Kendall's coefficient of concordance \((W)\) was computed to determine the existance of association between the rural and the urban groups. This test showed that \(W=0.049, \text{Chi-square}=1.715\) and \(\text{df}=35\). \(P\)-was less than 0.05, which was not significant. From this test the conclusion is drawn that there is no significant difference between the rural and the urban normative patterns.
Method of Theory Generation

One of the objectives of this study was to generate a partial, or middle range, theory relevant to the attitudes concerning natural resource development, use, and control. To generate this theory, the methodology suggested by Glaser and Strauss has been generally followed (1966).

As was previously mentioned, no hypotheses are used to begin the process of generating grounded theory. Instead the researcher induces a theory simply from the general relationships he has found. He need not concern himself with theoretical explanations of what he has found in comparison with what was supposed to find, as is done in verificational studies (Glaser and Strauss, 1966:196).

One method of "... generating theory from findings is to compare clusters of relationships within the context of the emerging theory (Glaser and Strauss, 1966:196)." A second method of theory generation is comparison between different items of study rather than within one item or group (Glaser and Strauss, 1966:196). The first of these two methods is the one most used for this particular study.

These within item analyses, using empirical indicators, clustering, and inspection of the statistical data have been tested using the variance. These tests of significance are contrary to the principles of Glaser and Strauss (1966:196). However, the tests were made to support and evaluate the empirical analysis.

The empirical analysis was made upon the relationships between the three general institutional related attitude scales and the twelve specific attitudes toward the development, use, and control of natural resources.
These relationships, as correlated by the contingency coefficients, were arrayed in matrices with the general attitudes providing one dimension of the array and the specific attitudes the other. (These matrices are shown in Table 16 and 17). The individual contingency coefficients have been computed for the rural group, the urban group, and the total group. (An example of this is the corrected contingency coefficient of the relationship between Item 23—attitudes toward education—and Item 70—desired type of water use—which results in a $C$ of 0.105 for the rural group. This is shown in Table 16.)

The relationships were then inspected and certain conclusions, supported by the two above mentioned tests of significance, were drawn. These conclusions then became the base for the newly generated middle range theory.

Possibly, more detail has been included in the generation of theory than is desired by Glaser and Strauss. Contrary to their statement that "... not all data must be presented and stated in exact detail..." (1966:203) this study has made use of some of the minor exactitudes to aid in the establishment of patterns. Perhaps this may be justified by their statement that "... each analyst must decide on various liberties according to his particular directions of effort" (Glaser and Strauss, 1966:203).

The second step in the generation of theory is to take the quantitative observations through an elaboration process (Glaser and Strauss 1966:205). This elaboration process is based upon the first step and attempts to explore various relationships between the immediate data and generalities. This "elaboration analysis is stimulating because the findings it produces fit the thought patterns of sociological theory" (Glauser and Strauss, 1966:207).
Glaser and Strauss sum up the procedure as follows:

In generating theory as it emerges, the analyst first discovers two-variable relationships: second, he discovers their elaboration. Then he moves into a third stage, in which he starts generating possible further elaborations of two-variable relationships within the previous elaboration... (1966:209).

Within this study the first and second steps of generating theory were followed. Due to the limitations of the data and the post factum orientation of the study, the third step was not accomplished.

Elaboration of Findings

Analysis of the data concerning the relationships between the general attitudes and the specific natural resource attitudes makes one thing evident. The attitudes relating to natural resources appear to be non-patterned or relatively independent of the attitudes relating to the general attitudes on credit use, education, and political-economic aspects as well as for rural and urban residence.

The lack of significance in the Kendall's coefficient of concordance test between the rural and the urban matrices appears to show a similarity of norms in the two groups when dealing with the natural resource aspects. This independence is apparent from casual examination of the various tables and is supported by the two statistical tests which found no significance in the degree of association. This holds true for the rural, urban, and total groups.

Elaborating from this finding, it is of interest to refer to the chapter dealing with the general attitudes. There it was found, in Table 1, that nearly all of the respondents were conservative or moderate when placed upon a conservative to liberal scale. It was also found (Table 2) that the attitudes of the respondents concerning the use of credit, as an
index of economic attitudes, spread over the entire conservation to liberal scale. In addition, it was found (Table 3) that the respondents group in the moderate and favorable portions of the scale when tested regarding attitudes toward education.

When considering that there is no apparent correlation between the attitudes toward natural resources and the general institutionally related attitudes the conclusion can be drawn that the norms, as represented by attitudes, are independent and possibly form a separate institutional pattern. This is further supported by the indication that there is no significant difference between the rural and urban groups when the test is applied to their interrelationship as based upon the matrix reductions. As there is no difference indicated then a sameness or correlation may be assumed. Assuming this and adding it to the lack of any single general institutional relationship the conclusion is drawn that even though there is independence between the general institutional norms and the natural resource norms, there is a sameness between the rural and urban natural resource norms.

From these conclusions the following partial, or middle, range theory is derived. The normative patterns concerning natural resources form a separate social institution. This institution exists in both rural and urban areas and the norms for each are not significantly different. This institution has few, if any, significant relationships or correlations with the general institutions of sociology when considered as an overall concept. However, certain patterns of relationship can be established when individual aspects, such as pollution or government controls, are compared to the general institutional attitudes. Thus, it is possible,
that a new institution has become evident. This has the probable limitations of being peculiar to this geographic and/or sub-cultural region.

This middle range theory, or proposition, can now be tested by the classical method of deriving hypotheses and testing them. By a future test the complete cycle of theory, hypothesis, and theory generation can be made. Thus, a self-propagating use is made of theory to further the discipline. These in turn may result in the further "discovery" of institutions or sub-institutions. Hopefully it will result in institution building rather than institutional analysis.¹

Summary

Within this chapter the relationships between the general institutional attitudes and the specific natural resource attitudes have been investigated. It was found that there is no apparent parallel between any of the general attitudes and the specific natural resource attitudes. This resulted in the conclusion that attitudes concerning natural resource development are independent of the general institutional attitudes studied. A section was included that dealt with the generation of theory and briefly covered the process as outlined by Glaser and Strauss. The steps in this process are: the discovery of two-variable relationships; elaboration of these relationships; and further generation of possible relationships.

¹A different view of the role of the student of social organization is held by many sociologists. They are of the social activist group and desire not only to investigate but to change. However, at some point in the process the social investigation process ends the original research. Therefore, it is important to differentiate between institution discovery and institution building. For a discussion of the latter concept see Etzkowitz and Schaflander (1968) current position paper and the writings of others concerning applications of social science knowledge (Waitzkin, 1968).
From the conclusion of the data and from the theory generation framework a partial, or middle range theory was developed which states: expressed attitudes concerning natural resource development, use, and control are independent of expressed attitudes concerning any single institution. It was further theorized that this is true for rural, urban, or combined rural-urban populations. This led to the proposition that these norms possibly constitute a separate social institution or sub-institution.

