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WILDERNESS AND THE SOCIAL ECOLOGY OF ATTITUDE CHANGE
AMONG COLLEGE STUDENTS

by

Gregory R. Campbell

B.A., University of California, San Diego, 1975

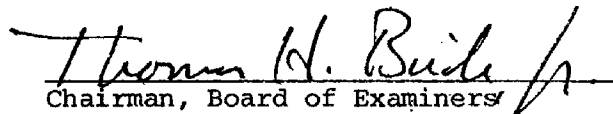
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ABSTRACT

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Director: Thomas Birch, Jr. THB.

The Wilderness Institute at the University of Montana offers a yearly 17-credit course of studies focusing on the theme 'Wilderness and Civilization' (W&C). This study examines the use and influence of wilderness as a situational determinant of attitudes and attitude change among college students in an environmental education program (W&C) that uses an initial back-packing trip to a Wilderness Area as a pedantic device.

Attitudes and attitude change are viewed cross-methodologically and holistically through a research strategy that shows the interrelationships of social ecological factors. This social ecological approach shows how wilderness contributes to attitude change within the situational, systemic, and ecological context of concern for the environment, social penetration and the development of community, individual awareness, academic instruction, and intimacy, and does not attribute direct causality to the physical setting.

Four separate methodologies are employed in this study. The first two, participant observation and interviewing, are qualitative, and the last two, survey questionnaires and content analysis, are quantitative. The results from these four methodologies are combined and cross-correlated to identify the salient features of the uses of wilderness as a didactic strategy. One of the purposes of this research is to show how the results from different social science methodologies can complement and supplement one another.

The cross-correlation showed that wilderness functions as a situational determinant by forcing interdependence, precipitating community, increasing environmental concern, creating intimacy, and broadening an awareness of social-environmental issues. Social penetration was rapid, and the students showed high self-disclosure. The students also revealed a high concern for, and awareness of, both the human and the non-human other.

It is suggested that outdoor environmental education using wilderness sensitizes students to each other and the natural environment, and that the use of wild ecosystems in education should become more widespread.

Finally, it is hoped that the educational benefits of wilderness will become one of the criteria for developing wilderness quality rating indices.

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TABLE OF CONTENTS

| | Page |
|--|------|
| ABSTRACT | ii |
| ACKNOWLEDGMENTS | iii |
| LIST OF TABLES | vi |
| LIST OF FIGURES | vii |
| Chapter | |
| I INTRODUCTION | 1 |
| Purpose of Study | 9 |
| II THE OTHER | 11 |
| III LITERATURE REVIEW | 17 |
| IV RESEARCH STRATEGY AND METHODS | 22 |
| Chronology of Research Events | 25 |
| Participant Observation | 28 |
| Survey-Questionnaires | 30 |
| Interviews | 35 |
| Content Analysis | 38 |
| V ANALYSIS OF DATA | 44 |
| The Data | 44 |
| Participant Observation | 44 |
| Statistical Analysis | 50 |
| Interviews | 63 |
| Content Analysis | 70 |
| VI DISCUSSION AND IMPLICATIONS | 83 |

| Chapter | Page |
|---|------|
| Correlation of Results | 83 |
| How Wilderness Contributes to Attitude Change | 95 |
| VII CONCLUSIONS AND RECOMMENDATIONS | 101 |
| Combining Methodologies | 101 |
| Disneyland or Wilderness | 103 |
| Wilderness and Education | 106 |
| REFERENCES | 108 |
| APPENDICES | 113 |
| A Sample Survey-Questionnaires and Statistical Equations Used in this Study | 114 |
| B Equations Used in the Content Analysis | 131 |
| C The Data | 133 |

LIST OF TABLES

| Table | Page |
|--|------|
| 4-1 Reliability of SEAT Results | 31 |
| 4-2 Mean Response Tendency | 33 |
| 4-3 Initial Backpacking Groups | 34 |
| 4-4 Coded Card (Example) | 42 |
| 5-1 SEAT, Form D Raw Data | 51 |
| 5-2 Comparative Data Indicating Pre-selection | 52 |
| 5-3 SEAT, Form D Content Clustered Items | 56 |
| 5-4 MACH V Raw Data | 59 |
| 5-5 Comparison of W&C Students to 1744 ^a Respondents | 59 |
| 5-6 W&C Student MACH Orientations | 61 |
| 5-7 Category A1 (Technology) | 71 |
| 5-8 Content Categories | 72 |
| 5-9 Ambivalence Ratios | 73 |
| 5-10 Intensity of Assertion Data | 76 |

LIST OF FIGURES

| Figure | | Page |
|--------|---|------|
| 5-1 | Change in Ambivalence in Each Category (Student #10) | 75 |
| 5-2 | Intensity of Assertion (for each category) | 78 |

CHAPTER I

INTRODUCTION

...it is one's own attitude...on which one needs to work. It is a fact that in any partnership, if one of the partners becomes quite clear in himself what it is that the situation requires, the chances are it will not be necessary to voice it; the other will somehow pick up the point and comply, with no words said (de Castillejo, 1973).

"One only understands the things that one tames," said the fox. "Men have no more time to understand anything. They buy things all ready made at the shops. But there is no shop where one can buy friendship, and so men have no friends any more. If you want a friend, tame me..." (de Saint-Exupery, 1943).

I knew a Wasco Indian logger (a faller) who quit logging (Warm Springs Camp A) and sold his chainsaw because he couldn't stand hearing the trees scream as he cut into them (Snyder, 1969).

I think we've got something special here -- I don't want to lose it (W&C student).

The Wilderness Institute, a public information center affiliated with the School of Forestry at the University of Montana, offers a yearly 17 credit course of studies focusing on the theme 'Wilderness and Civilization' (W&C). Offered every Fall Quarter for the past three years, this special interdisciplinary program includes courses in Forestry, English, Philosophy, and Humanities. In addition to these traditional subject areas, the W&C Program has several unique academic features:

1. Students are expected to apply their interdisciplin-

ary knowledge to special projects that focus on wildland allocation, management, and philosophy. These projects are often group efforts.

2. Students are required to participate in a "wilderness trek" to a specified Wilderness Area (e.g., the Bob Marshall). This occurs during the initial two weeks of the Fall academic calendar. Instructors as well as teaching assistants and students are involved in this backpacking trip. The trip typically lasts 10 to 12 days and covers 60 to 80 miles.

The actual trip to the wilderness is an unusual didactical tactic. It is a logical step in demonstrating the significance of wilderness as seen through literature, philosophy, science and humanities. Gaining an experiential sense of wilderness, one would conjecture, also adds to a heightened awareness of Wilderness (a political designation):

Perhaps the real significance of wilderness today... is the fact that it represents a model of ecological integrity that contributes to the maintenance of our entire environmental system. For many people the spiritual meanings previously sensed in the presence of awe-inspiring nature are more appropriately seen as ecological insights. The wilderness in particular has become a setting where the clash of values concerning the use of the natural environment is most sharply focused (Ittelson et al., 1974).

A sound cognitive grasp of this conflict of values would, to continue the argument, express itself in a concrete set of behaviors, particularly wilderness concern and advocacy. In addition to the direct advocacy of wilderness issues, an outdoor-oriented environmental education program should

produce students with a sensitization to the broader context of wildland allocation, i.e., an awareness of the total fabric of environmental concerns. This sensitization and its behavioral components might, for example, be expressed in art, poetry, literary analysis, and interpersonal development in addition to political activism, environmental research, and direct participation in societal mechanisms of reform and change. Not all individuals in a particular society are social advocates, and the same observation would be expected to hold true for the small microcosm of self-selected college students with an interest in wilderness examined in this study.

The previous explanation outlines the research problem: given that students should be expected to change in concrete, complex behavioral ways as a result of participation in a wilderness-centered environmental education program, how is it possible to describe, amplify, and verify these changes? An adequate longitudinal experimental approach to the problem would involve a controlled series of observations over a period of several years. These observations would record changes in careers, participation in relevant environmental activities (research, legislation, litigation, education, and mediation) and lifestyle alterations. Unfortunately, a longitudinal study of this nature not only requires the complete confidence of the subjects in the research and the researcher, but also would involve a sufficient time frame to devise strategies of experimentation, to conduct the research, and

to compile the data into a coherent and acceptable report. This type of longitudinal research simply exceeds the more modest scope of the present study.

The decision was made to address the question of the short run impact of wilderness as a situational determinant of attitudes and attitude change in college-level environmental education. With this base line research, a more lengthy, detailed longitudinal study could be undertaken to correlate attitudinal response with behavior. Current research (see Chapter III) questions the, at best, tenuous connections between the professed readiness to respond (attitude) and the physical response or actual behavior of the respondent.

The approach taken in this research is social ecological. The social, educational, and physical attributes of change combine in complex, systemic, situational contexts:

...the regularity and consistency of behavior in given physical settings over time and space occur because such settings are closely and tightly interwoven with the fabric of social, organizational, and cultural systems that circumscribe the day-to-day life of any group of individuals. In effect, any given physical environment is not only a behavioral environment, but also a social, organizational and cultural environment (Ittelson et al., 1974).

An ecological, systemic approach has only recently been adopted by students of interpersonal phenomena,

Not only does interpersonal exchange occur within an environmental milieu which effects its course and character, but social interaction involves active use of the environment. In a word, there is a truly mutual relationship between man and his environment (Altman and Taylor, 1973).

The goal of such research is to attempt to describe the

interactions between all the parameters of a particular situation in order to grasp the totality and complexity of factors contributing to the social phenomena under scrutiny.

The design of this study is holistic in two senses (see Chapter IV). First, the social, educational and physical parameters of student attitudes and concern for the environment are identified in the processes of social penetration, the development of intimacy and community, the internal social content categories of the participants, and the use and influence of natural, "wild" ecosystems. No attempt will be made to attribute direct causality of the physical setting to attitude change. Such an approach would attempt to isolate and reduce the experiences of the participants to a single influence, i.e., wilderness. Complex social ecological considerations would then be missing, and the situational context of changes in concern, attitudes, and awareness misrepresented. Rather, this study isolates, within the situational context, the different ways in which wilderness contributes to attitude change. The distinction between 'x causes change' and 'x contributes to change' is quite significant, and will be discussed in more detail in Chapter VI.

The second sense in which this study is holistic is methodological. There has been a traditional disparity between two different types of social science research designs. The first area of disparity involves combining quantitative

data (either survey or experimental or both) with qualitative, descriptive data. The second area of disparity has been eloquently developed in Hovland's classic comparison of the conflicting results derived from experimental and survey studies of attitude change (Wagner and Sherwood, 1969). From the social ecological perspective, these disparities are superficial, and the strengths of one methodological ploy may be used to complement the weaknesses of another. In this study, participant observation and interviewing are utilized to qualify the numerical data derived from a controlled exposure to wilderness and a content analysis of student-maintained journals. The use of a survey sample with the absence of controls would indeed produce the type of disparity in communication effects developed by Hovland. However, the strategy employed in this study was to use established survey-questionnaires for a random sample of W&C students prior to the wilderness trek, and then to administer the same instruments to the entire W&C student population after the trek. This minimizes the problem of divergent results in the degree of attitude change by using one segment of the class as a control group to test the effects of a 10 day wilderness trip on the experimental group. The use of controlled survey data and a numerical content analysis of journals qualified by participant observation and interview data circumvents the problems of obtaining communication information from any one methodological source.

Two final comments need to be stressed in this intro-

duction. Wilderness, as previously mentioned, represents an untouched working model of ecosystem integrity. Numerous arguments have been advanced utilizing scientific-utilitarian justifications for wildland preservation. The most noteworthy of these formulations is commonly known as the "gene bank" argument. The genetic diversity of undomesticated lands is viewed by many wilderness advocates as necessary to the long run stability of the biosphere. Wilderness Areas, to continue the argument, are "biosphere reserves" which can be utilized for future scientific research; research which is usually construed to hold the key to new technological and medical breakthroughs. This latter form of justification is typically advanced as a separate argument. The scientific-technological rationale for wildland allocation, however, is logically linked to gene bank considerations. Both arguments are teleological and utilitarian counter arguments to the calculative, economic logic of many government officials and industrialists. W&C students are gradually exposed to this culturally dominant mode of thought as the W&C Program progresses. These arguments, however cogent, are not the only raison d'être for wilderness advocacy. There is a hidden, more profound level of justification. According to this alternative perspective, responsibility to wildland is construed in terms of moral obligation and what is "best" or "right" for the land. The possibility of a prescriptive, normative-constitutive ethics of the environment hinges upon this non-utilitarian,

"deontological," and often poetic formulation. Wilderness is not simply a commodity subject to the dictates of an ever fluctuating market, but rather presents a powerful, guiding spiritual force in the uncharted territory of the unconscious -- to which, in many respects, it is analogous. Both the utilitarian and the deontological justifications for wildland allocation are compelling, and W&C students are expected to become familiar with both these senses of the meaning of the term 'wilderness.'

A final comment concerns the major difficulty in conducting this research: student confidence and cooperation. Several former W&C students felt that this study was unnecessary and would produce biased results. They felt that the presence of a participant observer would "influence attitudes" and misrepresent the social phenomena examined in this study. My major interpersonal strategy, given this potential critique and personal temperament, was to gain the confidence and trust of the respondents by adopting a policy of openness, innocuousness, and trustworthiness insofar as I could without revealing the overall design of this study and thereby inadvertently reinforcing the responses the students deemed appropriate to the research (which would, of course, then produce biased results). "Openness" turns out to be a significant category in the internal social reality of W&C students, and is the most likely reason that the students felt comfortable with me in my role as a researcher. The success of my social penetration must, of course, be judged by my

audience. It is noteworthy to mention that all the students who responded to Question #xiii during the interview phase of this research did not feel that I had significantly influenced their attitudes in any way other than through my role as a teaching assistant. They all indicated that they felt comfortable with me and my research (although they did not understand it), and looked forward to reading this thesis.

Purpose of Study

The central research problem has already been mentioned: given that W&C students should be expected to change both attitudinally and behaviorally as a result of participating in a wilderness-centered environmental education program, how is it possible to describe, amplify, and verify these changes? The research strategy adopted is analytical, holistic and combines survey sample data with a controlled, experimental approach qualified by participant observation, interviews, and anecdotal material derived from student journals. The focus of these combined methodological procedures in attitude change. Literature on attitudes and attitude change is developed in Chapter III. The methodologies employed in this study are examined in Chapter IV. Chapter V develops the data derived from the various methodologies, and Chapter VI integrates the material into a coherent framework of issues related to the use of wilderness as a didactic strategy. With this brief synopsis of research design and thesis format in mind, the purposes of this study are:

1. To provide base line data on student attitudes and attitude change as a result of wilderness-outdoor environmental education.
 2. To provide an evaluation of an environmental education program that uses wilderness as a didactic strategy.
 3. To provide evidence for the educational benefits of wilderness.
 4. To demonstrate how traditionally disparate social science research methods can be successfully combined in social ecological research.
 5. To show how ecologically sensitive students perceive their relationships to both the human and non-human other.
- The first four purposes are fairly straightforward and need no further explanation; they are reexamined in light of the results of this study in Chapter VII. The meaning of the fifth purpose, however, is not immediately apparent, and deserves further discussion. The attitudes examined in this study are "other-directed," i.e., they do not involve an assessment of a student's self-concept or self-image. The term 'other' has been extensively utilized in psychological and sociological studies involving other people. The following chapter develops the notion of an "other" which is not human. This "non-human other" is contrasted with the "human other" and the argument is advanced that the non-human other should not be relegated to an inferior status in human strategies for dealing with the world.

CHAPTER II

THE OTHER

Much of the literature on interpersonal relationships has focused on the determinants of attraction between people (Jones & Gerard, 1967; Berscheid & Walster, 1969; Bramel, 1969; cf. McClintock, 1972). Jones, Bell and Aronson (1972) develop the concept of similarity and human attraction in a study entitled "The Reciprocation of Attraction from Similar and Dissimilar Others: A Study in Person Perception and Evaluation" (McClintock, ed., 1972). They suggest, that,

...much of the natural gravitation toward similar others is prompted by the greater likelihood of acceptance by them; when one is assured that he will not be rejected by dissimilar others, the thought of associating with them may become positively attractive -- perhaps because dissimilar people can provide new information, more surprises, and give the person new perspectives on his ideas and abilities.

As is typical with most social psychological literature, the use of the term 'other' refers to other people. The surprising character of this statement, however, lies not in elaborating the common sense notion that one likes people who accept him/her, but that the description of dissimilar others suggests several qualities of the natural environment noted by backpackers: new information, surprises, and new perspectives. Contrast, for example, this statement by W&C Student #9:

"I think I like it (wilderness) because I don't feel like I can be the controlling power, you know? Like when I worked in that nursing home...to make someone happy all you have to do is suit their needs... and...when you're out there (in the wilderness)...if you suit the environment's needs or not -- it's not going to give happiness in return...things are going to go the way they go no matter what you do...I don't know if it was a force (her term), but it's neat. You can't manipulate it or persuade it or anything -- whatever's going to happen is going to happen" (Question #xi, Interviews).

As a naive wilderness user, her statement is particularly salient. She "feels" wilderness in a slightly different way than she experiences other people ("...it's not going to give happiness in return..."), but yet she reveals her surprise ("...it's neat."), new information and new perspectives ("You can't manipulate it or persuade it..."). Poet-anthropologist Gary Snyder comments on Eugene Odum's use of the term 'biomass:'

Life biomass...is stored information; living matter is stored information in the cells and in the genes. He (Odum) believes there is more information of a higher order of sophistication and complexity stored in a few yards of forest than there is in all the libraries of mankind (Snyder, 1974).

Snyder, of course, refers to genetic programming and species diversity and interrelatedness. However, if we are to accept the implicit definition of 'otherness' suggested by Jones, Bell and Aronson, we might be forced to admit that nature can indeed present "itself" as an other; biologically coded information, new horizons, and insights can be gained in the encounter with such an other.

How has the concept of the "other" been treated in traditional Western philosophical and psychoanalytic thought?

Jean-Paul Sartre offers one of the most comprehensive analyses of the other in his monumental Being and Nothingness. His treatment is anthropocentric, and deals with the spiritual character of consciousness or that which is "for-itself" (pour-soi):

The Other is first the permanent flight of things toward a limit which I apprehend as an object at a certain distance from me but which escapes me inasmuch as it unfolds about itself its own distances (Cumming, 1965).

What this peculiar phenomenological universe of discourse offers us is an interpretation of a special type of "object" -- man -- who continually flees his own existence as pour-soi towards an indeterminacy of being in which the human objects of his world continually elude him. The reason for this permanent flight centers on the question of intersubjectivity. People, according to Sartre, possess the unique ability to "reflect" upon their experiences, and, as a part of their daily engagements or "projects," they must confront peculiar objects that also reflect, i.e., other people. The problem with such a narrow definition of 'otherness' is the relegation of the status of other objects, including higher order vertebrates, to what Sartre terms "instrumental complexes." These "groupings" of objects are apprehended in the terms of a particular human subject's desires, goals and choices in a teleological framework of relations. Sartre continually describes these groupings as "obstacles" to the snaking path of consciousness. The natural world, according to such an interpret-

ation, is simply "in the way," and our encounters with the human objects Sartre designates as others are doomed to interpersonal failure, for, as in the title of one of his plays, "Hell is Other People."

Neglect of the natural world is also reflected in the writings of Alfred Schuetz, one of the first pioneers to apply the phenomenological method to the social sciences. Nature, he suggests, is basically what we have in common with human others, and not a formidable "other" in its own right:

The first communality which exists between me, the primordial I, and the appresentatively experienced other, and which forms the foundation of all other intersubjective communities of a higher order, is the community of Nature, which belongs not only to my primordial sphere but also to that of the other (Kockelmans, 1967).

The "higher order" to which he refers is again the community of rational beings who synthetically constitute "Nature" in a manner similar to their neighbors. As Sartre, Schuetz does not extend the moral community to include ecosystem components "other than" human. Unlike Sartre, however, he does not regard the objects of his experience as independently existing entities; they exist only when actively constituted by a transcendental ego.

Martin Heidegger, an exponent of phenomenological theory, is perhaps one of the first serious Western philosophers to consider the possibility of an "otherness" which is non-human. In his now classic essay on "The Thing," he describes the process of the world coming together in a

jug,

The spring stays on in the water of the gift. In the spring the rock dwells, and in the rock dwells the dark slumber of the earth, which receives the rain and dew of the sky. In the water of the spring dwells the marriage of sky and earth. It stays in the wine given by the fruit of the vine, the fruit in which the earth's nourishment and the sky's sun are betrothed to one another. In the gift of water, in the gift of wine, sky and earth dwell. But the gift of the outpouring is what makes the jug a jug. In the jugness of the jug, sky and earth dwell (Heidegger, 1971).

This "semi-poetic," ecological interpretation of an object -- a jug -- is actually a plea for the recognition of the interrelatedness of man, earth, sky, water, and the jug. The logical outgrowth of such a position is eloquently stated by Gary Snyder (1974): "...I would like to think of a new definition of humanism and a new definition of democracy that would include the nonhuman, that would have representation from those spheres." This democratic orientation towards the non-human first of all recognizes the the existence of an other which is integral to the cycles, energy flows, and information content of the natural world. But the politics and ethics of our relationships with the non-human other are much more complex than the simple acknowledgement of, to paraphrase Snyder, our non-human brothers and sisters. It is clear that we must eat some of these "brothers and sisters" to continue our existence as human others. The suggestion that ecosystems need representation, however, is not logically inconsistent with "making a living." Decay and death, as well as growth and climax,

are equally a part of ecosystem functioning. A "Declaration of Interdependence" from the natural world, which some ecologists claim we are facing today, would necessarily extend the definition of the moral community to include Magpie, Rattlesnake, Pine Pollen, and Bear (again, to paraphrase Snyder). Our relationship with these non-humans, nevertheless, may well be adversary as well as friend (which is also true of our relationships with humans). It is even possible to conceive of a world where, as zoologist Richard Dawkins aptly puts it, "If I say that I am more interested in preventing the slaughter of large whales than I am in improving housing conditions for people, I am likely to shock some of my friends" (Dawkins, 1976).

The non-human other was an experiential reality for many W&C students. Because it was a significant category, it was decided to operationalize the definition of the other by analytically distinguishing between the human other and the non-human other, particularly for purposes of content analysis (see Chapter IV). It developed that as a sorting device, these concepts related otherwise disparate content areas. Anecdotal material is examined in Chapter VI that supports student perception of otherness in both the human and non-human spheres.

CHAPTER III

LITERATURE REVIEW

There is a growing body of literature that pertains to the "psychological benefits" of wilderness. The "Wilderness Symposium" at a recent American Psychological Association meeting (September, 1977) at San Francisco, California, is an indicator of the relevance and current status of such research. This research presently crosses traditional disciplinary lines and involves more than just "psychological benefits." User response, self-concept modification, demographic characteristics of users, perception of wilderness, user attitudes, therapeutic camping, the religious and ethical significance of wilderness, and the cross-cultural uses of wildland (e.g., the "vision quest") belong to forestry, interpersonal communication, sociology, psychology (social-environmental), psychiatry, religion, philosophy, and anthropology (respectively). Therapeutic camping has, by far, received the most intensive research to date. Studies such as Berube (1975); Cullinane (1976); Henke (1943); and Rawson (1973) -- to mention a few -- have focused on the interpersonal and psychiatric benefits of summer camps. There is also quite a wide body of literature on wilderness as a leisure activity. These include Clark et al. (1971); Schmitzs (1974);

Hendee (1967); and Wagar (1963). Robert Lucas and George Stankey at the University of Montana have contributed studies focusing on wilderness perception, quality, and management (Lucas, 1964, 1966, 1970, 1974; Stankey, 1972, 1973). Thorstenson (1975) examined the effect of a "Wilderness Survival Experience" on anxiety and hearing sensitivity. Scott (1974) in his monograph "Toward a Psychology of Wilderness Experience" sums the underlying hypothesis of wilderness benefit studies well: "The expectation is that wilderness experiences are more likely to foster self-actualization and the occurrences of peak experiences than outdoor activity in more degraded environments." He also raises a question of central concern to this type of research, i.e., "Are those who seek wilderness activities more self-actualized than those who seek other outdoor recreation?" This question remains unanswered, although Black (1974) sheds significant light on the complexity of factors involved in Scott's assertion. Black's study, "Wilderness and Physical Activity Attitudes of College-age Backpackers" utilizes the Hendee "Urbanism-Wildernism" attitude scale and Kenyon's physical activity scale. Black concluded that wilderness experience has a positive influence on attitudes toward wilderness values (as defined by Hendee -- to be examined later); that men and women have the same attitudes; that backpackers have stronger attitudes towards a certain form of physical activity ("The pursuit of vertigo"); and that weight

trainers placed a low priority on the aesthetic component of physical activity (Black's study contrasted backpackers with weight trainers).

As with research into wilderness benefits, research into attitude change crosses disciplinary lines. Allport (1954) points out the "elastic" nature of the term 'attitude' in its application to isolated individuals or to broad patterns of culture -- a meeting point for psychologists and sociologists. Early writers (Thomas and Znaniecki, 1918) defined social psychology as the "scientific study of attitudes." Attitudes, it appears, are highly elusive entities that are often defined in operational contexts for specific types of research (Kiesler et al., 1969). Greenwald, in a contribution to a major textbook on attitudes (Greenwald et al., 1968) examines the diversity of attitude definitions: "a state of readiness," a "predisposition to experience...to act toward...a class of objects," "a predisposition to respond," an "affect for or against a psychological object," and "an implicit, drive-producing response." Greenwald concludes that "despite the many ways in which a conceptual definition can be and has been stated in words, there are a limited number of themes that are expressed in these definitions." For research clarification, Greenwald's treatment of attitudes ("On Defining Attitudes and Attitude Theory;" Psychological Foundations of Attitudes, 1968) will be accepted in this study.

There are a number of studies that focus directly on attitude change. A theoretical treatment of attitude change

is to be found in Brehm (1968; cf. Greenwald, 1968). Kiesler (1969) devotes an entire text to attitude change, attempting to derive the common elements from a diversity of theoretical models: evaluating theories, dissonance theory, stimulus-response (behavioristic theory), consistency theories, and social judgement theories. Hovland et al. (1953) did the first important empirical work on attitude change. Siegel (1957) examined the change in authoritarian attitudes of college women as measured by the E-F scale. His research is an important paradigm, and confirmed the hypothesis that the greatest change in authoritarianism occurs among members of groups that shift toward new identities, i.e., new and influential "reference" groups. Lifton (1957) did work on the change associated with the "thought reform" of Chinese intellectuals. There have also been a number of studies focusing on attitudes and attitude change in environmental education. These include numerous articles in The Journal of Environmental Education. Burt (1972) examines the relationship between public ecological positions and private ecological action in an article entitled "A Hierarchy among Attitudes Toward the Environment." Bowman (1974); Doran et al. (1974); Shafer and Morrison (1973); and Howell and Warmbrod (1974), among others, have researched student attitudes at various levels of academic development. Wood (1974) makes the case for environmental education using wilderness:

Today, the only major interpretive efforts that deal with the concept of wilderness are in relation to management of visitor-use...

Education about wilderness in a sense beyond the management framework is lacking. This lack is resulting in widespread misunderstanding of the wilderness idea and problems in wilderness designation and management.

He goes on to point out the need for wilderness education, but makes no reference to changing attitudes. To this researcher's knowledge, there have been no empirical studies of wilderness-related environmental education programs. This is easily understandable, as there are virtually no such programs in existence other than W&C.

CHAPTER IV

RESEARCH STRATEGY AND METHODS

As surveyed in Chapter I, this research is social ecological, i.e., it seeks to identify relationships between W&C students and their environments. In attempting to describe the processes of social penetration, environmental education, and the development of intimacy and attitude change, it is essential to distinguish between different types of situational determinants. Altman and Taylor (1973) suggest several hypotheses about "relevant dimensions" of the effects of situational factors: (A) situational formality, (B) situational confinement, and (C) situational interdependence. (A) The first hypothesis refers to the specification of roles by the degree of formality in a given situation, "...the physical environment may have certain props and objects to delineate its function ...". (B) The second hypothesis, that "...the general ease with which persons can leave an interpersonal relationship," depends upon the situation, is corroborated in a study by Taylor, Altman, and Sorrento (1969) which showed less self-disclosure in long-term, nonwithdrawal situations among Navy subjects. (C) The third hypothesis -- situational interdependence -- is the most crucial to the present study. This hypothesis states that social penetration or

the development of intimate ties is more extensive among group members who are interdependent. If we were to say that wilderness is an independent variable, then the three situational determinants outlined above could function as dependent variables: wilderness is highly informal and should produce rapid social penetration; wilderness involves high commitment but is relatively short-term, and we should therefore expect a high degree of self-disclosure; and wilderness requires interdependence among group members (e.g., helping each other on the trail, sharing food, and teaching each other about natural relationships), and should result in "clear-cut patterns of adaptive social activity, territorial behavior, and interpersonal synchrony."

The sphere of intimate, interpersonal relationships is one of the major areas of attitudes examined in this study. These attitudes are related to the broader category of attitudes towards societal, civilized, anthropocentric objects and relationships. Environmental concern is the second major sphere of attitudes surveyed in this research. Both of these spheres are related to the quality of being "other than" the subject (see Chapter II). The first of these spheres is more related to human affairs, while the second is primarily non-human in orientation. We then have two major areas of attitudes: attitudes towards the human other, and attitudes towards the non-human other. These attitudes, of necessity, point towards a self, i.e., it is logically

necessary to have a perceiver in order to perceive an other. However, attitudes towards the self, except by implication, were excluded in the design of this study.

To once again frame the research problem, we wish to describe, amplify, and verify any "other-directed" changes in attitudes that appear to be linked to wilderness as a situational determinant. Our major hypothesis is partially derived from the analytical distinctions of Altman and Taylor: the wilderness setting helps to produce rapid social penetration, intimate ties and concomitant attitude change toward the human other, increased ecological awareness and concern, and a broadened understanding of social-environmental problems. There are many sub-hypotheses related to this major hypothesis. Some of these are statistical hypotheses and some are research hypotheses. Rather than listing them here, they are developed in the context of the methodology used to distinguish them. This is because levels of generalization vary with the method used to accept, reject, verify or disconfirm the hypotheses (Glaser and Strauss, 1967).

In a fascinating article, Eugene Odum argues the case for holistic research of ecological design (Odum, 1977):

A human being, for example, is not only a hierarchal system composed of organs, cells, enzyme systems, and genes as subsystems, but is also a component of supraindividual hierarchal systems such as populations, cultural systems, and ecosystems. Science and technology during the past half century have been so preoccupied with reductionism that

supraindividual systems have suffered benign neglect. We are abysmally ignorant of the ecosystems of which we are dependent parts. As a result, today we have only half a science of man.

The research design employed in this study is both holistic and reductionistic. It seeks the total context of wilderness-related attitude change by utilizing four separate social science methodologies. Each methodology reduces the central research problem to manageable proportions by isolating salient components of the total social ecological context. Prior to discussing each of the methodologies separately, a summary of research events indicating overall research design is presented.

Chronology of Research Events

March 1977

The idea for this project was first conceived and suggested to Professor Thomas Birch as a possible thesis topic. Work on the Fall W&C Program was undertaken for graduate credit with the Wilderness Institute. Literature on environmental education, wilderness and attitude change was surveyed.

June 1977

Having developed a working relationship with WI faculty and staff, an EVST T.A.ship was secured. All signs indicated that this research would provide an acceptable thesis topic. A thesis committee was established.

August 1977

After spending the summer in another state, we discovered that several former students were opposed to this research on the grounds outlined in Chapter I. A meeting with WI faculty and staff was set up to discuss the purposes and methods of this study. Professor Robert Ream, Director of the Wilderness Institute, approved this study. It was stressed that a policy of openness to those concerned would be maintained.

September 1977

The appropriate methodologies were selected in consultation with the thesis committee, and the research problem was clearly defined and defended. The basic design of the study was presented to incoming W&C students for final approval. The students consented to allow this study to proceed. Prior to the backpacking trip, the Syracuse Environmental Awareness Test, Form D, and the MACH V Attitude inventory were administered to an experimental group consisting of two out of the four initial backpacking groups (each group was led by a WI instructor). Because of a tight schedule, these tests were administered in university vans as the groups left for the Bob Marshall Wilderness. Participant observation notes were initiated at the same time. Students began to maintain journals.

October 1977

Upon returning to the university, classes were initiated. Both test instruments were once again administered, this time to the entire W&C student body so that half the group could serve as a control. Participant observation notes were continued with a special emphasis on isolating areas of concern for the development of interview questions. My roles as participant observer, student, and teaching assistant were clearly defined to the students. The policy of openness and innocuousness towards students and faculty was maintained.

November 1977

Interview questions were developed in consultation with the thesis committee. These were primarily derived from the field notes. Eight students were randomly selected for interviews. All consented. The interviews were conducted in a casual setting suggested by the particular student and were, with two exceptions, tape recorded.

December 1977

Permission to use student journals for content analysis was secured. Only one student refused to comply with the request. The rest of the students indicated their trust and confidence in this study after a final presentation on the goals, purposes, and methods of this research. A third administration of the test instruments was deemed inappropriate upon consultation with several students. The academic quarter ended.

January - March 1978

Eight journals were subjected to a content analysis based on ecological criteria. The survey data were statistically tested for significance, and pertinent information from the interviews was transcribed. The field notes were edited and typed.

Participant Observation

Participant observation is a research method that has been employed in numerous studies of small groups. It involves copious note-taking, "face-to-face" interactions with the subjects under observation, and the recording of salient features, behaviors, and interrelationships in the social phenomena under scrutiny,

In order to feel that one understands what is "going on" with others, most people try to put themselves in the other person's shoes. They try to imagine or discern how the other person thinks, acts and feels. They try holistically to assess the life situation of the other as the other conceives it. In sociological parlance, this is called "taking the role of the other." It is among the most common of occurrences. Indeed, human society would be impossible without its constant occurrence (Lofland, 1971).

Rather than attempting to quantify data on interpersonal relationships, the participant observer qualitatively describes, amplifies, and clarifies his experiences vis-à-vis the experiences of his subjects.

Participant observation field notes were initiated just prior to the wilderness trek and continued until the end of the academic quarter. Gold (cf. McCall & Simmons, 1969) suggests four types of participant observation roles: complete

participant; participant-as-observer; observer-as-participant; and complete observer. Of these four, my role was basically participant-as-observer,

Probably the most frequent use of this role is in community studies, where an observer develops relationships with informants through time, and where he is apt to spend more time and energy participating than observing. At times he observes formally, as in scheduled interview situations; and at other times he observes informally -- when attending parties, for example. During early stages of his stay in the community, informants may be somewhat uneasy about him in both formal and informal situations, but their uneasiness is likely to disappear when they learn to trust him and he them.