This study, part of a much larger study based upon the same sample, has been oriented toward investigating: 1) the rural-urban differential of three general institutional related attitude scales; 2) the rural-urban differential of expressed attitudes relating to twelve specific items concerning natural resource development, use, and control; and 3) the inter-relationship between the general institutional oriented attitudes and the specific natural resource related attitudes.

The theoretical structure was bi-fold. The first two segments were set forth in the traditional theory, hypothesis, test format. Certain additions were made to this by the use of the process outlined by Bresnahan. This process calls for the use of general hypotheses which are tested through an intermediate step which utilizes specific sub-hypotheses. The general hypotheses tested were related to the general institutional attitudes and the specific natural resource attitudes.

The second theoretical approach used was patterned after the work of Glaser and Strauss. This approach begins with data and through the processes of examination and elaboration produced a partial, or middle range, theory.
SUMMARY, CONCLUSIONS, CONTRIBUTIONS, AND RECOMMENDATIONS

Summary

This study was a three part investigation into certain sociological phenomenon relating to the expressed attitudes of a sampled population of 1,095 heads of households. The population was drawn from three Idaho rural counties, two Utah rural counties, and the urban portion of one urbanized Utah county.

This study, part of a much larger study based upon the same sample, has been oriented toward investigating: 1) the rural-urban differential of three general institutional related attitude scales; 2) the rural-urban differential of expressed attitudes relating to twelve specific items concerning natural resource development, use, and control; and 3) the inter-relationship between the general institutional oriented attitudes and the specific natural resource related attitudes.

The theoretical structure was bi-fold. The first two segments were set forth in the traditional theory, hypothesis, test format. Certain additions were made to this by the use of the process outlined by Zitterberg. This process calls for the use of general hypotheses which are tested through an intermediate step which utilizes specific sub-hypotheses. The general hypotheses tested were related to the general institutional attitudes and the specific natural resource related attitudes.

The second theoretical approach used was patterned after the work of Glaser and Strauss. This approach begins with data and through the processes of examination and elaboration produced a partial, or middle range, theory.
In testing the hypotheses various non-parametric measures were used. These were basically matrix reductions and mainly consisted of Chi-square and Chi-square derived coefficients. To reduce the data and make the various computations upon it, mass data reduction methods were used extensively with nearly all computations being made with a third generation, real time computer. The final statistics, not including the various programming and test runs, included approximately 250 separate computer runs.

From the various analyses of the hypotheses concerning the general, institutionally related hypotheses, the following conclusions were drawn:

1) There was a difference between the rural and urban groups in regard to expressed attitudes concerning political-economic attitudes. The rural group being more conservative.

2) There was no significant difference between the rural and urban groups relating to expressed attitudes toward economic liberalism-conservatism using a credit purchase attitudes scale as an index.

3) There was no significant difference between the rural and urban groups in relation to the desirability of education. Both were generally favorable toward the desirability of education.

From the various analyses of the hypotheses concerning the various specific attitudes toward the development, use, and control of natural resources the following conclusions were drawn:

1) There is no significant difference between the rural and urban groups concerning priority of use between irrigation, industry, or joint use. Both groups gave highest priority to irrigation.
2) It was found that there is a significant difference between the rural and urban groups when choice of control of natural resources is between the public and private sectors. It was found that the rural group favored private control to a much greater extent than did the urban group.

3) It was found that there was a highly significant difference between the rural and urban groups concerning a choice of water use between water use for irrigation or for recreation. However, the difference was of little consequence since both groups were much more in favor of irrigation than recreation, over 90 percent in both cases.

4) It was found that there was a significant difference between the rural and urban groups concerning public versus private control of surplus waters. Although the rural group was less in favor of public control, still over 80 percent favored public control.

5) When testing for water development with guaranteed water rights it was found that there was a significant difference between the rural and urban groups. Unexpectedly it was found that the urban group was more in favor of development. However, both groups indicated a majority were favorable toward water development.

6) When problems concerning pollution were tested, it was found there was a very high significance between the rural and the urban groups. It was found that the urban residents were much more in favor of corrective action against pollution. However, the rural group was more aware of pollution on the particular water body with which the investigation was concerned. This latter is probably due to a closer proximity to the Bear River.
7) When testing for differences concerning the use of land for mineral development versus recreation, there was a very significant difference between the rural and urban groups. It was found that the rural group was highly in favor of mining over recreation with nearly 75 percent being so oriented against less than 45 percent of the urban group.

8) It was found that the general hypothesis of no rural and urban difference concerning use of water was not supported. The conclusion was that there is a significant difference between the rural and urban groups in this respect. Even though both groups gave their highest single response to irrigation use, the rural group approached 80 percent in favor of this use with the urban group just under 50 percent.

In analyzing the inter-relationships between the general institutionally related attitudes and the specific natural resource related attitudes a middle range theory was generated. This middle range theory was developed from observation of the data relationships between the two groups of attitudes. These observations were then tested using two different statistical tools designed for testing significance. Neither showed a significant relationship which supported the purely empirical indications. Thus, the middle range theory generated states that there is no significant relationship between the three tested general institutionally related attitudes and the specific natural resource related attitudes. This independence of attitudes implies that a normative pattern exists regarding natural resource attitude norms and that natural resource norms constitute a separate institution or sub-institution. This was supported by the finding that there are no apparent differences
between the rural and urban groups when a test for significance between matrices was made.

Conclusions

In the first chapter of this dissertation the section concerning the review of literature pointed out two major points. One of these was that there is still a rural-urban differential in the United States. The other was that some sociological writers decry the study of the rural-urban differential, even though acknowledging its existence, while others indicate that it should still be investigated.

Although not totally in agreement, the literature gives indication that there were rural-urban differences concerning the general institution related attitudes. This was found to be the case in this study. Also, assumptions drawn from the literature concerning natural resources lead to the assumption that there probably would not be any rural-urban differences in relation to natural resources in the particular sub-culture being studied. However, the results on specific items showed several differences, although often in degree of response rather than in direction.

When testing the continued existence of a general rural-urban differential it has been concluded, based upon this study, that there are still existing differences. This conclusion implies that there is a continuing need to study the rural sector as a distinct area of human behavior. In addition, it implies that certain considerations must be made when dealing with the rural segment of the population. These considerations should be involved in any activity which separates or separately effects the rural segment of the population.

Although the literature has little to say about a rural-urban differential concerning natural resources, it was found in this study that
there were differences for several specific factors and this re-inforces the above conclusions of continuing rural-urban differences. It is suggestive that the rural sector, perhaps even more than the urban, must be approached with this difference in mind as this segment is more closely involved with the various aspects of natural resources than the average urban population. Because people are more closely involved and as is indicated in the data that they tend to have more specific attitudes toward resource use, they may be less likely to accept change, and therefore, it must be assured that the water project designer, the non-rural developer, and others must take special consideration of the rural differences when planning proposed natural resource development projects.

An additional implication is that there will likely be strong rural opposition to certain types of developments - such as recreation projects - whereas, there will be elements of support from this sector for other projects.

Another conclusion that is of strong impact is that both the rural and urban groups are favorable to public rather than private control of natural resources. This implies that there is a basic acceptance of governmental control of natural resources when other factors are also acceptable, however as indicated above in the rural sector, there may be selective variability in this acceptance.