Trust was initially an issue (Student #2: "I think at first I didn't like you there...(in class) just sorta looking over us...being an observer all the time," Question #xiii, Interviews), although towards the end of the W&C Program, most students indicated their trust in me as a participant observer (Student #14: "I don't think of you as doing the research...to me you're just part of the group," Question #xiii, Interviews).

Participant observation is perhaps the strongest social science methodology for observing change. Vadich (cf. McCall & Simmons, 1969) suggests:

The technique of participant observation more than any other technique places the observer closer to social change as it takes place in a passing present. Change, as measured by the succession of days and hours rather than by years or arbitrary measures, takes place slowly. The desire of, and necessity for, individuals is to act in terms of what is possible in specific immediate situations.

My field notes not only indicate changes, but provide an

overall experiential, "lived," context for the other methodologies. The note-taking was not as copious as it could have been, but, when supplemented with interviews (which were derived, in part, from the notes), survey data, and content analysis information, it provides a perspective that makes all the data more meaningful. One of the difficulties in taking copious notes was bad weather on the wilderness trek:

I can see a difficulty in this undertaking: the physical demands of backpacking make it difficult to develop a regular note-taking routine. What little time I have is between breakfast and the time we leave. Everything takes longer to do out here, and I don't feel much like writing after a long hike. The weather is cold with high winds, rain, sleet, and a few snowflakes. Our hike yesterday was tiring, but not overly strenuous (Field Notes, 9/23/77).

Nevertheless, field jottings were maintained in the most adverse of circumstances, with special care not to intimidate students with an overly overt display of writing, and therefore to inadvertently reinforce behaviors that the students deemed significant to this research.

Survey-Questionnaires

Two standardized test instruments, the Syracuse Environmental Awareness Test, Form D, and the MACH V Attitude Inventory, were selected to measure attitudes towards the non-human other and the human other, respectively. The Hendee "Urbanism-Wildernism" scale was considered as a candidate, but was rejected for both lack of extensiveness

in content areas, and problems in design. Heberlein (1973) offers an extended critique of the Hendee scale in an article entitled "Social Psychological Assumptions of User Attitude Surveys: The Case of the Wildernism Scale." He argues that all meaningful inferences in the Hendee data "...could be made equally well using the shorter, unidimensional, and conceptually more integrated antifactualism scale."

The rationale for selecting the Syracuse Environmental Awareness Test, Form D (hereafter cited as "SEAT, Form D"), which measures the affective components of attitudes toward the natural environment by contrasting, in a forced-choice format, an "environmental issue" with a "social issue" on every item (with 105 choices possible), was to insure reliable information. The reliability of this test has been calculated, and is presented in Table 4-1. Internal consistency measures the degree to which respondents give similar responses to similar questions. This was determined by Kuder-Richardson Formula 20 reliability coefficients (KR20)

Table 4-1
Reliability of SEAT Results

| Test | KR20 | Test-retest |
|--------|------|-------------|
| Form A | .83 | .79 |
| Form D | .95 | .78 |

in a study by Kleinke and Gardner (1972). Test-retest

reliability measures the degree to which a respondent will give the same answer to the same question over a period of time. Iverson (1975) reports that the validity of this instrument is "appropriate."

One weakness with this instrument is that, "Form D is much more susceptible to being biased by student anticipation than is cognitive Form A" (Iverson, 1975). W&C students noticed this weakness (Student #25: "...it was easy to see the 'environmental' questions;" and Student #3: "You could go through the answers and pick the ones that had 'wild' or 'wilderness' in them. I know which ones I'd want to pick," Question #xvi, Interviews), but claimed that they didn't try to fool the researcher by answering dishonestly (Student #9: "When I filled it out I just did a kind of half-assed job of doing it," Question #xvi, Interviews).

The MACH V Attitude Inventory (hereafter cited as "MACH V") also utilizes a forced-choice format. It has been used extensively in psychological testing and measures interpersonal strategies for dealing with human others. The items were derived from Machiavelli's The Prince and The Discourses (1940). Scoring is based on whether the respondent agrees with Machiavellian statements (100+) or whether he/she disagrees (100-), with 100 as the theoretical neutral point (see table 4-2). The Machiavellianism scale has been correlated with a number of other scales, including a revision of the F scale, and Srole's Anomia scale (Christie & Geis, 1970). A copy of the MACH V instrument, as well as SEAT, Form D

Table 4-2
Mean Response Tendency (cf. Christie)

| Mean score | Pro items | Anti items |
|------------|-------------------|-------------------|
| 40 | Strongly disagree | Strongly agree |
| 60 | Somewhat disagree | Somewhat agree |
| 80 | Slightly disagree | Slightly agree |
| 100 | Neutral | Neutral |
| 120 | Slightly agree | Slightly disagree |
| 140 | Somewhat agree | Somewhat disagree |
| 160 | Strongly agree | Strongly disagree |

is included in Appendix A.

Who are "Machiavellians" and how do they interact with society? Low Machs (those who tend to disagree with Machiavellian statements) tend to be "empathetic," "spontaneous," and treat others "personally." This process has been termed "encountering" (Durkin, 1966; cf. Christie & Geis, 1970):

Encountering is a process by which we change through direct contact with one another. Encountering happens when we open up to one another, that is, when we lay aside the layers of cognitive insulation that usually isolate us within separate (although roughly equivalent) frames of reference.

High Machs (those who tend to agree with Machiavellian statements) are generally cynical, opportunistic, manipulative, and aggressive. Recent studies show that the modern trend is toward socializing high Machs:

The data suggest that the then-current (1964) generation of persons attending college and about to attain majority in the United States were significantly more in agreement with Machiavelli, however measured, than were those who were a generation or more older (Christie & Geis, 1970)

Finally, a factor analysis of MACH and anomia items

revealed that the factors labeled "Machiavellian Tactics" and "Honesty" had no significant correlation with occupational status or education in a nation-wide sample. There was no relationship between upward social mobility (as measured by the change from father's Hollingshead Index of Socio-Economic Status to respondent's SES) and Machiavellianism. Christie (1970) writes,

In the decades preceding the survey, apparently it was as likely for an honest man to get ahead in the world as a rogue. It is also possible that low Machs got ahead by hard work, while highs advanced by combining manipulative skills with less arduous labor.

Both the SEAT, Form D, and the MACH V instruments were administered to an experimental group comprised of students from Professor Ream's and Professor Birch's backpacking groups prior to the wilderness trek. Table 4-3 shows the composition of students in each of the backpacking units. Both instruments were again administered, this time to both Ream-Birch (experimental group) and Dunsmore-Roberts (control group), after the wilderness trek. A third administration had been planned, but was

Table 4-3

Initial Backpacking Groups

| Ream (experimental) | Birch | Dunsmore (control) | Roberts |
|---------------------|-------|--------------------|-----------|
| Students # | | | |
| 1-6 | 7-13 | 22-28 | 14-21, 29 |

decided against because of student reaction toward the

test instruments during the interview phase of this research. The forced-choice format of these tests is indeed repititious and tedious, and the students were often left with choices that seemed less than desirable (which is often the case using the forced-choice format).

The results of the testing, as well as a statistical analysis of the results, are developed in Chapter V.

Interviews

The interview questions were designed to elicit information regarding attitudes toward both the human other and the non-human other. They were derived from the participant observation field notes, which indicated which categories of meaning would be informative to probe. They were conducted in informal settings selected by the students. The interviewees (Students # 25, 23, 3, 14, 2, 8, 18, and 9) were assured of confidentiality, and freely consented to volunteer information regarding intimate concerns. The 8 interviewees were randomly selected from the initial backpacking groups (2 students per group), and full female representation (approximately one-fourth of the class) was one of the criteria of selection. Out of the 8 interviewees, 7 consented to the use of a tape recorder. One of those seven interviews failed to be recorded due to an oversight of the interviewer.

A major problem with this methodology is commonly known as "interviewer effect," and involves interviewer

reinforcement of interviewee response. Leading questions, e.g., "Don't you think that...?" and "Is it not likely that...?," communicate what the interviewer believes to be a preferable answer (Lofland, 1971). It is sometimes difficult not to pose a question in this manner, and special care was taken in this research not to suggest responses to the interviewees. A recent study on the effect of interviewing on attitudes (Bridge et al., 1977) suggests that interview effects will occur "...when the respondent's attitudes and information are unfocused or ambiguous and the topic is important." In general, the interviewees in this study were focused and unambiguous towards the content categories developed in the interviews. Most of them opened up to the interviewer (a familiar face during the interview period, 11/9/77 through 11/17/77) and indicated they had much they wanted to say about the questions. Many of the attitudes they expressed are cross-checked by reference to the other methodologies employed in this study (see Chapter VI).

A total of 19 questions were asked. There was no particular order to the questioning, and the students were briefed prior to the questioning that they were free to talk about what they wanted. The interviewer kept an interview guide in front of him to direct the responses. Most of the topics on the interview guide were covered in most of the interviews. The guide consisted of the following questions:

- i. Background information.
- ii. What features of the W&C Program attracted you?
- iii. Have you ever done any social work, volunteer or otherwise?
- iv. Have you actively worked to clean up the environment? In what capacity?
- v. Have you used Wilderness Areas much?
- vi. How did you feel about the wilderness trek? Did you ever wish you were someplace else?
- vii. How do you feel about hunting?
- viii. If you had a choice, would you live in the city? The country? Reasons?
- ix. What changes do you see in yourself as a result of the backpacking trip, particularly since there were so many people?
- x. What was more important to you while in the woods: developing a strong group (getting to know the people) or observing the landscape?
- xi. What are the most important "values" the wilderness has to offer?
- xii. Do you feel a part of a group now? In what ways? Is this important? Did you feel alone at first?
- xiii. Does the fact that I'm doing this research make you feel uncomfortable? In what way? Have I influenced your attitudes in any way?
- xiv. Do you consider yourself political? In what sense?
- xv. What do you think of the other students in the W&C

Program?

xvi. What did you think of the survey-questionnaires?

Elaborate?

xvii. Do you recycle garbage? Cans? What appliances and gadgets do you own? Do you intend to buy more?

xviii. Do you think this program will effect your future endeavors? Careers? Changes in majors? Use of academic background?

xix. I'd like to give you the opportunity to comment about any aspect of the Program: are there things you particularly like? Dislike?

Content Analysis

8 randomly selected student journals were subjected to a content analysis for key thematic categories expressive of student concern and awareness of both the human other and the non-human other. Content analysis has been used extensively in evaluating propoganda (Budd et al., 1967). Thematic categories are derived from newspapers, news broadcasts, and other sources, and then coded according to reference.

The categories used in this study were derived partly from interview and participant observation data (which indicate general thematic trends that were, in fact, part of the content of the journals), and partly from reading the journals and looking for patterns of response. The recurrent categories of response in the eight journals are listed in

Table 5-8, Chapter V. The total number of thematic references to these categories were coded on cards. The phrase used to express the reference was recorded together with the reference in order to determine the context of the statement. The words used to modify the reference were taken from the phrase. For example, if the phrase was, "This meadow is very peaceful," the reference is to the "meadow" (category A6, Environment and Surroundings), and "meadow" is the descriptor modified by the words "very peaceful." The words "very peaceful" are modifiers for the descriptor. Descriptors are generally nouns, and modifiers can be adjectives, adverbs or verb phrases.

The importance of recording the entire phrase with the thematic references is to understand the direction of assertion, i.e., whether or not the writer feels positively or negatively towards the content area defined by the descriptor, "A common pitfall in classifying direction is the tendency to isolate symbols and to equate them with a direction without reference to their context" (Budd et al., 1967). The content analysis procedure listed below describes the criteria used to determine direction of assertion. However, before developing the procedure, there is a final, somewhat controversial, area of content analysis known as intensity of direction (or "strength of assertion") that was utilized in this study. The intensity of direction is a measure of the "strength or degree of the conviction expressed," i.e., do the symbols that the writer uses

mildly favor or strongly favor the content area? Do the symbols mildly disfavor or strongly disfavor the content area? The equations used to determine strength or intensity of assertion are listed in Appendix B. Another set of equations that measure ambivalence towards the content area, i.e., how mixed the writer's feelings appear to be, are also listed in Appendix B. These "ambivalence ratios" and "ambivalence indices" are discussed in Chapter V.

The following procedure was used to code the content of the journals onto cards:

1. Read the entire entry watching for recurring content areas.
2. Isolate key themes.
3. Record the content phrases of the key themes.
 - A. Watch for repetitions: one coding for one area, regardless of repetitions (redundancy procedure).
 - B. If repetitions contain variations in assertion or direction of assertion, record the phrase.
 - C. Information that is essentially personal or intimidating is disregarded unless it pertains to the educational aspects of wilderness as a didactic strategy (in some cases, even educationally relevant data are disregarded if they are of too personal a nature as judged by the coder).
4. Direction of assertion criteria:
 - (+) = The view promotes ecological stability, social cohesion, and regard and understanding for the other.
 - A. Within the context of the journal entry, the

subject expresses general concern for his/her relationship with an other.

B. Self-interest is subordinated and/or equated with interest in an other.

C. The phrase indicates care, respect, harmony with, affection towards, desirability, social-ecological conscience (as perceived by the subject), and otherwise demonstrates positive regard for the integrity of an other.

(-) = The view is ecologically unsound, promotes social discord, neglects the other, and/or inflates the self.

D. Within the context of the journal entry, the subject expresses a lack of concern for an other.

E. Self-interest is overemphasized to the neglect and/or subordination of an other.

F. The phrase indicates dislike, disdain, carelessness, hatred, disharmony with, needless self-indulgence (as perceived by the subject), and otherwise demonstrates negative regard for the integrity of an other.

(e) = The position is neutral.

G. Statements of observation and/or fact.

H. There is no indication of a positive or negative regard for the integrity of an other.

(?) = The position cannot be ascertained within the context of the entry.

5. Dating:

A. If the entry is dated, then the code phrase is

given the date of the entry.

B. If the entry is not dated, then the period of the entry is identified by whatever clues the participant observer can ascertain:

(I) = Wilderness trek (9/22/77 through 10/2/77).

(II) = Pre-Bozeman trip (10/3/77 through 11/2/77).

(III) = Post-Bozeman trip (11/3/77 through 12/16/77).

6. Table 4-4 shows an example of a coded card.

Table 4-4
Coded Card (Example)

| Content Area | (Direction of Assertion) |
|--------------------|--------------------------|
| 1. Phrase 30 e 1/1 | (Date) |
| (# of Phrase) | (Student #) |

7. If the entry or portion of an entry is particularly significant and/or typical of journal entries, it is recorded in its entirety as an "anecdotal journal entry."

8. The reliability of the coding procedure can be checked by training other coders. A pilot test was administered to four graduate students at the University of Montana. Their difficulties with this coding scheme indicate that a longer period of time is necessary to train coders, as they do not share the "lived" experiences of the participant observer. Logistical problems prevented this researcher from adequately training other coders. The

internal consistency of this coder can be judged by reviewing the modifiers, descriptors, and direction of assertion signs identified in this study.

9. The validity of the coding procedure has been evaluated by the "jury method;" members of the thesis committee have reviewed the data.

The use of the coded data is examined in Chapter V. This methodology, admittedly, has problems with reliability and the determination of the direction of assertion. This is not unique to this study, and content analysis procedures in general are subject to skeptical review. Because this study employs other social science methodologies, however, the validity of the content analysis data can be cross-checked by reference to one or more of the other methodologies. Examples of such cross-checking, as well as anecdotal material from the journals, are developed in Chapter VI.

CHAPTER V

ANALYSIS OF DATA

The previous chapter dealt with the holistic design of this study, and examined each of the four methodologies separately. This chapter treats the results of each methodology separately. Chapter VI then shows how these results supplement and complement one another. Patterns of response, hypotheses, significant events and activities, attitudes and attitude change, and the use and influence of wilderness as a situational determinant are developed in a coherent narrative framework.

The Data

Participant Observation

Lofland (1971) suggests that qualitative analysis is best arranged along a continuum from the most microscopic social phenomenon to the most macroscopic. He outlines six categories that accomplish this task: acts, activities, meanings, participation, relationships, and settings. This is an ideal analysis; most social studies rarely segment their data in this fashion. The W&C experience was initiated by a 10 day wilderness trek, an activity in a special setting that provided the context for ensuing academic work, and the development of interpersonal ties. From the

beginning, the backpacking group I participated in made its own decisions,

Tom Birch is the covert leader of the group, although he does not make decisions without the knowledge and consent of the students and myself. His democratic approach creates a loose atmosphere (Field Notes, 9/22/77, hereafter cited with a date only).

The backpacking groups immediately relected a newly discovered integrity, "The newly formed groups (except Dexter's -- left a day late) stuck together in the cafe, although there was some intermingling" (9/23/77). The trip into the Bob Marshall was preceded by a "junk-food ritual," and sharing among group members commenced as we began our hike. From a phenomenological perspective, the wilderness immediately began to produce interesting psychological changes:

I find the lack of stimuli in the wilderness conducive to a rich fantasy life. In spite of the pain I experienced on the trail yesterday, I found my mind wandering over a diversity of topics, with rich emotional connotations (9/26/77).

The next phase of the trip was the formation of bonds. After a short but difficult hike, Student #12 suggested, "I feel spaced-out, both physically and mentally" (9/26/77). This, in retrospect, initiated the first real breakthrough to intimacy, "Anyway, on the 4th night (9/24) there appeared to be a breakthrough to solidarity. The students began to solicit information from Tom and myself;" and the beginning of academic discussion was initiated by the students: "Later that evening Student #12 asked: 'What is wildness, anyway?'

There was silence followed by a short discussion of 'wild,' its senses and applications." The group opened up to feelings about one another. I noted that more attention seemed to be deployed on developing interpersonal relationships than on the physical setting, "All students on the 4th night remained talking around the campfire, and payed little attention to the beautiful moonrise over the creek." This solidarity continued into the Rendezvous at Round Park*, in spite of bad weather. Student #11, initially an outsider, was gradually accepted by the group, "Student #11, referred to by Student #10 as 'the community joke,' was starting to be accepted as a group member." My own socially marginal membership as student, T.A., and researcher, was confirmed at the Rendezvous when the instructors switched backpacking groups, "This morning I was asked by several of the students if I would be staying with their group. My response of 'Yes' invoked a favorable reaction ('Good, glad to hear it')."

The Rendezvous was undoubtedly the most significant event of the trip. Students #7, 12, 10, 8, 13, and 11 initially overshot Round Park, and Tom Birch suggested that this was an indication of the "people-orientation" of the group (they were apparently looking for people). This suggestion is verified by two of the other data sources, and will be examined in more detail later. The students in the

* The "Rendezvous" (an old trapper term) was a meeting of the four integral backpacking groups in the Bob Marshall.

other arriving groups demonstrated their intimacy (i.e., intragroup intimacy) by establishing loosely defined territories, "After establishing their personal space, there began a process of casual interaction around the centrally located campfire which was eventually to lead to the merging of...two groups into one unit for a period of days" (9/29/77). The campfire is an exceptional and continuous prop that not only served as the focus of group interaction, but also provided heat and cooking. A single act, the temporary loss of Student #5, appeared to precipitate intergroup cohesion, "Bob Ream...then informed us of the unfortunate news: Student #5 had been lost for 24 hours. He (Bob) seemed visibly shaken and asked that all the group (Tom's) might hear the details" (9/29/77). My observation of class cohesiveness was later corroborated by several W&C instructors. Previous classes did not develop intergroup cohesiveness until after the wilderness trek. After the safe return of Student #5, "There was a general feeling that the 'tribes' had gathered (several individuals from different groups made this comment)." Bob and Student #1 "...pulled sleeping bags over their heads and enacted an 'elk ritual' (two males competing) in the middle of the meadow" (9/29/77). This cohesiveness is further verified by the "2nd Rendezvous" of Tom's and Dexter's groups at Gates Park (10/2/77). The other significant activity during the Rendezvous was the "meeting of the minds," a group discussion which formally initiated academic work for the

quarter.

An exceptional individual, a 78-year-old wilderness manager named "Pinnacle" Paul, was encountered by most of the backpacking groups. This man had spent his last 57 years in the Bob Marshall Wilderness Area, and provided meaning to the wilderness trek,

The old man recounted some of the highlights of his 57 year stay...Yes, he recalled the ways of the native peoples of the region. "The Indians," he suggested, "know the balance of the system. They understood their role as predators, and didn't deplete populations" (10/2/77).

Students, during the previous phase, became sensitized to each other (the human other) and the natural environment (the non-human other). The next major phase involved readaptation to Missoula and a structured academic environment. Again citing my own experience (corroborated in the journals),

When we arrived in Missoula last evening, I could feel the muscles in my abdomen tighten up in the physical expectation of readapting to an urban, university-centered environment after 10 days in the Bob Marshall Wilderness (10/2/77).

The class appeared unusually subdued during the first formal class meeting (Dexter's ^{ROBERTS} class, 10/4/77):

Dexter soon arrived, the chatter continued, and I wondered what new roles would develop in this new setting ...Most of the students remained silent while Dexter lectured, apparently gauging the man in his professorial role as opposed to his 'hiker' role.

An important prop, continually verified throughout my classroom notes, was placing chairs in a circle. This was initiated by Roger ^{Dyersmore} (10/6/77), and almost always corresponds

to open, free-flowing communication exchanges. For example, in Dexter's class (10/11/77), Student #28 commented, "This is really structured," referring to the room and the arrangement of chairs in rows. Dexter lectured most of the class session. Tom^{BIRCH} encountered problem talkers and class disruptors (10/13/77): "Again, there is a traditional classroom setting with the front row empty. I wonder if students will ask about rearranging the chairs?" When Tom placed the chairs in a circular arrangement for the first time (10/20/77), the class not only listened intently, but also opened up to Tom,

Tom passed out his rock (a didactic device to get students thinking about the problem of the moral community: should rocks be included?), and Student #9 stuck it under his nose and laughingly said, "Got you in the face." It is interesting to note the mutual acceptance of professor and student.

More time was initially deployed in the development of interpersonal relationships among class members than in pursuing academic work. This will be developed further in Chapter VI. This phenomenon relates to the final phase of group development, anxiety over performing well academically, which is cross-correlated with the other methodological sources in Chapter VI.

Throughout this section I have referred to Professors Ream, Roberts, Birch, and Dunsmore as Bob, Dexter, Tom, and Roger, respectively. This is how class members referred to them throughout the W&C Program. This is one indicator of how wilderness, a situational determinant, encourages

intimacy by forcing interdependence. The instructors were willing to allow this intimacy to develop, which shows the interrelationship and complexity of factors involved in wilderness-related attitude change.

Statistical Analysis

As previously mentioned, the design of this study uses standardized survey-questionnaires to measure attitude change towards the non-human other (SEAT, Form D), and the human other (MACH V). This statistical analysis tests:

1. The degree of pre-selection (self-selection) of W&C students (i.e., their degree of wilderness concern prior to entering the W&C Program).

2. The reactive problem, i.e., whether or not W&C students in the experimental group (Ream-Birch) scored significantly different than students in the control group (Roberts-Dunsmore), and therefore "reacted" to the first administration of these tests.

3. The significance of change of the experimental group scores before and after the wilderness trek.

4. The significance of change of the experimental group scores (SEAT, Form D) in the content clustered items, Ecological Relationships; Science, Growth and Technology; Population; Water Pollution; Noise Pollution; Land Pollution; and Air Pollution, before and after the wilderness trek.

5. The correlation the instruments used in this study.

SEAT, Form D, will be examined first, followed by the MACH V analysis in categories 1 through 3. The correlation of the instruments will be examined last.

Raw data from the two administrations of SEAT, Form D, are included in Table 5-1. Because of the small sample size, non-parametric statistical tests were used to measure the significance of these data. These are included in Appendix A.

Table 5-1
SEAT, Form D Raw Data

| Experimental (Ream-Birch) | | | Control (Roberts-Dunsmore) | |
|---------------------------|----------------|----------------|----------------------------|-----------------|
| Student # | (before) | (after) | Student # | (after) |
| 1 | 99 | 102 | 14 | 91 |
| 2 | 99 | 100 | 15 | 82 |
| 3 | 84 | 89 | 16 | 102 |
| 4 | 85 | 86 | 17 | 95 |
| 5 | -- | 88 | 18 | 101 |
| 6 | 99 | -- | 19 | 75 |
| 7 | 82 | -- | 20 | 67 |
| 8 | 60 | 57 | 21 | 90 |
| 9 | 77 | 88 | 22 | 85 |
| 10 | 77 | 88 | 23 | 92 |
| 11 | -- | 101 | 24 | 95 |
| 12 | 92 | -- | 25 | 98 |
| 13 | 77 | 99 | 26 | 99 |
| | | | 27 | 101 |
| | | | 28 | 102 |
| | N=11 | N=10 | | |
| | $\Sigma x=931$ | $\Sigma x=898$ | | |
| | R=60-99 | R=57-102 | | N=15 |
| | $\bar{X}=84.6$ | $\bar{X}=89.8$ | | $\Sigma x=1375$ |
| | S=12.09 | S=13.19 | | R=67-102 |
| | | | | $\bar{X}=91.7$ |
| | | | | S=10.46 |

Null hypothesis 1 states: There is no pre-selection towards wilderness-environmental issues among W&C students

as measured by SEAT, Form D.

Table 5-2 below shows a comparison of the original normative study using SEAT, Form D, a second study by Iverson (1975), and the present study. The means of the normative study and the Iverson study are significantly lower than the mean of the experimental group (before) in the present study. This suggests that the null hypothesis should be rejected. The data derived from the

Table 5-2
Comparative Data Indicating Pre-Selection

| | N | \bar{X} | S^2 |
|--------------------------|------|-----------|--------|
| Iverson Study | 396 | 68.76 | 341.05 |
| Original Normative Study | 1252 | 57.80 | 412.09 |
| This Study | 11 | 84.60 | 146.17 |

Iverson study were from a sample of 11th grade high school students at Hellgate High School, Missoula. The normative data were also from a sample of 11th graders. Data on college students were not available, although SEAT, Form D, has been used with college students and adults. As Iverson points out, however, "...eleventh graders are nearly finished with high school and should represent a nearly finished product..." (Iverson, 1975). As many W&C students were freshmen, a comparison of the Iverson and normative studies with the present study represents at least a relative indicator of the degree

of pre-selection (i.e., students entering the W&C Program chose to enter this particular program because of a predilection towards wilderness, and consequently possess a higher level of environmental awareness than a "normal" population of students). This contention is further supported by Iverson's finding that near the 50th percentile rank, environmental concern no longer increases with environmental knowledge, and levels out to form "a knowledge plateau." The implication here is that college students, with a higher degree of environmental knowledge than most high school students, will not necessarily have a different level of environmental concern.

A mean of 84.6 places W&C students in the 77-79 percentile ranks of the Iverson sample, and in the 89-90 percentile ranks of the original normative sample. While the mean is not an accurate representation of central tendency in the present study because of the small sample size, it is a relative indicator of the magnitude of pre-selection.

Null hypothesis 2 states: The experimental group (after) does not have significantly different SEAT, Form D, scores than the control group (after), and therefore did not react to previous testing with the same instrument.

The Mann-Whitney U Test was selected to measure the significance of the difference between experimental group scores and control group scores. A value of U which is

less than or equal to the critical value of U is significant beyond the .05 level. The value of U was calculated to equal 68.5. The critical value of U for the sample sizes under comparison ($n_1=10$, and $n_2=15$) is 44, two-tailed.

The null hypothesis was accepted.

There was no significant difference between experimental group scores and control group scores as measured by SEAT, Form D. This indicates that students in the experimental group were not sensitized to the test instrument as a result of the earlier (before) testing, and therefore did not react to the previous testing.

Null hypothesis 3 states: There is no positive, significant change in Total Environmental Concern as measured by SEAT, Form D, between experimental group (before) scores and experimental group (after) scores.

Because of the small sample size and measurement on, at best, an ordinal scale, the Wilcoxon Matched-Pairs Signed-Ranks Test was selected to measure the significance of the change between the before and after scores of the experimental group. The Wilcoxon Test assumes that the difference between a score of 60 and one of 40 is greater than the difference between a score of 40 and one of 30 (Siegel, 1956). SEAT, Form D, meets this requirement.

The value of the Wilcoxon statistic, T, is the smaller sum of like-signed ranks. T was calculated to equal 3.5,

one-tailed. This is significant beyond the .05 level.

The null hypothesis was rejected.

There was positive, significant change in total environmental concern as measured by SEAT, Form D, between the before and after scores of the experimental group. This indicates that the students became more concerned with their environment as a result of participation in the wilderness trek.

The following 7 hypotheses are derived from the content clustered items in SEAT, Form D. Table 5-3 summarizes the areas of change and the probability levels associated with the significant content clustered items.

The Wilcoxon Matched-Pairs Signed-Ranks Test was selected to measure the significance of the changes in the content clustered items.

Null hypothesis 4 states: There is no positive, significant change in concern for Ecological Relationships as measured by SEAT, Form D, between the before and after scores of the experimental group.

Table 5-3 shows a T value of 9, one-tailed. This is an insignificant value.

The null hypothesis was accepted.

Null hypothesis 5 states: There is no positive, significant change in concern for Science, Growth, and Technology as measured by SEAT, Form D between the before and after scores of the experimental group.

Table 5-3 shows a T value of 0, one-tailed. This is significant beyond the .005 level.

The null hypothesis was rejected.

There was positive, significant change in concern for Science, Growth, and Technology as measured by SEAT, Form D, between the before and after scores of the experimental group.

Table 5-3
SEAT, Form D Content Clustered Items

| Item: | T value | Change | Probability |
|-------|---------|--------|-------------|
| ER | 9 | no | -- |
| SGT | 0 | yes | .005 |
| P | 12.5 | no | -- |
| WP | 8 | no | -- |
| NP | 0 | yes | .005 |
| LP | 1.5 | yes | .01 |
| AP | 1.5 | yes | .01 |

abbreviations: Ecological Relationships-ER; Science, Growth, and Technology-SGT; Population-P; Water Pollution-WP; Noise Pollution-NP; Land Pollution-LP; Air Pollution-AP.

Null hypothesis 6 states: There is no positive, significant change in concern for Population as measured by SEAT, Form D, between the before and after scores of the experimental group.

Table 5-3 shows a T value of 12.5, one tailed. This is an insignificant value.

The null hypothesis was accepted.

Null hypothesis 7 states: There is no positive, significant change in concern for Water Pollution as measured by SEAT, Form D, between the before and after scores of the experimental group.

Table 5-3 shows a T value of 8, one-tailed. This is an insignificant value.

The null hypothesis was accepted.

Null hypothesis 8 states: There is no positive, significant change in concern for Noise Pollution as measured by SEAT, Form D, between the before and after scores of the experimental group.

Table 5-3 shows a T value of 0, one-tailed. This is significant beyond the .005 level.

The null hypothesis was rejected.

There was positive, significant change in concern for Noise Pollution as measured by SEAT, Form D, between the before and after scores of the experimental group.

Null hypothesis 9 states: There is no positive, significant change in concern for Land Pollution as measured by SEAT, Form D, between the before and after scores of the experimental group.

Table 5-3 shows a T value of 1.5, one-tailed. This is significant beyond the .01 level.

The null hypothesis was rejected.

There was positive, significant change in concern for Land Pollution as measured by SEAT, Form D, between the before and after scores of the experimental group.

Null hypothesis 10 states: There is no positive, significant change in concern for Air Pollution as measured by SEAT, Form D, between the before and after scores of the experimental group.

Table 5-3 shows a T value of 1.5, one-tailed. This is significant beyond the .01 level.

The null hypothesis was rejected.

There was positive, significant change in concern for Air Pollution as measured by SEAT, Form D, between the before and after scores of the experimental group.

The next set of hypotheses examine the MACH V instrument. Table 5-4 shows the raw data from the administration of this test.

Null hypothesis 11 states: There is no pre-selection towards MACH V orientations among W&C students.

Table 5-5 shows a comparison of W&C students to the college respondents of a normative sample labeled 1744^a (Christie and Geis, 1970). The means of the 1744^a sample are sufficiently close to the means of the before group (experimental) and the after groups (experimental and control) of the present sample. This suggests that the null hypothesis should be accepted.

Table 5-4
MACH V Raw Data

| Experimental (Ream-Birch) | | | Control (Roberts-Dunsmore) | |
|---------------------------|-----------------|-----------------|----------------------------|-----------------|
| Student # | (before) | (after) | Student # | (after) |
| 1 | 102 | 89 | 14 | 100 |
| 2 | 96 | -- | 15 | 92 |
| 3 | -- | -- | 16 | 104 |
| 4 | 114 | 112 | 17 | 117 |
| 5 | -- | 98 | 18 | -- |
| 6 | 90 | -- | 19 | 103 |
| 7 | -- | 95 | 20 | 96 |
| 8 | 60 | 94 | 21 | 102 |
| 9 | 96 | 110 | 22 | -- |
| 10 | 96 | 104 | 23 | -- |
| 11 | -- | -- | 24 | 104 |
| 12 | 123 | 120 | 25 | -- |
| 13 | 96 | 106 | 26 | 100 |
| | | | 27 | -- |
| | | | 28 | -- |
| | N=9 | N=9 | | |
| | $\Sigma x=903$ | $\Sigma x=928$ | | |
| | R=90-123 | R=89-120 | | N=10 |
| | $\bar{X}=100.5$ | $\bar{X}=103.1$ | | $\Sigma x=1022$ |
| | S=11.14 | S=9.97 | | R=92-117 |
| | | | | $\bar{X}=102.2$ |
| | | | | S=6.5 |

A MACH V score of 100 is the theoretical point at which agreement with "Machiavellian" statements balances out disagreement. W&C students as a group prior to the

Table 5-5
Comparison of W&C Students to 1744^a Respondents

| W&C Students (before) | 1744 ^a | W&C Students (after) |
|-----------------------|------------------------------|----------------------|
| \bar{X} : 100.5 | 99.27 (male); 95.60 (female) | 102.6 |
| S: 11.14 | 11.17 (male); 10.09 (female) | 8.09 |
| N: 9 | 1,596 | 19 |

wilderness trek showed neither a high or a low MACH orientation. However, in contrast to the 1744^a study, W&C students showed a slightly higher MACH orientation. This slightly higher MACH orientation is supported by the conglomerate scores from the post-wilderness testing (after).

Table 5-6 shows W&C students with high and low MACH orientations, and those with changes from one orientation to the other. The data on students #1-13 are before and after scores if the student's before score changed. Otherwise, all the orientations indicated in Table 5-6 are taken from the before scores (experimental group) and from the after scores (control group).