An implied conclusion of this study is that there is a separate normative pattern relating to natural resources. If there is, a further implication is that a separate institution exists, at least in some localities, to deal with natural resources. Therefore, the planner, engineer, developer, and user of the various natural resources
must consider various new approaches to problems. These approaches must be based upon a different pattern of norms than those related to existing institutions. As these norms are different, the expected result of an action may be very different from the usual reaction to certain policies which follow the general patterns of society.

**Contributions**

The contributions which this study makes are of two categories. The primary category is that of adding to the knowledge concerning sociology, particularly the sociological knowledge concerning attitudes relating to the development, use, and control of natural resources. The secondary category is the addition to social science research techniques.

The important contributions to the discipline of sociology were the investigation of the rural-urban differential relating to sociological aspects of natural resource research and the resultant partial, or middle range, theory resulting from this research. Also of importance, although secondary to this study, was the investigation in the area of rural-urban differences in regard to institutional attitudes.

The additions to social science research were not original but were instead refinements of many different research tools. Important among these were the applications of various statistical tools through the media of the computer, modification of existing computer methods and programs to better suit the social science, and gathering together in one study a number of different computer programs and statistical procedures primarily oriented to non-parametric procedures. Also, possibly for the first time in relation to the sociological study of natural resource related behavior, the concept of grounded theory was applied.
The following recommendations are made as an afterview of this study. These are determined by various criteria. The most important of these criteria are the need for other data that would be useful for further analysis.

In regard to the current study, the obvious problems existed which it is recommended that future studies take into account. These are:

1) A minimal size sample for further data reduction;
2) Other institutional scales and tests would be useful for further testing, and checks relating to these scales;
3) A definite shortage of parallel research relating to broad testing of standardized institutional related scales;
4) A dearth of previous research in the specific area of natural resource related sociological research.

These problems can be partially overcome by an increase in sample size and the addition of more institutional scale related data for future studies. The lack of parallel, institutional related value research is a problem of sociology as a whole. The lack of any great quality of natural resource related research is to be expected as the Sociology of Natural Resources is a very new sub-discipline.

Points brought forth by the immediate study indicate the following recommendations:

1) A standardized, often used value scale relating to natural resources is needed. This scale should be created, standardized, and utilized to avoid the need for the extensive "adaptations" common to value scales. It then could provide comparative data based upon the same standards.
2) The generated theory which was developed within the present study should receive further testing, elaboration, and retesting.

3) The statistical methodology should be elaborated upon and some attempt at standardization should be made.

4) The entire study should be applied to other populations.
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APPENDIX A

Complete Interview Schedule

State
County or Town
Segment & House #
Schedule #
Date
CMRR-11
Interviewer
Time Started

A SURVEY OF SOCIAL ASPECTS OF WATER USE AND MANAGEMENT
A Project of the Utah State University Water Research Center

Respondent's Name:
Mailing Address, Street or Rural Route Number:
Location, Town or Local Area Name:
Give date: _______ 1st Call _______ 2nd Call _______ 3rd Call _______

1. Family Information

1. Names of all members of the family living at home or away and other household members:

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<tr>
<th>(1)</th>
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<tbody>
<tr>
<td>Name</td>
<td>Relation</td>
<td>If Away</td>
<td>Last</td>
<td>Married</td>
<td>Age</td>
<td>Grade</td>
<td>Status</td>
<td>Present Major</td>
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<td>Sex</td>
<td>Give</td>
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</table>

Code (7) M-Married, W-Widowed, D-Divorced or separated, N-Never married

10. Head's Father's Occupation
11. Wife's Father's Occupation
12. Where did you grow up for most of your childhood?
13. How long have you lived in this residence?
14. How long have you lived in A. This County
   b. (IF IN TOWN) This Town
15. (IF FARM RESIDENCE) How many acres do you operate? a. Total
    b. Owner
    c. Rented
16. What previous kind of jobs have you worked at for one or more years?
   1.
   2.
   3.
   4.

II. Here we have some questions regarding farm:

17. All things considered would you prefer a non-farm occupation or would you prefer to farm as an occupation,
   a. Farm
   b. Non-farm
APPENDIX A

Complete Interview Schedule

State
County or Town
Segment & House #
Schedule #

Date
Interviewer
Time Started

A SURVEY OF SOCIAL ASPECTS OF WATER USE AND MANAGEMENT
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<tbody>
<tr>
<td>Name</td>
<td>Relation</td>
<td>Sex</td>
<td>If Away</td>
<td>Give Age</td>
<td>Last Grade</td>
<td>Marital Status</td>
<td>Present Major Occupation</td>
<td>Any Part Time Job</td>
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<td>Head</td>
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10. Head's Father's Occupation
11. Wife's Father's Occupation
12. Where did you grow up for most of your childhood?
13. How long have you lived in this residence?
14. How long have you lived in A. This County
   B. (IF IN TOWN) This Town
15. (IF FARM RESIDENCE) How many acres do you operate? a. Total
    b. Owned
    c. Rented
16. What previous kind of jobs have you worked at for one or more
    years?
   1. 
   2. 
   3. 
   4. 

II. Here we have some questions regarding farming.

17. All things considered would you prefer a non-farm occupation or
   would you prefer to farm as an occupation.
   a. Farm 
   b. Non-farm
Now on these we would like you to indicate what you think about farming: please answer the following questions in one of five ways: Strongly Agree, Agree, Undecided or no opinion, Disagree, Strongly Disagree. (USE CARD I)

18. The supply of water is one of the biggest worries of the farmers in this area.
   SA _____ A _____ U _____ D _____ SD _____

Farming Attitudes Scale

19. I feel it is more interesting to work in a specialized kind of job than do a more general type of work such as farming.
   SA _____ A _____ U _____ D _____ SD _____

20. A farmer these days is more of a specialized business man and it is more important to make farming pay than just be a place to live.
   SA _____ A _____ U _____ D _____ SD _____

21. I would very much like to see my children go into farming.
   SA _____ A _____ U _____ D _____ SD _____

22. (FOR THOSE WITH CHILDREN 15 to 18) What do the children plan to go into? (NUMBER AS IN ITEM 1. PAGE 2. LIST FIRST NAME OF EACH CHILD)

III. Education

(ANSWER LIKE THE QUESTIONS ON FARMING) (USE CARD I)

23. If possible, every individual regardless of vocational goals should finish high school.
   SA _____ A _____ U _____ D _____ SD _____

24. If possible, every individual regardless of vocational goals should finish college.
   SA _____ A _____ U _____ D _____ SD _____

25. The only real value of education is if it teaches you how to do something.
   SA _____ A _____ U _____ D _____ SD _____

26. Trade schools should not be supported financially by the state.
   SA _____ A _____ U _____ D _____ SD _____

27. Most high school teachers are very competent in their fields of knowledge.
   SA _____ A _____ U _____ D _____ SD _____

Newspapers

28. The newspapers in this area are usually an adequate source of information.
   SA _____ A _____ U _____ D _____ SD _____
29. Which newspapers do you receive regularly? (IF NONE, INDICATE)
   a. ___________________  b. ___________________
   c. ___________________

IV. It is important to us to know something about the kinds of contacts people have and what they do in the community.

What groups, clubs or organizations do you belong to? (GET INFORMATION FOR HEAD ON MEETINGS ATTENDED IN PAST TWO YEARS AND COMMITTEE OR OFFICER ACTIVITY FOR PAST TWO YEARS)

We are thinking of organizations such as: Church groups, Lodges, Unions, Civic, Farm and Coop, Educational, Occupation or Professional, Neighborhood, etc.: (PROBE FOR ALL ORGANIZATIONS RELATED TO WATER, INCORPORATED OR OTHERS, COMPANIES, UNINCORPORATED COMPANIES, COOPS, IRRIGATION ASSOCIATIONS, PRIVATE, PUBLIC, ETC. ALSO COMMITTEES, CONSERVATION GROUPS, SPORTSMEN GROUPS, GOVERNMENT AGENCY COUNCILS, ETC.)