Table 5-6
W&C Student MACH Orientations

| High | Low | Change (+or-) | High | Low | Change |
|-----------|-----|---------------|-----------|-----|--------|
| Student # | | | Student # | | |
| 1 X | | -13 (low)* | 16 X | | |
| 2 | X | | 17 X | | |
| 3 -- | -- | | 18 -- | -- | |
| 4 X | | -2 | 19 X | | |
| 5 | X | | 20 | X | |
| 6 | X | | 21 X | | |
| 7 | X | | 22 -- | -- | |
| 8 | X | +4 (low) | 23 -- | -- | |
| 9 | X | +14 (high)* | 24 X | | |
| 10 | X | + 8 (high)* | 25 -- | -- | |
| 11 -- | -- | | 26 | X | |
| 12 X | | -3 (high) | 27 -- | -- | |
| 13 | X | +10 (high)* | 28 X | | |
| 14 | X | | | | |
| 15 | X | | | | |

*indicates those students who changed MACH orientations.

All but 4 students maintained their MACH orientations. The significance of the change in MACH V scores will be examined below.

Null hypothesis 12 states: The experimental group (after) does not have significantly different MACH V scores than the control group (after), and therefore did not react to previous testing with the same instrument.

The Mann-Whitney U Test was selected to measure the significance of the difference between experimental group scores and control group scores. The value of U was calculated to equal 41.5. This was greater than the critical value of U, two tailed.

The null hypothesis was accepted.

There was no significant difference between experimental group scores and control group scores as measured by MACH V. This indicates that students in the experimental group were not sensitized to the test instrument as a result of the earlier (before) testing, and therefore did not react to the previous testing.

Null hypothesis 13 states: There is no significant change in MACH V orientations between experimental group (before) scores and experimental group (after) scores.

The Wilcoxon Matched-Pairs Signed-Ranks Test was selected to measure the significance of the change between the before and after scores of the experimental group. The T value was calculated to equal 9. This is an insignificant

value.

The null hypothesis was accepted.

The final two hypotheses in this section concern the degree of correlation between the test instruments.

Null hypothesis 14 states: There is no significant correlation between Machiavellianism as measured by MACH V and Total Environmental Concern as measured by SEAT, Form D before the wilderness trek.

The Kendall Rank Correlation Coefficient (τ) was selected as the strongest non-parametric test to correlate the instruments. The value of the coefficient was calculated to equal .062. This is significant beyond the .460 level. Significance beyond the .05 level is required to reject the null hypothesis.

The null hypothesis was accepted.

Null hypothesis 15 states: There is no significant correlation between Machiavellianism as measured by MACH V and Total Environmental Concern as measured by SEAT, Form D, after the wilderness trek.

The Kendall Rank Correlation Coefficient was again selected to correlate the instruments. However, because of the slightly larger sample size, the Kendall coefficient had to be adjusted by the "z" statistic which measures the deviation of the observed value of the population mean when the standard deviation is equal to 1. z is normally distributed (Siegel, 1956). The Kendall coefficient was

calculated to equal $-.21$. Using this value, z was calculated to equal -1.17 . This is significant beyond the $.1210$ level. Significance beyond the $.05$ level is required to reject the null hypothesis.

The null hypothesis was accepted.

The higher level of probability associated with null hypothesis 15 probably indicates that with increasing sample size, there could be a significant level of correlation between the test instruments.

Interviews

The rationale for, and the derivation of, the interview questions as well as the process of administering the questions was discussed in Chapter IV. For many of the questions there were definite patterns of response. However, the three women and five men who were randomly selected for these interviews represent a diversity of backgrounds, beliefs, opinions, values, and attitudes. A sampling of the major patterns of response and the diversity of attitudes with a special emphasis on attitude change is amplified here. The interviews were lengthy and quite extensive and we can do no more than provide a succinct overview of pertinent responses.

As previously mentioned, all the students who responded to Question #xiii which measures attitudes toward this research and the researcher-interviewer, indicated that they felt comfortable with both. Student #14's response is

representative: "I don't think of you doing the research... to me you're just part of the group." Student #2, who indicated his initial skepticism towards me and my research, said, "I think at first I didn't like you there... (in class) just sorta looking over us...being an observer all the time." However, he later indicated his complete trust and confidence in me during the interview: "...after a while...you are a part of the group more than any of the other T.A.s...I just have accepted you as part of the group." This change in attitude from initial reserve to "openness" (Student #2: "...the whole idea of the class is openness.") is indicative of the success of my policy of openness, trustworthiness and innocuousness.

Questions #iii, iv, and xiv provide background information on the degree of participation and motivation of the students prior to entering the W&C Program. Question #iii deals with volunteer social work. The majority of the students did not volunteer their efforts to social causes prior to entering the W&C Program, with the notable exceptions of Students #18 and 9. Student #18 worked for the Student Action Center at the University of Montana, and Student #9 worked as a nurse's aid for two years. More students indicated, in response to Question #iv, that they had actively worked to clean up the environment. Student #25 canoed to clean up rivers; Student #14 worked as a Youth Conservation Corps Supervisor and participated in a

Great Bear Wilderness Proposal study through the University of Montana's Wildlife Club; Student #18 was the most active of all the students interviewed, and is known state-wide for his environmental reporting; and, finally, Student #9 did a study of a sugar beet factory while in high school. Student #2, now actively working for the Wilderness Institute, indicated an initial reluctance to associate with environmental groups, "...I just didn't understand who was in 'em, how they operated, what the people were like in them," but felt that this "...was a deficiency of my own... I'm definitely overcoming it." Judging simply by the number of previously active students in both social and environmental activities, it would appear that initial environmental concern was higher than initial social concern. The final background question, #xiv, probes political concern. Students #23, 2, and 8 indicated that they had been, prior to the W&C Program, apolitical. Student #25 was not an American citizen, although he indicated a willingness to be more active when he receives U.S. citizenship. Student #23 was unclear as to the meaning of political participation; she did not consider written testimony on the Great Bear Wilderness Proposal to be significant. Student #14 had been definitely active, "...I've always been fascinated by hearings;" Students #3 and 9 participated in student government, although Student #9 felt that this "...was a bunch of bullshit;" and Student #18 had actively written and testified

many times prior to the W&C Program. Most of the students expressed a desire to become more active in wilderness issues, Student #8: "I wouldn't mind being a representative or something;" Student #3: "I'm planning to take some political science courses next quarter;" and Student #9: "Now I think it's important to become politically involved because if I don't, who's gunna?" Longitudinal data is necessary to verify whether this professed readiness to become more active corresponds to future activism.

There were varied responses to Question #ii, which dealt with reasons for entering the W&C Program. Students #25, 23, 14, and 8 indicated that other people attracted them or encouraged them to participate. Student #14, however, qualified her response: "About that time (prior to the Program) I was 'scientific-mindedness-burned-out.'" She desired a broader, more humanistic, perspective on environmental issues. This corroborates Student #2's response: "I've been looking for meaning in my education -- I've been taking all this biology for so long..." Student #9 expressed a desire to understand the environment, "...people were more aware (of their environment) in the few days I was here (prior to entering);" and Student #18's response was an anomaly: "Being a package the way it was, it was handy."

An orientation towards getting to know other people was a definite stimulus for entering the Program. Question

#x on the relative significance of natural and interpersonal settings in the "woods" (i.e., during the wilderness trek) offers a perspective on the degree of people-orientation. Students #25, 3, 8, and 9 said that "...getting to know the people," was slightly more important than the natural setting, Student #8: "I think I was more into the people than most everybody else was." Student #3 indicated a change in attitude towards the other people on the trek as the trip progressed: "I was more into the woods (at first), I didn't think about the people that much 'til the end of the trip." All of the students indicated that they enjoyed the natural setting, and Student #2 indicated the importance of having a teacher in the woods to point out natural features. He also suggested that while on the trek, "I wasn't really concerned with anything...I was just checking out the scene -- just taking things as they came..."

The interview data suggest that wilderness was a situational determinant for attitude change, although the changes indicated by this methodological source are not as pronounced as in the survey data, the participant observation field notes, and the content analysis. This will be discussed in more detail in Chapter VII. Question #v shows that most of the students were not naive Wilderness Area users, with the exception of Students #23 and 8, although Student #8 felt that "Just kinda out in the country there (in South Dakota) is a wilderness -- in some

ways." Student #9 had never backpacked before, although she used a "Wild and Scenic River Area" in Minnesota. Students #25, 3, 2, 14, and 18 said that they had backpacked in Wilderness Areas many times. When asked how they felt about the wilderness trek, all indicated that they enjoyed it; Student #25 felt "social pressure" on the trip; Student #3 said that "After a week...things with the group just pulled together;" Student #8 suggested that "Sometimes I wanted to be back in the city;" and Student #18 felt the trip was "nothing special." The major change indicated by the interview data was the development of interpersonal relationships and community. Question #xii probes group membership: all students saw the development of strong group ties during the wilderness trek (Student #2: "After the trip, then we're all together because we all went through it."). All felt a part of a group, although Student #25 felt ambivalent about his membership; and Student #18 suggested that he was not "...as much into the group as alot of other people," although "I'm part of the group...but I don't do alot of the things that people do... like all the different outings." Student #8 sums the general feeling well: he stressed that "a real community" had developed.

When asked what "values" the wilderness has to offer (Question #xi), all students indicated a very strong commitment to, and understanding of, wild ecosystems.

The intensity of their convictions is probably indicative of the reinforcement of pre-existing attitudinal complexes through participation in the wilderness trek and the development of group cohesion. Student #25 enjoyed the "scenic beauty;" Student #3 thought it was a "nice place;" Student #14 enjoyed "solitude" and "the challenge of taking a trip;" Student #8 felt that "...the issue of whether we should have wilderness should be approached from the viewpoint of the animal having the same rights (as humans) to have a 'city' of his own;" Student #18 construed wilderness in utilitarian terms ("locking up resources"); and Student #9's response was cited in Chapter II ("The Other"). Student #2's response was the most intense and deserves complete citation:

This world without wilderness is not worth being in...I think the first thing is wilderness and being in relationship to the land...'cause that's what we're part of...we are part of this world, we're part of this universe for that matter. And we need the wilderness here to understand our relation to the world. When the wilderness is gone, then man is going to lose himself. Wild areas set aside are just a drop in the bucket compared to the whole thing, they're just a small piece to remind us...the earth is our source...we are the earth...

Although information from all the questions is far from exhausted, and several questions remain unexamined (they will be incorporated, as needed, into the following sections), one final question needs a close examination. Question #ix offered the students an opportunity to comment on perceived changes in attitudes as a result of the

backpacking trip. This is, admittedly, a loaded question in the sense that one might ask a long lost relative how he/she changed since childhood and receive a blank stare. The question simply does not elicit the desired response, and the relative may, in response to a different type of question, for example, about his/her job, reveal more information pertaining to the initial question about changes. This, in fact, appears to be the case with Question #ix. Most of the students indicated changes in majors and lifestyle alterations (examined later) that appear to be related to the wilderness trek (which functioned as a sort of catalyst for changes), but did not indicate significant changes when directly confronted with Question #ix. Student #25 saw no changes in himself; Student #3 felt an "...increased understanding of ecological relationships;" Student #14 said she felt "more at ease" and learned to pay more attention to the environment through tree identification (an exercise asked of the students by Professor Ream); Student #2 thought the trip was unusual "...from the standpoint of so many people being together;" Student #8 compared wilderness and urban ecosystems; Student #18 said that he hadn't "...really thought about it;" and Student #9 became "more aware" of what wilderness is.

Content Analysis

The content analysis used in this study was designed to measure attitudes towards the human other and the

non-human other. The content areas listed in Table 5-8 and the descriptors and modifiers derived from the analysis of the journals provide data that are quantifiable. Table 5-7 shows an example of the descriptors and modifiers in category A1, Technology.

Table 5-7
Category A1 (Technology)

| Student # | Descriptor | Sign | Modifiers |
|-----------|-------------|------|-------------------|
| 13 (I) | cabin | - | intrusion |
| | cabin | e | very neat |
| | dam | e | curiosity |
| | chainsaw | - | (disappointment) |
| (II) | cat | - | beast, ripping up |
| (III) | houses | - | sick (crowding) |
| | snowmobiles | - | much work to do |

Roman numerals indicate the period of the reference. The total number of references are 5 (-), 2 (e), and 0 (+). The total number of modifiers are 6 (-), "cat" was modified by two modifiers.

The number of positive references (r^+) plus one ($r^+ + 1$) and the number of negative references (r^-) plus one ($r^- + 1$) are the indices of ambivalence, and the ratio of the two expresses the degree of mixed assertion towards the content area or category. This ratio is labeled "ambivalence ratio" (AR). The actual equations used to determine ARs are listed in Appendix B. Using the example in Table 5-7, the indices of ambivalence (AI) for period I are 2 + 1 (-) and 0 + 1 (+), with AR = $-1/3$ or $-.33$ (the ratio takes the sign of the larger ambivalence index). As the ratio approaches 0, from either the

positive or the negative directions, the "ambivalence" or degree of mixed assertion of the writer is lower. The number of like-signed references are greater in either the positive or negative direction as expressed by the AI. The range of the ARs is ± 1 (complete ambivalence in the direction of the sign) to 0 (no ambivalence). Hence, an AR = .33 indicates fairly low ambivalence in the positive direction ($r^+ + 1$ is greater than $r^- + 1$), i.e., the writer feels fairly positively and certain about the content area, and an AR = -.33 indicates fairly low ambivalence in the negative direction ($r^- + 1$ is greater than $r^+ + 1$), and the writer feels fairly negatively and certain about the content area. Table 5-8 lists the recurrent categories of response derived from the content analysis.

Table 5-8
Content Categories

| A. Non-human other | B. Human other |
|-----------------------------|-------------------|
| 1. Technology | 1. People |
| 2. Wildlife | 2. Social Issues |
| a. hunting | a. social ecology |
| b. fishing | 3. Classmates |
| c. ecology | a. sharing |
| 3. Pollution | 4. Civilization |
| 4. Land Planning | 5. Recreation |
| 5. Wildness/Wilderness | |
| 6. Environment/Surroundings | |
| 7. Class & Materials | |
| 8. Resource Use | |
| 9. Lifestyle | |
| a. the primitive | |

Table 5-9 summarizes the ambivalence ratios in each content

area. Figure 5-1 graphs the changes in ambivalence in each category for Student #10, who is used as an example of a student with a number of interesting changes in Chapter VI.

Table 5-9
Ambivalence Ratios (AR)

| Student # | 13 | 10 | 26 | 5 | 1 | 22 | 17 | 16 |
|-----------|------|------|------|------|-----|-----|------|------|
| Category | | | | | | | | |
| A1 (I) | -.33 | -.25 | e | .66 | 1 | 1 | e | e |
| (II) | -.5 | -.33 | -.5 | 1 | .25 | 1 | -.33 | -.33 |
| (III) | -.33 | e | .33 | .66 | .5 | -.5 | -.5 | e |
| A2 (I) | e | .5 | e | .5 | .25 | .33 | .5 | .5 |
| (II) | 1 | .5 | .33 | e | e | .5 | e | .5 |
| (III) | e | e | .5 | e | e | .5 | .5 | .5 |
| A2a(I) | .5 | e | e | .33 | e | e | .5 | .5? |
| (II) | .66 | 1 | .5 | e | e | e | .5 | .5 |
| (III) | e | e | -.66 | e | e | e | e | .5? |
| A2b(I) | .5 | e | e | e | .5 | e | .5 | e |
| (II) | e | e | e | e | e | e | e | e |
| (III) | e | e | e | e | e | e | e | e |
| A2c(I) | e | e | e | .33 | e | e | .5 | e |
| (II) | e | .33 | e | .5 | e | e | .5 | e |
| (III) | .33 | .33 | e | e | e | e | e | e |
| A3 (I) | e | e | e | e | e | e | e | e |
| (II) | -.5 | e | e | -.5 | -.5 | -.5 | -.5 | -.5 |
| (III) | -.33 | e | e | -.5 | -.5 | e | e | e |
| A4 (I) | e | e | e | -.33 | e | e | -.33 | e |
| (II) | e | -.5 | .5 | e | e | e | e | e |
| (III) | .5 | e | .5 | e | e | e | .5 | -.5 |
| A5 (I) | .33 | .16 | e | e | .33 | .25 | 1 | .5 |
| (II) | e | .66 | .5 | e | .33 | e | .5 | .33 |
| (III) | .5 | e | .5 | e | e | .5 | .5 | .5 |
| A6 (I) | .57 | .66? | e | e | .20 | .11 | .33 | e |
| (II) | 1 | -.5 | .33 | .66 | e | .25 | .5 | e |
| (III) | .33 | e | 1 | e | -.5 | 1 | e | .5 |
| A7 (I) | e | .5 | e | .33 | e | .20 | .33 | e |
| (II) | .5 | .5 | .33 | .12 | e | .5 | e | .25 |
| (III) | e | .5 | .33 | -.33 | e | .25 | e | e |
| A8 (I) | e | .33 | e | e | e | e | e | e |
| (II) | .5 | e | e | .66 | e | 1 | e | e |
| (III) | e | e | e | .5 | e | e | e | e |
| A9 (I) | e | 1 | e | e | e | e | e | e |
| (II) | e | e | e | e | e | e | e | e |
| (III) | e | e | e | .5 | e | e | e | e |

Table 5-9 (continued)

| Student # | 13 | 10 | 26 | 5 | 1 | 22 | 17 | 16 |
|-----------|-----|------|------|-----|-----|----|-----|-----|
| Category | | | | | | | | |
| A9a(I) | e | 1 | e | e | e | e | e | e |
| (II) | e | e | e | e | .5 | e | e | e |
| (III) | e | e | .5 | e | e | e | e | .33 |
| B1 (I) | .25 | .5 | e | .5 | .5 | e | e | e |
| (II) | .5 | .5 | e | e | e | e | e | e |
| (III) | .5 | e | 1 | 1 | e | e | e | e |
| B2 (I) | -.5 | e | e | e | e | e | e | e |
| (II) | e | e | e | e | e | 1 | e | e |
| (III) | e | e | e | e | e | 1 | e | e |
| B2a(I) | -.5 | e | e | e | e | e | e | e |
| (II) | -.5 | e | e | e | e | e | -.5 | .5 |
| (III) | e | -.5 | .5 | e | e | e | e | e |
| B3 (I) | e | 1 | e | .5 | .33 | e | e | -.5 |
| (II) | e | .5 | e | e | .33 | e | e | e |
| (III) | e | e | -.33 | e | e | e | e | .33 |
| B3a(I) | .5 | .33 | e | .20 | e | .5 | .33 | e |
| (II) | e | e | e | e | e | e | e | e |
| (III) | e | e | e | e | e | e | e | e |
| B4 (I) | e | -.66 | e | e | -.5 | e | e? | e |
| (II) | .5 | -.25 | -.5 | e | e | e? | e? | e |
| (III) | e | e | -.33 | e | e | e | e | e |
| B5 (I) | e | e | e | e | e | e | e | e |
| (II) | e | e | .5 | e | e | e | e | e |
| (III) | e | e | e | e | e | e | e | e |

Roman numerals indicate the period of the response.

These ambivalence ratios are helpful in assessing the changes in attitudes in various categories. The ratios are also used below in the qualitative assessment of each of the categories using the anecdotal materials (coded phrases) derived from the card file.

The criteria used to develop the analysis of strength or intensity of assertion have already been surveyed in Chapter IV. Table 5-10 shows the total number of modifiers in each category (m_t^+ and m_t^-), the total number of references (r_t^+ and r_t^-), and the intensity of assertion

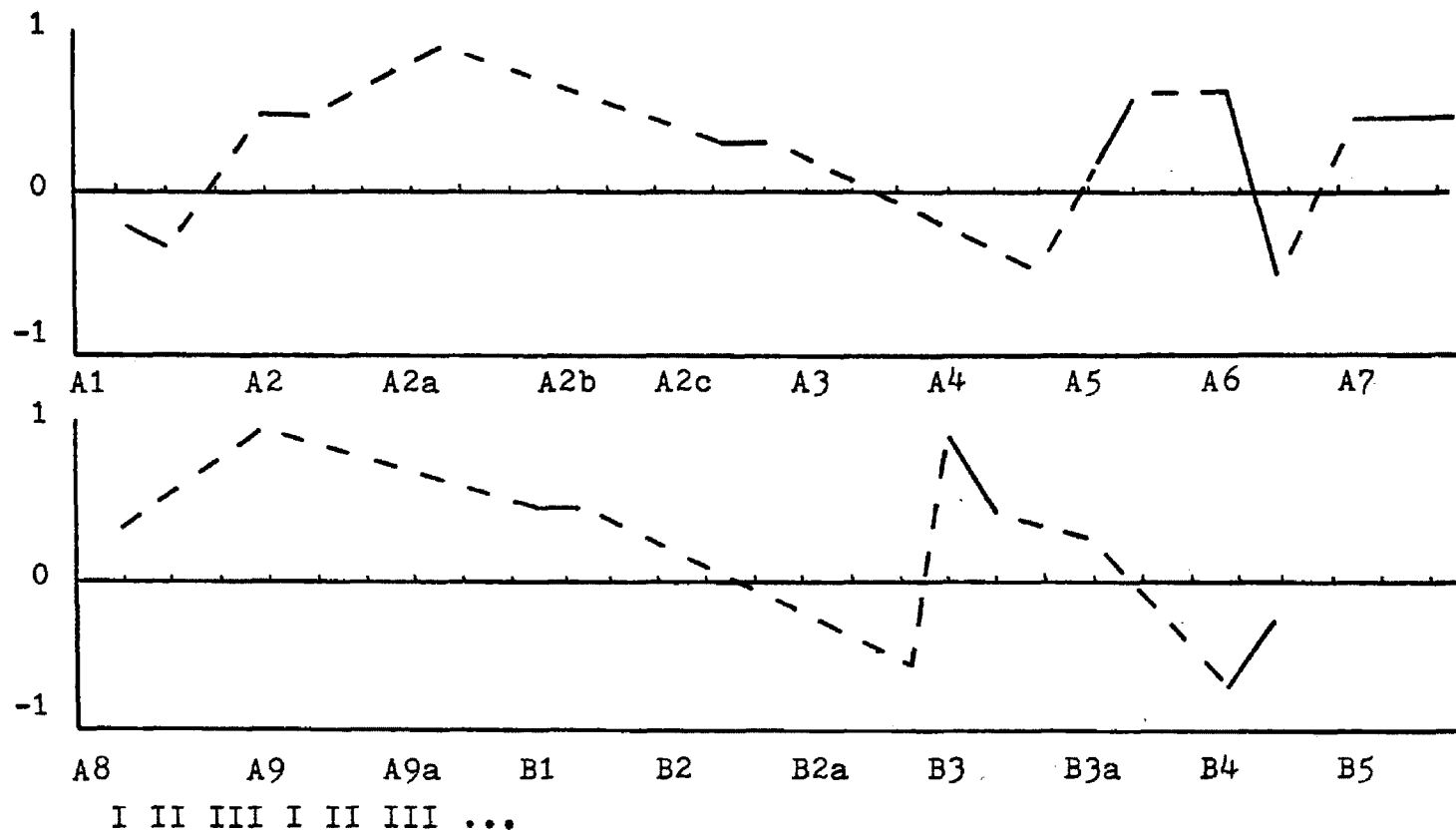


Figure 5-1

Change in Ambivalence for Each Category
(Student #10)

Roman numerals indicate period of response.
The solid line (—) shows continuous data points.
The broken line (---) shows regions of no information (e).

Table 5-10
Intensity of Assertion Data

| Category | (m_t^+, m_t^-) | (r_t^+, r_t^-) | I^+ | I^- |
|----------|------------------|------------------|-------|-------|
| A1 | 13,27 | 12,24 | 0.58 | 1.24 |
| A2 | 24,4 | 23,4 | 1.11 | 0.38 |
| A2a | 13,5 | 11,5 | 1.35 | 0.33 |
| A2b | 3,0 | 3,0 | 0.66 | 0 |
| A2c | 12,0 | 11,0 | 1.16 | 0 |
| A3 | 0,10 | 0,9 | 0 | 1.20 |
| A4 | 4,6 | 4,6 | 0.5 | 0.66 |
| A5 | 30,2 | 27,2 | 1.27 | 0.29 |
| A6 | 40,11 | 35,7 | 1.2 | 1.7 |
| A7 | 33,5 | 30,4 | 1.18 | 0.45 |
| A8 | 7,2 | 7,2 | 1 | 0.40 |
| A9 | 2,1 | 2,1 | 1 | 0.5 |
| A9a | 4,0 | 4,0 | 0.33 | 0 |
| B1 | 10,2 | 9,2 | 1.11 | 0.4 |
| B2 | 2,5 | 2,5 | 1 | 1 |
| B2a | 2,4 | 2,3 | 0.33 | 0.67 |
| B3 | 13,5 | 11,5 | 1.33 | 0.80 |
| B4 | 4,11 | 3,10 | 1.04? | 0.22 |
| B5 | 1,0 | 1,0 | 1 | 0 |

for each category (I^+ and I^-). The relative intensity of assertion for student_i (X^+ and X^-), which were used to calculate I^+ and I^- , are included in the equations listed in Appendix B. The terms used to express both relative intensity for student_i, and intensity for each category, are not additive. The magnitude of the negative intensity (i.e., how strongly the writer feels towards the category in the negative direction), and the magnitude of positive intensity (i.e., how strongly the writer feels toward the category in the positive direction) are not symmetrical. The degree of one's

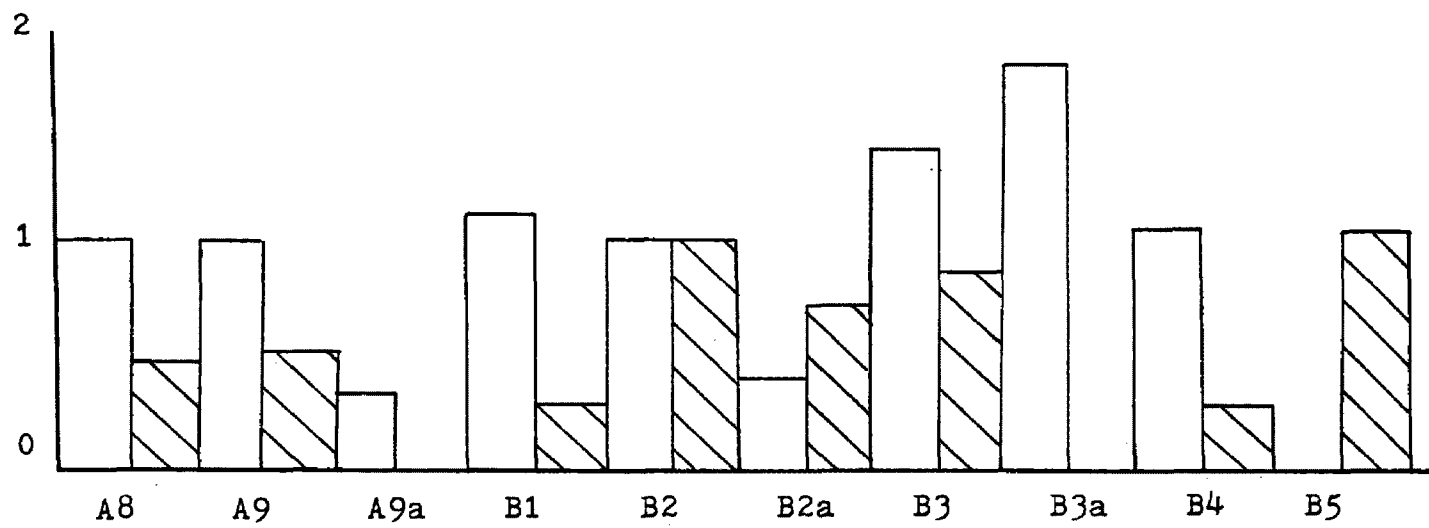
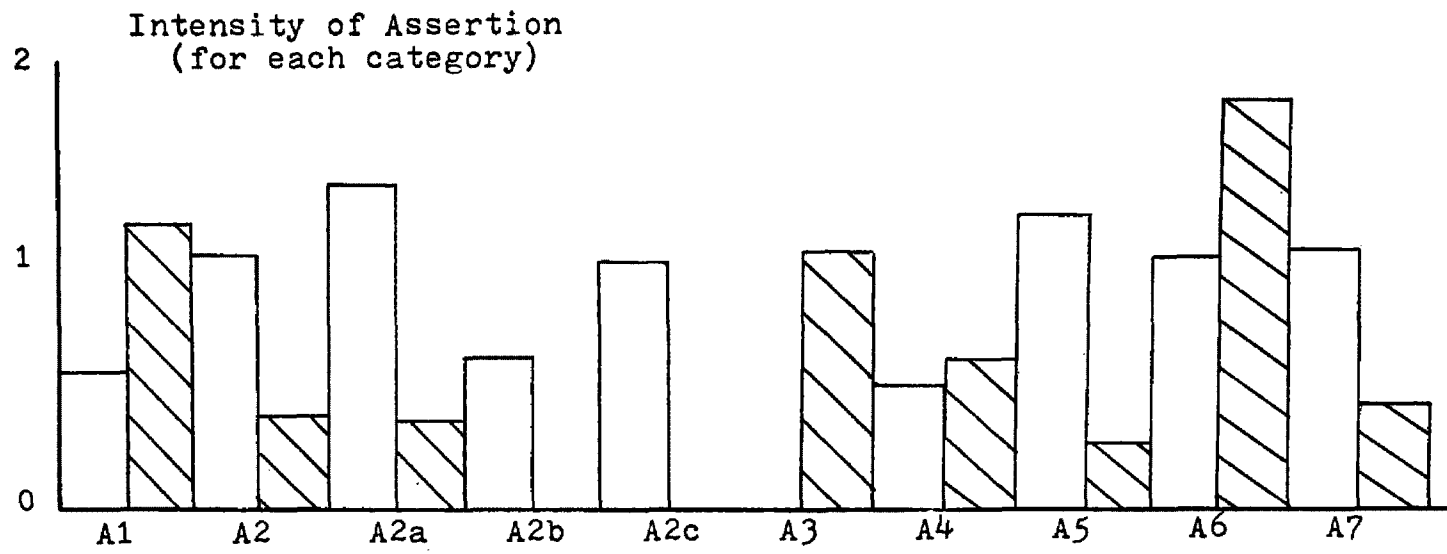
negative feelings are not necessarily equivalent to the degree of one's positive feelings. The equations used to calculate I^+ and I^- also take into account the individual abilities of the writers to express themselves in English.

Figure 5-2 graphs the intensity of assertion for each category (I^+ and I^-). These data are helpful in determining the areas of greatest and least concern to the students, and also indicate possible strengths and weaknesses in the content of W&C instruction.

The following patterns of response were derived from Tables 5-9 and 5-10, and the card file.

Category A1 (Technology): Most students appear to be extremely anti technology, although Student #5 sees possibilities in soft technology, and simple living. Student #10 recognizes our dependence on hard technology, and is concerned about the social ramifications. There was fairly high ambivalence in this category, although Students #15, 10, 16, and 17 had fairly low ambivalence in the negative direction. There was a fairly even spread of references between periods I, II, and III.

Category A2 (Wildlife): There appears to be a very positive attitude towards Wildlife. There was virtually no ambivalence. Student #26 had the highest ambivalence (in the positive direction), and also showed the greatest understanding of the factors involved in wildlife



□ indicates I^+ .
 ▨ indicates I^- .

preservation. Student #10 was concerned for "natural integrity," and Student #17 perceived changes in himself and said he felt he had a more realistic understanding of animals. Student #16 learned appreciation for animals by "stalking."

Category A2a (Hunting): Fairly high ambivalence towards Hunting is supported by the mixture of attitudes concerning "proper" hunting. No women referred to hunting. Student #26 was concerned with ethical hunting, and being "in phase" with the environment.

Category A2b (Fishing): Very low ambivalence, almost all the references were positive. Fishing was uncontroversial.

Category A2c (Ecology): All the references were positive. No ambivalence, and no strength of assertion in the negative direction. There was a definite positive concern for ecological relationships during all three periods.

Category A3 (Pollution): Very low ambivalence in the negative direction. No strength of assertion in the positive direction. However, there were not many references to Pollution. All the references began after the wilderness trek.

Category A4 (Land Planning): There were very few references to Land Planning. Ambivalence was fairly high, and the information content was low. Student #17

shows an increased understanding of land use problems that appears to be related to the wilderness trek.

Category A5 (Wildness/Wilderness): There was generally very low ambivalence in this category, with some interesting exceptions. Student #10 was in "ecstasy" just after the wilderness trek. Her high positive attitude towards wilderness later changes to a question of "social vulnerability." Student #17 initially saw wilderness as a "scary" place, but later indicated firm advocacy. Students #22 and 16 indicated very positive attitudes and an artistic appreciation for wilderness. Student #10 commented that wilderness "brings people together."

Category A6 (Environment/Surroundings): References toward Environment/Surroundings were sorted on the basis of references toward natural environments and references toward artificial environments. Both were higher in the negative direction of strength of assertion. There were many references to the bad weather during the wilderness trek, and many negative references to the urban Missoula environment. There was a definite concern for natural beauty. There was mid-range ambivalence. All references to artificial environments began after the wilderness trek, indicating a concern for immediate surroundings.

Category A7 (Class & Materials): There was some ambivalence towards Class and Materials (references to

instructors, instruction, the learning environment, and class-related materials), although the response was generally positive (as indicated by I⁺). Student #10 was concerned with understanding the material, and was very skeptical. Student #26 developed a concern for environmental ethics, and discussed many of the materials. Students #5 and 1 began to read class materials in the woods, and Student #5 referred to the importance of classroom encounter. Student #17 indicated a "wilderness group" feeling, and Student #16 said he was very happy with the program.

Category A8 (Resource Use): There were very few references to Resource Use, and fairly high ambivalence. This could be a weak area of the Program, although the journals might not be the appropriate format for exploring attitudes toward this category.

Category A9 (Lifestyle): There was low information content regarding lifestyle. There was a general desire to create "communities," and a need to be ecologically responsible.

Category A9a (The Primitive): The Primitive was an area of low ambivalence, and the students indicated an acceptance of alternate, simpler lifestyles.

Category B1 (People): There was low ambivalence in the positive direction, and the positive references were recorded in all settings. There was no indication of the

intrusion of outsiders into personal environments, and people tend to be well regarded. The negative references were to crime and business.

Category B2 (Social Issues): There were mostly negative references to the present social order, some ambivalence, and only 3 students mentioned Social Issues. Student #10 became an advocate of women's issues.

Category B2a (Social Ecology): There was high ambivalence towards the ecology of social relationships. Student #26 said that man should be included in ecological relationships, and several students referred to a sense of "powerlessness."

Category B3 (Classmates): There was fairly high ambivalence towards Classmates during the early part of the Program. After Student #5's safe return during the wilderness trek, the references become increasingly positive.