<table>
<thead>
<tr>
<th>Name of Organization</th>
<th>(31) What proportion of regular meetings attended in past two years.</th>
<th>In past two years have you</th>
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<td>1/4</td>
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</table>

34. In relation to sources of information and decisions we often find people talk to others about various ideas. Which of your neighbors or friends are well enough informed on current topics that you usually talk over problems with them? (PROBE HARD) (NAMES)

35. Where do you feel they get most of their information? (FOR EACH NAMED)

V. Leisure Orientation Scale (USE CARD I)

36. The constructive use of leisure time is the answer to many of the problems now facing the American Society.
   SA _____ A _____ U _____ D _____ SD _____
   4 0

37. I generally feel guilty when I enjoy leisure for more than a short time.
   SA _____ A _____ U _____ D _____ SD _____
   0 4

38. Leisure serves no useful purpose in life.
   SA _____ A _____ U _____ D _____ SD _____
   0 4
39. My chief reason for working is to pay for my leisure activities.
SA____ A____ U____ D____ SD____

40. I sometimes feel guilty when I am on vacation, because I am not working.
SA____ A____ U____ D____ SD____

41. Most people spend too much time just enjoying themselves today.
SA____ A____ U____ D____ SD____

VI. Recreation Participation for Head of Household

42. Have you taken a day off now and then in the past year from work or taken a week-end to travel to areas of interest to you and your family?
Yes____ No____
a. (IF YES) What were the areas visited in the last year?

43. Did you take a vacation of four or more days in which you took a trip within the last three years? (TRIP AWAY FOR AT LEAST ONE NIGHT AND NOT RELATED TO HIS OCCUPATION)
Yes____ No____
a. Give the (a) places you have gone and (b) activities you have done on a vacation in the last three years.
Place 1.________________________ Activity________________________
Place 2.________________________ Activity________________________
Place 3.________________________ Activity________________________

45. Have you visited any foreign countries on vacations as adults?
Yes____ No____

46. Do you and your family participate in any recreation activities related to water?
Yes____ No____
a. (IF YES) What are they?

VII. Credit (USE CARD I) (Conservatism-Liberalism on credit scale)

48. Staying out of debt is more important than owning your own home.
SA____ A____ U____ D____ SD____

49. The only thing you should go in debt for is your home.
SA____ A____ U____ D____ SD____

50. The use of credit is all right to get things to improve your home, for medical bills or for a car if it is necessary.
SA____ A____ U____ D____ SD____

51. Going into debt for things to improve your living standards is all right as long as you have a steady income.
SA____ A____ U____ D____ SD____
52. Now days I consider buying things on time or on credit as necessary to my way of life.
SA____ A______ U______ D______ SD_____ 0

VIII. Public Opinion (Politico-economic conservatism-liberalism scale)

These are general statements of opinion that have been used in some other studies also. Some of them may be controversial but we are interested only in the range of people's opinions. (USE CARD II)

53. Labor unions should become stronger and have more influence generally.
SA____ A______ D______ SD_____ 0

54. America may not be perfect, but the American Way has brought us about as close as human beings can get to a perfect society.
SA____ A______ D______ SD_____ 0

55. It is up to government to make sure that everyone has a secure job and a good standard of living.
SA____ A______ D______ SD_____ 0

56. No one should be allowed to earn more than $25,000 a year.
SA____ A______ D______ SD_____ 0

57. In general, full economic security is bad; most men wouldn't work if they didn't need the money for eating and living.
SA____ A______ D______ SD_____ 0

58. The government should own all public utilities (transportation, telephone, gas, and electric facilities, railroads, etc.)
SA____ A______ D______ SD_____ 0

IX. Social Interests (Social status orientation scale)

59. A job which pays a definite and steadily increasing salary is preferable to one which offers the opportunity for high income but to only a few of the top individuals.
SA____ A______ D______ SD_____ 0

60. It is important that a person's life work be a respected kind of work rather than being one of the more menial jobs.
SA____ A______ D______ SD_____ 0

61. A job as a teacher or office worker is preferable to one as a carpenter or other construction worker.
SA____ A______ D______ SD_____ 0

62. I think it is important for a person to join the club or social organization in his community that carries some prestige and importance.
SA____ A______ D______ SD_____ 0
63. I would prefer a high paying job with long hours over a job requiring less work but also less money.

SA ☐ A ☐ D ☐ SD ☐

64. Although you may like an individual, if he is not from the right social group and you want to get anywhere it would really be a mistake to associate too much with him.

SA ☐ A ☐ D ☐ SD ☐

X. Social Behavior Opinions (USE CARD I) (Self-perspective scale)

65. When in public, people should be extra careful of their behavior.

SA ☐ A ☐ U ☐ D ☐ SD ☐

66. I'm uncomfortable when I am with people who have bad manners.

SA ☐ A ☐ U ☐ D ☐ SD ☐

67. I want a house which I can be proud to have my friends see.

SA ☐ A ☐ U ☐ D ☐ SD ☐

68. I think my house has a lot to do with my friends' opinion of me.

SA ☐ A ☐ U ☐ D ☐ SD ☐

XI. Opinions on Water Use

70. What do you feel are the most important uses for natural stream water resources in this area? (FIRST CHOICE ONLY)

Industry Uses ☐ Urban and Household ☐

Irrigation for Agriculture ☐ Recreation ☐

Other: (SPECIFY)

71. Do you think it is wrong to take water away from one river basin and move it out of its natural area to another?

Yes ☐ No ☐ DK ☐

72. Is it wrong to take water away from agriculture to use it for industry?

Yes ☐ No ☐ DK ☐

73. Industry sometimes can afford to pay more for water than agriculture; should agriculture be left to compete or should agriculture have priority?

Left to compete ☐ Not left to compete ☐ DK ☐

74. Where did you learn about the importance of water rights? (PROBE)

☐

XII. (FOR FARM OPERATORS ONLY) (IF NOT FARMER SKIP TO ITEM 110)

76. Of the new farm ideas you have used, where have you usually heard of them first?

1. farm journals ☐

2. extension ☐

3. newspapers ☐

4. neighbors or friends ☐

5. other ☐

6. salesman ☐
77. During the last five years, how many times per year on the average have you had some kind of contact for information or educational purposes with the extension service? ______________

78. Are there any agricultural programs on TV and radio which you listen to with some degree of regularity? Yes __________ No __________
   a. (IF YES) Which ones? ____________________________________________
   (IF NO on 78 skip 79)

79. Do you usually find these informative enough so that they help to form your opinions? Yes __________ No __________ DK __________

80. Which farm journals do you receive or read regularly?
   Western Farm Life___ Intermountain Farmer___ Farm Quarterly___
   Utah Farmer____ Successful Farming___ Hoard's Dairyman___
   Farm Journal____ Utah Farm & Science___ Cattleman___
   Other (specify) ______________________________________________________

81. Do you get any ideas about water use or equipment from any of these sources? Yes __________ No __________
   a. (IF YES) Can you tell me some of them? ____________________________

XIII. Financing (USE CARD I) (Farm credit attitude scale)

82. Most farmers who enlarge their operation by borrowing make more profit than farmers who have small operations free of debt. SA_____ A_____ U_____ D_____ SD_____ 4 0

83. Farmers should wait until they can accumulate their own capital rather than to borrow for farm production purposes. SA_____ A_____ U_____ D_____ SD_____ 0 4

84. A farmer should strive to increase the size of his business rather than to get out of debt on a small unit. SA_____ A_____ U_____ D_____ SD_____ 4 0

85. A farmer should borrow enough money to have as much equipment and livestock as he needs, regardless of how much he is in debt. SA_____ A_____ U_____ D_____ SD_____ 4 0

88. Do you have a water right? Yes __________ No __________
   a. (IF YES) What is the date of your right? ____________________________
   b. (IF NO) Do you use irrigation water? Yes __________ No __________
      (1) (IF YES) Where do you get this water? __________________________

89. Do you think this system of water rights could be changed in any way? Yes __________ No __________ DK __________
   a. (IF YES) Explain ________________________________________________

90. Has it changed any since the time of the early settlers? Yes __________ No __________ DK __________
   a. (IF YES) How? ________________________________________________
91. Is the water you have adequate for your needs?
   Yes____ No____
   a. (IF NO) Explain needs______________________________

92. Do you use all the water available to you?
   Yes____ No____
   a. (IF NO) What do you do with it?______________________

93. If you need more water, how would you get it?__________________
   a. (IF BUY OR LEASE) from whom?________________________

94. How do they measure the water you get? Acre Ft.__________
   Second Ft.________ DK________ Other________
   a. (IF SECOND FT.) Is this the best way? (EXPLAIN)_________

   b. (IF SECOND FT., DON'T KNOW OR OTHER ABOVE) Have you heard
      of the use of acre feet? Yes____ No____ DK________
      (1) (IF YES) Is this a better way of measuring water or not?
         Yes____ No____ DK________
         (a) (IF YES) Why?________________________
         (b) (IF NO) Why not?____________________
      (2) (PROBE IF YES ON #94b) How does the use of acre feet in
         irrigating affect the use of water?_______________________

XIII. Problems

95. What kinds of human problems do you and other farmers encounter
    in the use of water around here? (EXPLAIN IN OWN WORDS IF
    NECESSARY)__________________________________________

96. Are there any problems with other people using water out of
    turn?
    Yes____ No____ DK________
    a. (PROBE) Explain____________________________________

97. Are there ever any problems in this area with not getting the
    right amount of water according to your shares?
    Yes____ No____ DK________
    a. (IF YES) What are the causes of this?__________________

    b. Is this considered a serious matter around here? Yes____
       No____ DK________
       (1) (IF YES) What do people do when it happens?_______

98. Have you ever had any problems like this in the past 10 years?
    Yes____ No____ DK________
    a. (IF YES) What do people do when it happens?____________
       __________________________________________________
99. Are there any problems with the distributing organizations or canal companies?
   Yes________ No________ DK________
   a. (IF YES) What are they and why?

100. Do you have any problems around here because of what they do with the water in other areas along the river?
   Yes________ No________ DK________
   a. (IF YES) What are these problems?
   b. (IF YES) What areas are involved?

101. (IF NOT ALREADY MENTIONED) Have you ever had to take any legal action or go to the water company or other groups to solve a water problem?
   Yes________ No________
   a. (IF YES) With what type or action or group did you go to?
   b. What action was taken?

102. Do you know of others that have had to take some kind of action?
   Yes________ No________ DK________
   a. (IF YES) What kind of action was taken?

XIV. Organization Systems

103. Do you get water from more than one canal company?
   Yes________ No________ DK________
   a. Which canals do you use?
   b. __________________________
   c. __________________________
   d. (IF YES) Are there any problems because of getting water from more than one company? Yes________ No________ DK________
   List problems

105. (IF TWO OR MORE) Have they ever thought of consolidating these companies?
   Yes________ No________ DK________
   a. Why don't they consolidate?
   b. Do you see any advantages in consolidation? Yes________ No________ DK________
   c. What are the advantages?
   d. What are the disadvantages?
106. a. For Canal Company A (NAME) ______________________________
   How is this organized; is it a corporation company, a coop, a
   share holding association or private?

   (1) What officers are there?
   (2) How are the officers named?
   (3) How is it financed?
   (4) Who are the officers?

   b. For Canal Company B (NAME) ________________________________
   How is this organized; is it a corporation company, a coop, a
   share holding association or private?

   (1) What officers are there?
   (2) How are the officers named?
   (3) How is it financed?
   (4) Who are the officers?

   c. For Canal Company C (NAME) ________________________________
   How is this organized; is it a corporation company, a coop, a
   share holding association or private?

   (1) What officers are there?
   (2) How are the officers named?
   (3) How is it financed?
   (4) Who are the officers?

107. Is there any other organization related to water use that you
   are associated with in any way? (PROBE) Yes______ No____
   DK____

   a. (IF YES) What is the name of it?

108. Have there been any changes in organizations dealing with
   water that you have thought of that we haven't talked about
   such as new companies or committees, associations or others?

109. How have you made any changes in your irrigation methods in
   the past twenty years? (OR FOR LENGTH OF TIME HAS FARMED)

109A Do you have any wells?
   Yes______ No_____

   a. (IF YES) How many?

   b. Size of flow of each?

109B How many shares of water do you own or lease?
   Owned______ Leased______

   a. What constitutes a share?
(PROBE FOR EACH CANAL COMPANY)
1. 
2. 
3. 
b. Cost per share? (PRESENT ASSESSMENT)
1. 
2. 
3. 

(FOR ALL RESPONDENTS)

XV. Conservation

110. Conservation is a term used a lot these days; what do people generally think of around here when they talk about conservation?

(Numbers 111 to 112 were dropped)

113. Which should have priority use of water: industry or irrigation? (PRESENT ASSESSMENT) (USE ANSWER IN #72 IF ANSWER INDICATES ATTITUDE)

114. What about priority between forest or grazing use of public land?

115. Of land held by the BLM and the Forest Service, which use should have priority, use of land for private farming and ranching or holding it for public use?