Category B3a (Cooperation and Sharing): This category had the highest intensity (I^+) in the positive direction, and no negative intensity (I^-). There was very low ambivalence. This indicates social cohesion, unity, solidarity, and a sense of community.

Category B4 (Civilization): There was fairly high ambivalence towards Civilization. There was some concern for the condition of cities. Civilization did not appear to be viewed as the opposite of wilderness.

Category B5 (Recreation): There were only two references.

CHAPTER VI

DISCUSSION AND IMPLICATIONS

Correlation of Results

The data derived from the four methodological sources previously discussed, participant observation, survey-questionnaires, interviews, and content analysis, have been preliminarily explored in order to describe, amplify, and verify broad patterns of attitude change as they relate to wilderness as a situational determinant. The holistic, systemic, ecological context of these data provides the basis for combining them into a framework that describes the social, educational, and physical parameters of student attitudes and concern for the environment, the process of social penetration, the development of intimacy and community, the internal social content categories of the participants, and the use and influence of natural, "wild" ecosystems. This last dimension, the question of how wilderness contributes to attitude change, is developed separately and extensively in the concluding section of this chapter, although it is referred to here as a component of the eco-social "system" examined below. Because of the extensiveness of the information derived from the different data sources,

only general patterns and interesting cases are elucidated.

The students who entered the W&C Program during Fall Quarter, 1977, were self-selected on the basis of an initially high concern for wilderness and the natural environment. The survey data suggest that students with initially low SEAT, Form D, scores (Students #9, 10, and 13) and initially low MACH V orientations showed the greatest overall change in attitudes as a result of participation in the wilderness trek. These students showed a significant change in environmental concern in the direction of high positive concern, and changed MACH V orientations from low to high. This suggests greater concern for both social and environmental issues and change in the direction of wanting to do something (i.e., being interpersonally manipulative) about these issues. Student #10 came into the Program with set expectations:

I don't mean to set up a conflict between the urban and the wilderness, because I think that for the wilderness to continue to exist there mustn't be confliction (sic) between it and urban life. However, out here we learn what our urban experiences don't allow us or force us to learn (Journal Entry, 9/23/77).

She soon began to reflect upon her social experiences:

It is tempting to acknowledge some mass system which runs the country much like a small child would run a miniature train set. This stems from a sort of rejection of responsibility. For, if what I do is bad for the ecosystem, then by deferring to some larger system for responsibility for what I did,

I can then reject responsibility for that act and also reject responsibility for trying to change the causes that led me to act the way I did (Journal Entry, 9/26/77).

Her concern for social issues is also apparent in the field notes, when I questioned her about her views on urban sprawl:

"I think there should be a diversity of lifestyles, urban, suburban, and rural." "Well," she replied, "People don't always have a choice, you know what I mean? We're running out of space." I agreed: "Yes, well space should be a constraint anyway." "Yeah," she replied, "but if my dad could have his way, he'd buy a huge ranch" (Field Notes, 9/26/77).

Her ambivalence ratios during this period show the least ambivalence ($-.25$ for A1, and $.16$ for A5) in the content areas of Technology (low negative ambivalence) and Wildness/Wilderness (low positive ambivalence). The intensity of her assertions towards these areas are $X^- = 1.12$ for A1 ($X^+ = 0$), and $X^+ = 1.27$ for A5 ($X^- = 1$). These compare to $I^- = 1.24$ for A1, and $I^+ = 1.27$ for A5. This shows that the intensity of her feelings toward Technology, an area of low ambivalence in the negative direction, was not as great as the mean intensity of her classmates. However, her favorable regard of Wilderness is equal to that of her classmates. This high regard is corroborated by a statement made when she returned to Missoula from the Bob Marshall Wilderness:

I don't know if "understand" is really the right word for what I began to know out there because it seems to imply some sort of rational

comprehension and I don't think that's what happened.

It was more like just walking into the meadow of Gates Park by myself and feeling real contact with the land I was in. I can't really describe it so what I mean seems to verg (sic) on saying words like "you know man, I mean it was far out" (Journal Entry, 10/1/77).

This early period during which she had "...some really high periods...when I felt ecstatic about being out in the wilderness..." (Journal Entry, 10/1/77) was later tempered by a more comprehensive examination of her social world: "...I really do respect wildness...but yet I do find it more vulnerable than a societal unit..." (Journal Entry, 10/18/77). This is corroborated by a comment she made in Tom's class which indicates her broadening concern for social issues. She argued that sex "...is a moral principle, where does it fit on a casuistry tree?" which initiated class discussion on this point (Field Notes, 10/13/77). The interesting correlation here is a decrease in negative ambivalence in category B4, Civilization, from -.66 to -.25 from period I to period II. She did not make any reference to B4 during period III. In other words, she did not look at Civilization during period II as ambivalently as she did during period I. Overall, her regard for Civilization is one of the highest in the class ($X^+ = 1.3$, and $X^- = 0$ for B4, where $I^+ = 1.04?$, and $I^- = .22$). This indicates that her change in environmental concern as measured by SEAT, Form D, was indeed tempered by a broadening of her social perspective, particularly towards

the feminist movement:

I guess the same confusion exists in collusion with the feminist movement. How long do we keep pointing out women's oppression and their lack of power and when do we start celebrating the power and the throwing off of oppression. To what extent will that celebration lead to more power -- power not necessarily used in the political sense here but more in the power of the individual and of individuals together feeling human strength and the desire to survive (Journal Entry, 11/15/77).

Student #10 is an example of a W&C participant with a number of interesting changes in attitudes. Before examining examples of students with less pronounced changes, we will return to the initial wilderness trek period for a brief look at student attitudes toward, and perception of, the non-human other. Student #10 suggested a "non-rational" comprehension of the wilderness. She further elaborates this in her journal:

When I was walking through a meadow yesterday I kept expecting a little man to jump out of the bushes. I really convinced myself of it, that he was there watching me. It was the first time I'd felt other presences here besides the folks I'm with (Journal Entry, 9/25/77).

In Chapter II we developed the notion of an other which is non-human. This non-human other was used as a sorting device for a variety of content areas (A1 through A9a). Student #10's testimony is one of 17 references to such an other. She actually experienced nature in a manner similar to the way she experiences other people. Some of references verge on hallucination: "...saw a huge spot some 100' away...I flicked the button (of his flashlight) and

illuminated a four foot high stump" (Student #5, Journal Entry, 9/24/77), and,

I walked out by the river (while in the Bob Marshall) and I saw this big thing in the middle of it...I didn't know if it was a bear...I didn't know if I should turn around and go back...so I stood there to see if it moved, and it turned out to be a clump...(Student #9, Question #x, Interviews).

Other examples of encounters with the non-human are more mundane: "I guess I've earned membership into this group of high altitude beauties (mountains)...I feel like I've joined them at the top" (Student #17, Journal Entry, 9/24/77). And, "We enter the forest...I get new energy for some strange reason" (Student #17, Journal Entry, 9/22/77). Other references reveal the effect of new information from the natural world, "The intricacies I've observed; the essence exuded from botanical life forms are awesome..." (Student #5, Journal Entry, 11/1/77), and "I hear voices often in the wind or a brook or stream... I cannot understand them though..." (Student #26, Journal Entry, 10/25/77). One reference indicates a newly found sensitivity to the non-human sphere: "Damned if the...car didn't hit the raccoon, both tires. I could actually feel the tires running over my neck, my spine cringed with pain" (Student #17, Journal Entry, III). One student actively sought the experience of being "other than" human:

I stood in the forest meditating on being a tree for about $\frac{1}{2}$ hr. listening to my neighboring trees stretching their branches in the wind. I

hear a rustle over there and I know something's there, but I can't see it. They know I'm here, that's why. Heard some Elk bellowing far off in the distance. Coyote's howling echoes in the hills and the Owl's words follow in with the wind every now and then (Student #22, Journal Entry, 9/25/77).

Finally, one student attempted to "become one" with the "mind" of a deer:

I followed as closely as possible to the exact path the deer had taken. I tried to see the forest as the deer saw it. I went past the same bushes, I climbed over the same logs, I walked around the same trees, I saw the same things it saw. My mind was focused on that deer...then something of consequence happened. I found myself at the top of the rock face that I first set out to climb. It may not mean anything but I thought it was neat to end up there without even planning to. It was a beautiful view. I scrambled down the rocks, back to the house and party (Student #16, Journal Entry, III).

Deer, when pursued by hunters, will often circle around to where they started. A measure of Student #16's success in assuming the guise of a non-human other -- in this case, a deer -- is that he circled precisely as his "prey" -- the deer -- must have.

This concern for, and awareness of, the non-human other is corroborated by the statistically significant change in concern measured by SEAT, Form D. Although this instrument did not indicate significant change in the content clustered item, Ecological Relationships (which probably indicates a high initial concern for this category), all ambivalence ratios in category A2c, Ecology, (periods I through III) show positive, fairly unambivalent attitudes (period I, .33, and .5; period II, .33, .5, and .5; and period III,

.33, and .33), with the least ambivalence during period III, which probably shows the effects of academic work on this category of response. The intensity of direction in category A2c was also one of the highest ($I^+ = 1.16$) in the A (non-human other) categories, with no negative intensity ($I^- = 0$).

The non-human other was a significant category for many W&C students. As an experiential category, it shows the degree of sensitization of some W&C students to the natural environment. Another measure of wilderness sensitization is the development of intimate interpersonal relationships and the social penetration process. Student #5's disappearance during the wilderness trek was a major precipitating factor for the development of community.

He describes his ordeal:

A pine squirrel chattering just inches from above my head woke me this morning. It was fortunate that he did for I had quite a trek in store. Last eve I had unknowingly hiked down the western & wrong side of the Chinese Wall. How I became so disoriented is beyond comprehension. I'm thankful for the bright morning sun which warmed me and restored my sense of direction.

I finally made the long trek up & over the Chinese Wall by midday -- I felt comforted knowing that I would reach Round Park today. Through the whole ordeal I wasn't paranoid nor scared; in these modern tymes one has numerous rescue teams which can be called upon -- quite different from years past.

Shortly after descending the East side of the Chinese Wall -- I met on the trail with (Students # 2 and 3) who were on their way to Gates Park to obtain horses and radios for my rescue. If not found by the day's end they were to alert the National Guard for further assistance. (Student #2) told me of how Uncle Reamus and he had spent much of the last evening

& several hours this morning traversing the Chinese Wall looking for me. Bob was extremely concerned and feeling very uneasy over my absence. Damn... Damn...Damn...Damn...Not once but twice I've perpetuated undo concern to Bob and my fellow group members.

(Students #2 and 3) & I had about ten miles to reach Round Park, the first four miles being lots of climbing over two ridges & the rest being very level following alongside of Open Creek. Upon reaching Open cr. trail junction, we found (Students #1 and 6) who were the base camp for my rescue. Jesus Christ! This whole rescue mission was taking on many phases and many people. I was feeling very indebted and the object of much undo attention. I dislike being a spectacle. I may sound disgruntled and unappreciate to the reading audience -- but that is very untrue. I have been expressing much regret, but I also realize the necessity for all the implemented precautions. Furthermore, the concern & willingness displayed by those involved is an intense exchange of feelings. I feel much in need of making retribution (sic) to those who were so generous with their tyme.

I was intent on reaching Round Park as soon as I could, for I'd heard that Bob Ream is incredibly distraught and wished to relieve him of such negative feelings. I stopped only when I came upon four recruits that Uncle Reamus had sent to the "base camp." I felt further indebtedness & verbally thanked them all for their help & expressed regrets. I blazed on, thinking of confronting Bob & just what I'd say. After a quick, though seemingly long 5 miles, I reached the expansive meadow at Round Park. Many cheered & I was warmed by hugs and smiles. I sat beside Ream who was lying on the ground, much in need of rest. He looked up & we embraced to console one another as tears culminated the intensity of emotions. I spent the day's remainder just reflecting on the implications and lessons of the experience; one which I'd never before encountered (Journal Entry, 9/26/77).

The cohesiveness that developed from this event is corroborated by the intensity of direction of category B3a, Sharing, $I^+ = 1.68$, and $I^- = 0$. This is the highest positive intensity of any category, with no negative intensity (all references are from period I).

Seven phases of bond formation, social cohesiveness, and development of community are identified from the field notes and the interviews. The first phase, self-selection and initial wilderness concern, has already been examined. The second phase, the disappearance of Student #5 and concomitant attitude changes toward the group, is further corroborated by the changes in ambivalence ratios in category B3, Classmates. During period I, the ratios (1, .5, .33, and -.5) show slightly higher ambivalence, mostly in the positive direction, than during period II (.5, and .33), and period III (-.33, and .33). The intensity of direction is much lower in the negative direction ($I^- = 0.8$) than in the positive direction ($I^+ = 1.33$), which indicates that there is a fairly high regard towards fellow classmates, even if feelings are somewhat mixed. Initial regard for Classmates (period I) is more ambivalent because there are several negative references toward the group during this period (Student #16: "I wanted to be first along the trail and I didn't want anybody else near me," and Student #5: "Today began a twelve-day backpacking trip with seven fellow students... I regret hiking with such a crowd..."), although these negative references changed at the Rendezvous (with the return of Student #5):

Sunshine flowing happy energies/all throughout
land, spirit, & body --/ Music echoes across the
meadows-/ Loving warmth/ felt everywhere --/ Trees

bend, sending out notes to catch/ us and hold us THERE
 for a/ Moment --/ --The violins of the forest. --/
 Squirrels chatter the wind hums/ My mind sings to
 me/ (HARMONY), (Student #22, Journal Entry, 9/27/78).

Later in her journal, this student reveals the reinforcement of community with increasing familiarity through classroom encounters:

I have lived the life of introvert for years, I have never gone all out to make relationships with others even when I really wanted to. Especially then, I found myself backing away, in order not to push something (myself) on someone else. Communication among people, being able to let others see you as you are, is as important as having those things in the first place.

I feel more tribal now, I feel the strength in groups, I feel the security that can be felt in having people with you -- with you in your thoughts. In the past my attitude has always been one of isolated figures passing thru life -- alone -- literally in our own little world. But now I step out of that into a sharing atmosphere -- like a "family;" a group to share with; a band of friends -- getting so much more insight (Student #22, Journal Entry, III).

The fourth phase is readaptation to the structured academic environment and urban life. The third phase already examined, showed that the students began to undergo a process of resocialization and sensitization to the other. This resocialization is confirmed by student reaction to the structured university atmosphere that most non-W&C students were adapted to: "Once again, we are seated in rows. Student #28 commented: 'This is really structured,' referring to the room and the arrangement of chairs" (Field Notes, 10/11/77). This was particularly evident in Tom's class:

During casual pre-class conversation, Tom dropped a not quite crushed cigarette into a trash can, producing a little flame. Student #3 commented, "Let's build a campfire." There was a murmur of agreement, indicating that the classroom was not the best environment to conduct the class. This was confirmed when Student #27 suggested, "Let's go outside" (Field Notes, 10/27/77).

This negative attitude towards the formal structuring of the class and the classroom (Student #23: "Structuring the Rendezvous* is not so good," and Student #14: "Some of the classes get a little drawn out at times," Question #xix, Interviews) is further corroborated by responses during a later phase, anxiety over performing well academically, which is the last and seventh phase of development. Student #1, while at the Sleeping Child Hot Springs retreat -- the concluding event of the W&C Program -- suggests, "We wanted to do a good job on the final" (Field Notes, 12/14/77). Student #28 was concerned over her performance on the essay portion of the final exam, "Yeah, that way you can devote more time to essay questions during the last week," and Student #23, "I spent too much time on the earlier questions." An earlier entry from the field notes (11/22/77) clarifies this anxiety:

As Tom arrived, Student #4 commented: "The class has stalemated" (referring to W&C and not any particular class). Student #16 replied,

*A weekly classroom continuation of the original "meeting of the minds" in the Bob Marshall.

"Apparently the other classes have slowed down during this period." Student #10 suggested, "I think it's just all the work piling up."

It is interesting to note that the first negative ambivalence ratio in category A7 (Class & Materials) occurs during this period (period III, $-.33$), and that the lowest ambivalence ratio in this category ($.12$) was during period II (all ratios during period I are also fairly low in the positive direction, which probably indicates fairly high expectations toward the W&C academic experience). Generally, the intensity of direction towards A7 is fairly high ($I^+ = 1.18$, and $I^- = .45$), and the students' comments about the W&C Program and their instructors in response to Question #xix of the interviews (general evaluation of the W&C Program) are glowing.

The fifth and sixth phases of the W&C Program involve the sensitization of W&C students to the broader context of social-environmental issues (the fifth phase) and life-plan redirection (the sixth phase). The sixth phase is discussed in detail in the next section. The sensitization of W&C students towards a variety of environmentally-related issues has already been examined in reference to Student #10, who became an ardent feminist.