116. If mining destroyed a recreation area, which use do you think should take priority, mining or recreation?

117. Which should have priority, use of water for irrigation or for recreation?

118. Do you think there should be public control of the use of land where erosion and other run off problems affect the water supply or should this be left up to individual users to control?

119. What do you think about the choice between controlling the run off of streams with reservoirs and using the surplus water for new uses or leaving this to private development?

XVI. Social Change

120. Urban centers, Los Angeles, Salt Lake, Pocatello, Idaho Falls, are growing with a greater and greater demand for water for household, business, industrial and municipal uses. As this pressure grows how will this affect the use of water in this area?

121. Should the Great Basin area attempt to get more industry if this puts more pressure on the supply of water in the area? [YES NO DK]

122. Would more industry be a good thing for this region? [YES NO DK]
a. (EITHER ANSWER) Why do you feel this way?
123. Are things changing in this area?
   Yes ________  No _________  DK __________
   a. (IF YES) How?

124. (IF NOT A FARMER) Speaking of change and water, has there been any important change in the past twenty years in the use of water in this area?
   Yes ________  No _________  DK __________
   a. (IF YES) In what way?

XVII. Institutional Aspects

125. Does your county or town government deal with water or get involved with it in any way?

126. How do politics around here get involved with water?

127. In what way does water become involved in educational programs in this area?

128. Does the church (or religious groups) around here deal with water in any way? (PROBE - DO THEY DISCUSS WATER PROBLEMS AT CHURCH OR TEACH ANYTHING THAT DEALS WITH THE WAY PEOPLE FEEL ABOUT IT OR DO THEY HANDLE ANY PROBLEMS RELATED TO WATER?)

XVIII. Leadership Structure

Now I would like to ask about some of the people around here that know what is going on and are important in these things. This helps us understand the way the community gets things done.

129. Who are the important people in this area that have to do with what goes on with water?
   1. __________________________  4. __________________________
   2. __________________________  5. __________________________
   3. __________________________  6. __________________________

130. Who are important people in this community when it comes to getting things done generally?
   1. __________________________  4. __________________________
   2. __________________________  5. __________________________
   3. __________________________  6. __________________________

131. What organizations or groups other than canal companies are most influential when it comes to water use or development?
   1. __________________________  3. __________________________
   2. __________________________  4. __________________________

132. What do these groups do or why are they important with water resources?
   Group 1 __________________________
133. Are there any government agencies that are important in relation to water resources in this area?
Yes  No  DK  a. (IF YES) What are they and what do they do?

134. What do you think of the activities of government agencies related to water development?

135. Have you heard of the Bear River Reclamation project proposed for the development of the Bear River?
Yes  No  a. (IF YES) What are they proposing to do in the Bear River Project?

136. If those with water rights were assured of getting their water do you think there should be complete planning and development of the Bear River?
Yes  No  DK  a. Explain (either)

137. Do you think that the proposed Bear River Project will hurt you?
Yes  No  DK

138. Do you think that there is any surplus water in the Bear River?
Yes  No  DK

139. Do you think any area is getting more than another in the Proposed Bear River Project?
Yes  No  DK

140. Have you attended any meetings in which the Bear River Project was the major topic of discussion?
Yes  No  a. (IF YES) a. Who held the meeting and b. when?

141. What do you think is holding up the project?
Political bickering  Local government
Federal government  Private industry
Other (SPECIFY)

142. Where did you first hear of the Bear River Project?
Extension service  Newspaper
Neighbor  Farm journals
Radio  Other (SPECIFY)

a. What other sources both (1) for and (2) against have you encountered?
1.
2.
b. How did you decide which way to feel on this?
143. Did you actively try to become better informed about it?
   Yes  __________  No  __________  DK  __________
   a. (IF YES) What did you do?  __________

144. Over all do you think the proposed Bear River Project would help or hinder the water picture in this area?
   It would help  __________  It is essential  __________
   It would hinder  __________  It won't make much difference  __________
   It would really hurt  __________  No opinion  __________
   Why?  __________

144A Do you feel anything needs to be done about stream pollution in this region? (ROCKY MOUNTAIN AREA)
   Yes  __________  No  __________  DK  __________
   a. (IF YES) What should be done?  __________

144B Are there any stream pollution problems on the Bear River or its branches?
   Yes  __________  No  __________  DK  __________
   a. (IF YES) Specify (a) type and (b) source and (c) location, etc.
      a.  __________
      b.  __________
      c.  __________

144C Do you or members of your family use the Bear River for any recreation activities?
   Yes  __________  No  __________
   a. (IF YES) What are they?
      (1) fishing  __________
      (2) boating  __________
      (3) swimming  __________
      (4) other (SPECIFY)  __________

144D When a shortage of water occurs what happens?
   a. in the supplying system (i.e. canal co. or other organizations) that is providing water.  __________
   b. to you, what do you do or how do you adjust?  __________

144E Do you know of any ways or practices by which the present water resources might be conserved more fully?  __________

XIX. Level of Living

145. Is there a telephone in your home?
   Yes  __________  No  __________
   a. (IF YES) Party or private line?  __________

146. Do you rent or own the place where you are living?  __________

147. How many bedrooms are there in your home?  __________

148. About what year was this house built?  __________

149. How many cars do you have?  __________
a. What year? (1) (2) (3)
b. Type of Body? (1) (2) (3)
c. Were any of these bought new or used? (1) (2) (3)

XX. Income

150. Here is a list showing several family income levels. Family income includes any income of all family members from wages and salaries and net income, from farm or business, and any other income. Please indicate into which of these categories your family income before taxes fell in 1965: (USE CARD III)
a. Under $1,000 f. $6,000 to $7,999
b. $1,000 to $1,999 g. $8,000 to $9,999
c. $2,000 to $2,999 h. $10,000 to $14,999
d. $3,000 to $3,999 i. $15,000 and over
e. $4,000 to $5,999

151. What percent of your net income came from the following sources?
Farming or ranching Non-farm wages or salaries
Farm labor jobs Non-farm self-employment
Other (CIRCLE OR SPECIFY) (social security %, pensions %, dividends %, rental property %, or other %) TOTAL SHOULD ADD TO 100%

XXI. Interviewer Rating

152. Neatness of house and yard
 _______ Very neat
 _______ Average
 _______ Not neat

153. (IF FARM OPERATOR) Neatness of farm and barnyards
 _______ Very neat
 _______ Average
 _______ Not neat

154. Rapport during interview
 _______ Very good rapport, talked very freely
 _______ Not so free on some questions
 _______ Unable to communicate freely
 _______ Poor rapport, almost lost interview

155. Rating of Social-Economic Status. (ESTIMATE BY ENUMERATOR)
 _______ Very high
 _______ High
 _______ Medium
 _______ Low
 _______ Very low
APPENDIX B

The Interview Scales

The three scales used in this investigation are all based upon previously standardized scales. As these scales have all been validated by others, in some cases by many different researchers, no scale analysis—other than in exploratory computer programming—was carried out in the immediate investigation. The questions, given below, are parts of the total interview schedule (Appendix A) and are numbered according to their position in the interview schedule.

Desirability of Education Scale

The origin of the scale is from Rundquist and Sletto (1936: 27, 378-384). The questions used originally appeared in their long form questionnaire. Certain modifications of wording were made for the present work to fit the overall format of this study. The response patterns of strongly agree, agree, undecided, disagree, and strongly disagree were altered. Some additional questions have been added (Andrews and Sardo) but in orientation to the factor of dating the questions, not to the basic orientation. This has been done in many cases of sociological research to overcome such problems as changes in levels of aspiration. In this particular case Question 24 has been added as a completed high school education in 1935 has about the same connotation as a completed college education thirty years later.

In the original form these scales (of Rundquist and Sletto) yielded split-half reliability coefficients corrected by the Spearman-Brown formula ranging from .78 to .88 for the standard samples of 500 of each sex (Rundquist and Sletto, 1936:137).
Desirability of Education Scale

23. **If possible**, every individual regardless of vocational goals should finish high school.

   SA___ A___ U___ D___ SD___

24. **If possible**, every individual regardless of vocational goals should finish college.

   SA___ A___ U___ D___ SD___

25. The only real value of education is if it teaches you how to do something.

   SA___ A___ U___ D___ SD___

26. Trade schools should not be supported financially by the state.

   SA___ A___ U___ D___ SD___

27. Most high school teachers are very competent in their fields of knowledge.

   SA___ A___ U___ D___ SD___

Credit Buying Scale

The credit buying scale probably had its origins in the Rundquist and Sletto (1936:26) work. However, the current form is one adapted from Hesser and Janssen (1960).

Credit Buying Scale

48. Staying out of debt is more important than owning your own home.

   SA___ A___ U___ D___ SD___

49. The only thing you should go in debt for is your home.

   SA___ A___ U___ D___ SD___

50. The use of credit is all right to get things to improve your home, for medical bills or for a car if it is necessary.

   SA___ A___ U___ D___ SD___

51. Going into debt for things to improve your living standards is all right as long as you have a steady income.

   SA___ A___ U___ D___ SD___
52. Nowadays I consider buying things on time or on credit as necessary to my way of life.

SA_____ A_____ U_____ D_____ SD_____

Political-Economic Conservatism-Liberalism Scale

The third scale used in this study was developed from the works of Adorno, et al (1956:151-207). The reliabilities of the total Adorns, et al scales are reported to be between 0.79 and 0.90. A reliability using the split-half technique is given at 0.87, whereas, some of the other figures are estimates by the original researchers and others (Shaw and Wright, 1967:403).

Political-Economic Conservatism-Liberalism Scale

53. Labor unions should become stronger and have more influence generally.

SA_____ A_____ U_____ D_____ SD_____

54. America may not be perfect, but the American Way has brought us about as close as human beings can get to a perfect society.

SA_____ A_____ U_____ D_____ SD_____

55. It is up to government to make sure that everyone has a secure job and a good standard of living.

SA_____ A_____ U_____ D_____ SD_____

56. No one should be allowed to earn more than $25,000 a year.

SA_____ A_____ U_____ D_____ SD_____

57. In general, full economic security is bad; most men wouldn't work if they didn't need the money for eating and living.

SA_____ A_____ U_____ D_____ SD_____

58. The government should own all public utilities (transportation, telephone, gas, and electric facilities, railroads, etc.)

SA_____ A_____ U_____ D_____ SD_____
Relationship to Religious Attitudes

As was stated in the section dealing with definitions (Chapter One), this study has dealt with a sub-cultural area with a predominate religious attitude, even when not always in the actual population majority. The predominate religion of the Mormon sub-culture could be questioned as a factor in the rural-urban differential as it is possible that differences in expressed attitudes might have been due to a different religion apportionment between the rural and urban area. (The urban area, Ogden, generally has just below two-thirds of the population belonging to the Latter-Day Saint (Mormon) Church. In the rural area the proportion is over three-fourths (86.6% of the respondents in the study were LDS).

This imbalance in religious affiliation does not seem to affect the attitudes. In the rural area Gillings and Andrews (1967) found that religion was not significant in relation to other attitudes. Mauss (1968) has found in Utah urban areas that religious affiliation does not greatly affect, if at all, the other institutional attitudes.
APPENDIX C

History of the Bear River Development
and a Geographic and Climatological
Description of the Area

This particular study is a portion of the sociological section of a
study of proposed development of the Bear River by the Bureau of Reclama-
tion, United States Department of the Interior. This project, officially
termed the Bear River Project, is still in the development stages. Various
aspects, economic, hydrological, structural, etc., are being investigated.
The sociological portion is thus not an end to itself but a portion of a
larger pattern.

This chapter deals with a brief geographic and climatological
description and a short history of the developments on the Bear River.

Geographic and Climatological Description of the Area

The area being studied consists of seven counties, three each in
Idaho and Utah and one in Wyoming. As is detailed in the chapter on
sampling (Chapter Three), not all of these counties was totally sampled.
However, the geographic description is inclusive of all the seven counties.
All but Weber County in Utah are crossed by the Bear River. Weber County
lies just to the south of the Bear River's outfall into the Great Salt
Lake.

The Bear River rises in the Uintah Mountains of northeastern Utah
and flows north through Wyoming, including the sampled Uintah County, to
Idaho. The three Idaho counties sampled, Bear Lake, Caribou, and Franklin,
from the southeastern corner of Idaho. The Bear River enters Idaho flowing
northward at Bear Lake County and follows a roughly horseshoe course to leave Idaho flowing southward from Franklin County into Cache County in Utah. From Cache County, a sampled county, the river flows southwestwardly through Box Elder County and reaches its terminus. Thus, the Bear River after flowing over 500 miles from its source empties about 90 miles west of its head waters (Bureau of Reclamation, 1962:1).

The basin formed by the Bear River consists of about 7,100 square miles. Of this total 2,700 are in Idaho, 2,910 in Utah, and 1,490 in Wyoming (Bureau of Reclamation, 1962:2). The Bear River is the largest tributary of the Great Salt Lake as well as being the largest stream in North America that does not reach the ocean (Bear River Commission).

The areas through which the Bear River flows have altitudes, at its source, in excess of 8,000 feet down to approximately 4,300 feet, depending upon the level of the Great Salt Lake. The various valleys through which Bear River flows have a rainfall average in range of 15 inches per annum. The mean annual temperature of the upper portions, composed of the Idaho, Wyoming, and Cache counties, is in the mid-forties (Fahrenheit) with extremes from -40°F to 110°F. The climate in Box Elder and Weber counties is milder as can be seen by the thirty more frost free days in 150 days (Bureau of Reclamation, 1962:4).

Due to the low rainfall, most of which occurs in the form of winter snows, the only way to obtain high, sustained agricultural yields is through wide spread irrigation. Some dry farming is done but it is not consistent in production nor very remunerative. The dry farming is normally restricted to grains. Irrigation on the same lands provides fair to good
groups in grains, pasturage, raw crops - mainly canning vegetables, sugar beets, and potatoes.

History of the Bear River Development

The current proposed development of Bear River by the Bureau of Reclamation is the latest harnessing of the river. However, it is not the first development as the history of development of the Bear River goes back to practically the first white settlers. The Bureau of Reclamation itself has been doing work connected with river since 1903 (Bureau of Reclamation, 1962:13), only a year after its creation under the guidance of Theodore Roosevelt (General Services Administration, 1965:258-259).

Throughout the Mormon sub-cultural area, the norm has long been to irrigate. The Bear River settlements have not deviated from the norms wherever irrigation development has been feasible. Canal building to better utilize the waters of the Bear River was started in the latter part of the Nineteenth Century and has continued with building spurts since that time. With the first project dating back to pre-Civil War times, the Bear River has a long and interesting history of development (Ricks, 1956).

Not too long after the beginnings of irrigation development, other water uses became important. With the development of community electrification came many demands for local electrical supplies. Without the modern, high voltage, high cycle electric power developments of today the community or region desiring electric power either generated its own or did without. Even though the Bear River would not be considered prime for development in today's hydro-electric scheme, its lowhead generating potential was very attractive to developers at the turn of the century.
Electric Bond and Share, today a behemoth holding company operating many companies in the Western Hemisphere, was then in the process of establishing a number of local companies to supply small area electric power needs. One of the areas in which they worked was the Bear River Basin. The present day Utah Power & Light was a direct outgrowth of Electric Bond and Share's developments in the area (Ricks, 1956). It, UP & L, has been a social, political, and economic force from its earliest times and continues to be so.

This hydro-electric development has aided in the resource development of the Bear River Basin. However, it has added a great point of controversy to the entire problem. With any water development comes the problem of water rights and with water rights come conflict problems. These conflicts have long been recognized as an 1899 bulletin of the United States Department of Agriculture indicates.

Since few of the more important streams used for irrigation lie wholly within the limits of any one state, and there is great diversity of irrigation laws in different states, interstate complications over water rights have been frequent and must become more frequent and more acute as the demand for water increases, unless some mode of settlement is devised (Johnston and Breckens, 1899:3).

With the accumulation of water rights disputes paralleling the building of canals and generating stations, it was not too many years before an adjudication of the Bear River water rights were made. In 1920, the Honorable F. S. Dietrich gave his decisions on the water rights of the Bear River. This decree was commonly called the Dietrich decree, (Dietrich, 1920). This settled, supposedly forever, the water rights for the entire Bear River.

Due to some over-development and other problems such as drought the problem was not solved. The first major dispute which involved more than
one state at once was the use of the waters of Bear Lake. This lake, even though not part of the Bear River channel is inter-tied with the Bear River to be used as a leveling basin to maintain even flow for the UP & L hydro-electric stations. During drought times dispute has arisen over the use of these waters. Finally, in 1958 as part of the Bear River Compact, these problems have been worked out by assigning waters above a certain elevation to be used for electric power generating purposes while the rest, below 5,912.91 feet above mean sea level are to be irrigation reserve (Utah-Idaho-Wyoming, 1958:7).

With the creation of the Bear River Commission following the Bear River Compact, large scale development of the Bear River was again brought up—the current Bear River Project being one result. The current project is to store, regulate, distribute, and exchange waters of the Bear River and its tributaries. Included in the project are new dams, canals, diversion works, and modification and improvement of existing structures, channels, canals, and storage facilities. New irrigation projects will convert now arid lands to more beneficial use. In addition, recreation and flood control benefits will be realized (Bureau of Reclamation, 1962).

This is not the first large scale development as has been pointed out. The Bear Lake leveling operation is best considered the first very large operation—costing over a million dollars a half century past (The Journal, 1917:6). Nor is the proposed Bear River Project the first shown need for interstate planning and operation (The Herald Journal, 1934).

Even though the current project of the 1960's is neither the first irrigation, power, or flood control project, it is the largest yet
proposed. In addition, it is the first one of inter-state importance which includes portions to develop the various uses of the river.

At this writing, the proposed project's possibilities of construction appear to be high. However, the project is still in the planning stage.

The populations of the six different researched areas are listed according to the 1960 census (United States Census, 1960: Idaho, 42-43 and Utah, 40). The populations are given for the entire five rural counties and for the incorporated area of Ogden. However, only portions of the five counties were actually included and interviewed and an estimate of the population base that was actually sampled is given for Cache and Box Elder counties. The other three counties were sampled close enough so their total area to eliminate a need for this estimation.

### TABLE 18

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<th>Area</th>
<th>Number Interviewed</th>
<th>Total Population</th>
<th>Estimated Population of Sample</th>
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<td>194</td>
<td>70,197</td>
<td>70,197</td>
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<tr>
<td>Box Elder County, Utah</td>
<td>193</td>
<td>55,061</td>
<td>11,000</td>
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<td>Cache County, Utah</td>
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<td>9,000</td>
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<td>Caribou County, Idaho</td>
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<td>5,976</td>
<td>5,976</td>
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<td>Bear Lake County, Idaho</td>
<td>118</td>
<td>7,148</td>
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</tr>
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</table>
APPENDIX D

Populations of the Area

The populations of the six different researched areas are listed according to the 1960 census (United States Census, 1960: Idaho, 42-43 and Utah, 40). The populations are given for the entire five rural counties and for the incorporated area of Ogden. However, only portions of the five counties were actually included and interviewed and an estimate of the population base that was actually sampled is given for Cache and Box Elder counties. The other three counties were sampled close enough to their total area to eliminate a need for this estimation.

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VITA

James Lane Gillings

Candidate for the Degree of

Doctor of Philosophy


Major Field: Sociology

Biographical Information:

Personal Data: Born at Riverside, California, February 10, 1933, son of Herbert H. and Lorena Lane Gillings.

Education: Attended public schools in southern California and Nevada; graduated from Monrovia-Arcadia-Duarte Union High School (California) in 1951; received the Associate of Arts degree from Brigham Young University, with a major in Archaeology and a minor in Mathematics, in 1957; received the Master of Recreation Education degree from Brigham Young University, with a major in Recreation and a minor in Sociology, in 1966; attended the University of Utah 1965-66; completed requirements for the Doctor of Philosophy degree, with a major in Sociology and a minor in Forest Science (Recreation), in 1969.

Professional Experience: Presently Assistant Professor of Sociology, Stephen F. Austin State University; 1966-67, Special Instructor in Sociology, Utah State University; 1965-66, Assistant Professor of Anthropology, Weber State College; 1964-65, Instructor in Sociology and Anthropology, Defiance College; 1963-64, Instructor in Sociology, University of Maine; 1961-63, Civil Engineer, employed by M. G. Sturgeon, Los Angeles, California; 1959-60, Junior Civil Engineer, Ventura County, California; 1957-58, Engineering Designer, Ventura County, California; 1956, Archaeologist and Cartographer, New World Archaeological Foundation, Tuxtla Gutierrez, Chiapas, Mexico; 1955, Engineer-in-training, U.S. Army, Corps-of-Engineers, Los Angeles, California.