How Wilderness Contributes to Attitude Change

There are several ways that wilderness, within the

social ecological context of instructional materials, instructors, social penetration and intimacy, group dynamics, and physical settings, functions as a situational determinant. The data correlated in the previous section suggest that it would be incorrect to describe wilderness as a direct causal agent for attitude change. Wilderness can best be described as a "precipitating factor" for changes in attitudes. As a situational determinant, it cannot be totally isolated from the context of the individuals involved, their expectations, the expectations of the instructors, the influence of academic materials, previous socialization, and the resocialization that occurred during the W&C Program. Wilderness, however, does contribute to attitude change within the situational context by forcing interdependence, precipitating community, increasing environmental concern, creating intimacy, and broadening an awareness of social-environmental issues. These parameters have been examined in the previous section. Students and instructors were forced to become interdependent by living together, sharing, confronting the natural environment, and encountering one another. This is confirmed by the patterns of adaptive social behavior, particularly concerning the disappearance of Student #5, that developed through the wilderness trek. Social penetration was very rapid, and the students showed a

high degree of self-disclosure, as exemplified by their attitudes towards this research and the researcher. High commitment in a highly informal setting seem to be factors that are related to the influence of wilderness as a situational determinant. All the students who responded to Question #xii during the interview phase of this research ("Do you feel part of a group now?") confirm the precipitation of community through the wilderness experience. This sense of community developed and was strengthened through the academic portions of the W&C Program in the classroom setting (which was regarded as "too structured"). An increase in environmental concern is confirmed statistically by the significant change in Total Environmental Concern, concern for Science, Growth and Technology, and concern for Noise, Land and Air Pollution, as measured by SEAT, Form D. Although the students did not become low Machs, or "encounterers," as a result of the wilderness trek, probably because of the deep-seated attitudes measured by this instrument, the indication that intimate interpersonal relationships did develop is quite clear from the other methodological sources. This intimacy is particularly apparent in Students #16 and 22, who indicate the continuation of W&C-related friendships outside the classroom, and the comments of Student #5 and others regarding classroom encounters. It is hypothesized that if the MACH V

instrument had been administered at the end of the academic quarter, there might have been significant change in the direction of lower Machiavellian orientation, although, if the assumption is correct that there is a correlation between Machiavellianism and Total Environmental Concern with increasing sample size, then students might become more interpersonally manipulative towards outsiders as a result of broadening social-environmental awareness. This is an area that should be tested further. Finally, an increase in concern for the broader context of environmental issues is supported by the testimony of Student #10 and others, and is particularly apparent in this classroom encounter:

I arrived late as Dexter was lecturing on the meaning of Snyder's "becoming one with the mind of an animal" -- being a hunter. The class was initially quiet, there were a few late stragglers, a few students were taking notes, and most were intent upon listening to Dexter. The point of Snyder's idea, Dexter continued, is "to apply practice to everyday life." Student #2 spoke up: "...applying practice to everyday life -- why do you smoke and pollute other people's air? I think it's a contradiction to our class." Dexter (who's been trying to quit off and on) replied, "I won't smoke now..." The point was well taken, as Dexter was stressing non-polluting lifestyles (Field Notes, 12/6/77).

The content analysis shows fairly low strength of assertion in categories B2 (Social Issues, $I^+ = 1$, $I^- = 1$), and B2a (Social Ecology, $I^+ = .33$, and $I^- = .67$), and fairly high ambivalence in the negative direction during periods II and III (B2, 1, 1; and B2a, -.5, -.5, -.5, -.5, and

.5). This is probably because the journals were not the appropriate format for reflection on these issues, particularly since so much of the students' emphasis in the journals is on personal and interpersonal development. However, all references to category A3 (Pollution) in the content analysis show decreasing negative ambivalence from period II (-.5, -.5, -.5, -.5, and -.5) to period III (-.33, -.5, and -.5), with no references during period I, and $I^- = 1.20$ ($I^+ = 0$). These students, then, were concerned about the broader context of social-environmental issues, even if this is not always reflected in the content analysis.

One area that has been overlooked in previous chapters was explored during the interview phase of this research. This involves changes in majors, career-orientations, and life-plan direction. The students' professed readiness to become more involved with wilderness as professionals is clear evidence for the influence of wilderness as a situational determinant of attitude change. Student #3 said:

"Now I'm thinking about changing my major (from business-economics) to wilderness management, wilderness recreation -- something like that." He said that he had't considered this before the Program: "I didn't know it was available" (Question #xviii).

Student #23 indicated she was considering changing her major to "...something related to wilderness;" Student #2 said he was going to continue more in forestry than

biology; and Student #8 hoped to get a job on a wildlife refuge. All the students indicated a desire to use their wilderness background.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

Combining Methodologies

The strategy of this research was to combine social science methodologies in order that the results derived from the different sources might help to isolate the salient features of wilderness as a didactic strategy. The results supplement and complement one another in complex, interrelated ways as shown in Chapter VI. This approach has several advantages:

1. The central problem of attitude change can be viewed from a cross-methodological, and hence more complete, perspective. The critical difficulties with any one particular methodological bias can be circumvented.

2. The various methods provide cross-references and checks for accuracy. For example, a student may indicate high environmental concern in a pencil and paper score; he/she may verbally express concern in an interview or a journal; and yet, this same person may not act (for whatever reasons) in a manner consistent with his/her views. The reverse (low pencil and paper scores; low verbal expression; and high activity) might also be true.

3. This approach offers flexibility of interpretation and elasticity in freely interacting with the participants. What the subjects had to say about the various methodologies provided useful information.

There are, of course, pitfalls in attempting to combine methodologies. Gold (1973) contrasts ethnographic with survey research:

These approaches to studying society are so different that they lead not only to two different ways of conceptualizing society but to two distinctive and essentially incompatible ways of doing, and even talking about, sociology...The field-involved researcher relies heavily upon informants to help make sense out of what goes on in their society... (the instrument-dependent researcher) studies statistical populations, treating them as if they were instances of society, while frequently referring to them as cultures.

The contrast Gold draws is loaded heavily in favor of the field-involved researcher who has the advantage of "reality-checking" his information. However, after contrasting the deductive logic and macroscopic approach of the statistician with the inductive, microscopic methods of the researcher who participates in the community he is studying, he concludes, "There is considerable potential for the work of the two to complement and supplement each other despite a lack of methodological, procedural, and conceptual fit."

There was some divergence of results that are related to the holistic design of this study. Student awareness of the broader context of social-environmental issues was not

always indicated by the content analysis, but is corroborated by the field notes and the interviews. The MACH V instrument showed no change in interpersonal strategies and concern for the human other, while the other methodological sources provide extensive evidence for interpersonal development. The interviews did not shed significant light on student perception of attitude change except by the indirect inference of these changes through the use of the other interview questions. The content clustered item, Ecological Relationships, in the SEAT, Form D instrument, was not an area of significant change. This might have been misleading if it was not qualified by the other sources.

Many of the data do fit together nicely. The cross-correlation developed in Chapter VI shows how the data complement and supplement one another. The ability to isolate the areas of divergent results is perhaps the greatest strength of this social ecological approach. These divergent areas indicate the direction that future research should take.

Disneyland or Wilderness?

An indication of the current public image of wilderness is the popularity of the wilderness simulation rides in Adventureland and Frontierland at the Disney amusement parks in California and Florida. During the rides, one

views plastic hippopotami, plastic trees, plastic rattlesnakes, and in general, plastic. This debasement of the "wilderness experience" to simulations reflects the increasing technological orientation of Western culture and contributes to the widespread misunderstanding of wild ecosystems.

The results of this study show that the natural wilderness setting functions as a situational determinant by forcing interdependence, precipitating community, increasing environmental concern, creating intimacy, and broadening an awareness of social-environmental issues. Students showed high self-disclosure, and the social penetration process was very rapid. Could these results have occurred in another, more degraded setting, e.g., Disneyland? Certainly one can maintain attitudes towards both the human and the non-human other in a variety of settings. The experiences of "urban homesteaders" show that eco-social awareness is not incompatible with highly technological surroundings. More commonly, however, the urban setting with its amusement parks encourages a disdain for the integrity and information content of the non-human other, and often reinforces the culturally dominant, teleological, calculative logic of many government officials and industrialists.

Respect for wilderness should be linked with a sense of moral obligation. It is not only disastrous biologically

and spiritually to encourage a disdain for the integrity of wild ecosystems, but it is also morally wrong to treat the non-human other as a mere obstacle to one's desires, goals, and life fulfillment. It is highly unlikely that the experiences of W&C students could have occurred, say, on a bus. This research indicates that one does not learn moral obligation toward the non-human other in a more degraded setting. This is confirmed by the negative attitudes of the students toward the current social order, and their negative regard of the "structured" classroom setting. Furthermore, there is a crucial concept that relates the wilderness setting, and attitudes toward the non-human other, to the development of interpersonal relationships and community. This is the concept of "minimum impact." While in the wilderness, one sees the immediate effects of trying to survive. Heavily impacted campsites show students how callous many individuals are in their regard of the non-human other. One learns to "minimize" one's impact on the natural environment when the effects of heavy impaction are so apparent.

The ability to see an "otherness," or quality of "elusiveness" in natural ecosystems is logically linked to the idea of minimum impact. Many W&C students learned to recognize, or were sensitized to, this "unknown" in the wilderness, as well as the "unknown," or "unfolding of distances" (to paraphrase Sartre) in their neighbors'

eyes. They learned respect and concern for this otherness, and actively tried to minimize their impact on its integrity, in both the human and non-human spheres. This, we suggest, differentiates the influence of the wilderness setting from the idle amusement of a Disneyland simulation.

Wilderness and Education

The sensitization to, and positive changes in attitudes towards, both fellow human beings and the natural environment, is clearly supported by the findings of this study. Wilderness was found to function as a situational determinant of positive attitude change towards both the human and the non-human other. This suggests that wild ecosystems can play a much more important role in environmental education at all levels. Data is needed for other segments of the population, however, to verify if the changes and processes recorded in this study are simply unique to the W&C Program, Montana, and the personal temperament of W&C instructors, or whether they are more universal. In particular, a sample of individuals with very low initial environmental concern should be exposed to the academic content of this program and the wilderness trek to see if the changes are as pronounced as they were for W&C students. Furthermore, wilderness can be found in urban environments, and has often been characterized as a "state of mind." Little pockets of

wildland adjacent to urban areas might be used to sensitize students to the other.

The educational benefits of wilderness relate to the recognition of interpersonal and interspecies interdependence. The findings of this study show that wilderness can be effectively used as a didactic strategy with college students. This alone should constitute evidence for developing educational criteria in the assessment of wildland allocation. Wilderness quality rating indices show the different values of wildland, and should, we suggest, include the category "educational benefits."

In summary, we agree with Eugene Odum (1977) that science must go beyond reductionism and examine the total, ecological, systemic context of social, cultural, and natural systems:

...going beyond reductionism to holism is now mandated if science and society are to mesh for mutual benefit. To achieve a truly holistic or ecosystematic approach, not only ecology, but other disciplines in the social, and political sciences as well must emerge to new unrecognized and unresearched levels of thinking and action.

REFERENCES

Books

- Allport, G. W. Handbook of Social Psychology. U.S.A.: Addison-Wesley, 1954.
- Altman, Irwin, Taylor, Dalmás A. Social Penetration: The Development of Interpersonal Relationships. New York: Holt, Rinehart and Winston, Inc., 1973.
- Budd, R. W., Thorp, R. K., Donohew, L. Content Analysis of Communications. New York: The Macmillan Company, 1967.
- Christie, Richard, Geis, Florence L. Studies in Machiavellianism. New York: Academic Press, 1970.
- Cumming, Robert D. The Philosophy of Jean-Paul Sartre. New York: Vintage Books, 1965.
- Dawkins, Richard. The Selfish Gene. New York: Oxford University Press, 1976.
- Glaser, B. G., Strauss, A. L. The Discovery of Grounded Theory: Strategies for Qualitative Research. Chicago: Aldine Publishing Company, 1967.
- Greenwald, A. G. (editor). Psychological Foundations of Attitudes. New York: Academic Press, 1968.
- Heidegger, Martin. Poetry, Language, Thought. New York: Harper & Row, Publishers, 1971.
- Ittelson, W. H., et al. An Introduction to Environmental Psychology. New York: Holt, Rinehart and Winston, Inc., 1974.
- Kiesler, C. A., et al. Attitude Change: A Critical Analysis of Theoretical Approaches. New York: John Wiley & Sons, Inc., 1969.
- Kleinke, David J., Gardner, Eric F. Syracuse Environmental Awareness Tests: Final Report. Syracuse: Syracuse University, 1972.

- Kockelmans, Joseph J. (editor). Phenomenology. New York: Doubleday & Company, Inc., 1967.
- Lofland, John. Analyzing Social Settings. Belmont: Wadsworth Publishing Company, Inc., 1971.
- McCall, G. J., Simmons, J. L. Issues in Participant Observation. Massachusetts: Addison-Westley Publishing Company, 1969.
- McClintock, Charles G. (editor). Experimental Social Psychology. New York: Holt, Rinehart and Winston, Inc., 1972.
- Robinson, J. P., Shaver, P. R. Measures of Social Psychological Attitudes. Ann Arbor: Survey Research Center, 1971.
- Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill Book Company, Inc., 1956.
- Snyder, Gary. Turtle Island. New York: New Directions Publishing Corporation, 1974.
- Snyder, Gary. The Old Ways. San Francisco: City Lights Books, 1977.
- Tate, Merle W., Clelland, Richard C. Nonparametric and Shortcut Statistics. Danville: Interstate Printers and Publishers, Inc., 1957.
- Wagner, Richard V., Sherwood, John J. The Study of Attitude Change. Belmont: Brooks/Cole Publishing Company, 1969.

Articles

- Berube, Pierre. "Survival Camping: A Therapeutic Modality," Journal of Leisureability, (1975), 14-20.
- Bowman, M. L. C. "Assessing College Student Attitudes Toward Environmental Issues," Journal of Environmental Education, Vol. 6, No. 2, (1974), 1-5.
- Bridge, R. Gary, et al. "Interviewing Changes Attitudes -- Sometimes," Public Opinion Quarterly, 41(1), (Spring, 1977), 56-64.

- Burt, W. M. "A Hierarchy Among Attitudes Toward the Environment," Journal of Environmental Education, Vol. 4, No. 1, (1972), 10-13.
- Clark, R. N., et al. "Values, Behavior and Conflict in Modern Camping Culture," Journal of Leisure Research, 3 (3), (no date given), 143-159.
- Culinane, William, Santosuosso, John J. "Values Clarification and the Summer Camp Counselor," Adolescence, XI, (1976), 636-642.
- Doran, R. L., et al. "Assessing Students' Awareness of Environmental Problems," Journal of Environmental Education, Vol. 5, No. 4, (1974), 14-18.
- Heberlein, T. A. "Social Psychological Assumptions of User Attitude Surveys: The Case of the Wilderness Scale," Journal of Leisure Research, 5, (Summer, 1973), 18-33.
- Henke, Milo, Kuhlen, Raymond. "Changes in Social Adjustment in a Summer Camp," Journal of Psychology, 15, (1943), 223-231.
- Howell, D. L., Warmbrod, J. R. "Developing Student Attitudes Toward Environmental Protection," Journal of Environmental Education, Vol. 5, No. 4, (1974), 29-31.
- Lifton, R. J. "Thought Reform of Chinese Intellectuals," Attitudes, Jahoda (editor), (New York, 1966), 196-209.
- Lucas, R. C. "Recreational Use of the Quetico-Superior Area," U.S.D.A., Forest Service Research Paper, LS-8, 1964.
- Lucas, R. C. "The Contribution of Environmental Research To Wilderness Policy Decisions," Journal of Social Issues, XXII (4), (1966), 116-126.
- Lucas, R. C. "User Concepts of Wilderness and Their Implications for Resource Management," Environmental Psychology, Proschansky, Ittelson & Rivlin (editors), (New York, 1974), 297-302.
- Rawson, Harre E., "Residential Short-Term Camping for Children with Behavior Problems: A Behavior-Modification Approach," Child Welfare, Vol. 52 (8), (October, 1973), 511-520.

- Scott, N. R. "Toward a Psychology of Wilderness Experience," Natural Resources Journal, (no date given), 232-237.
- Shafer, E. L., Morrison, D. A. "Changing Attitudes Among Forestry Students," Journal of Environmental Education, Vol. 4, No. 4, (1973), 44-47.
- Siegel, A. E., Siegel, S. "Reference Groups, Membership Groups and Attitude Change," Attitudes, Jahoda (editor), (New York, 1966), 187-195.
- Stankey, George. "A Strategy for the Definition and Management of Wilderness Quality," Natural Environments, Krutilla (editor), (Baltimore, 1972), 88-114.
- Stankey, George. "Visitor Perception of Wilderness Recreation Carrying Capacity," U.S.D.A., Forest Service Research Paper, 142, (1973), 61 pp.
- Thorstenson, C. T., et al. "The Effect of a Twenty-nine Day Wilderness Survival Experience on Anxiety and Hearing Sensitivity," Therapeutic Recreation Journal, (no date given), 117-120.
- Wagar, J. A. "Relationships Between Visitor Characteristics and Recreation Activities in Two National Forest Areas," U.S.D.A., Forest Service Research Paper, NE-7, 19 pp.
- Wood, H. W. "Environmental Education and the Wilderness Idea," Vol. 6, No. 2, (1974), 50-52.

Unpublished Material

- Black, J. A. Wilderness and Physical Activity Attitudes of College-age Backpackers. Thesis, (1974), University of Montana.
- Gold, R. L. "Combining Ethnographic and Survey Research," Department of Sociology, University of Montana.
- Hendee, J. C. Recreation Clientele -- The Attributes of Recreationalists Preferring Different Management Agencies, Car Campgrounds or Wilderness in the Pacific Northwest. Dissertation, University of Washington.

Iverson, R. L. An Analysis of the Interrelationship of Environmental Knowledge and Environmental Concern, Dissertaion, (1975), University of Montana.

APPENDICES

SYRACUSE ENVIRONMENTAL AWARENESS TESTS

Level III Form D

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NEED

The development of this test has been funded by the Northeastern Environmental Education Development, a cooperative effort of The State Education Departments of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont under a grant from the United States Office of Education (ESEA Title 5-Sec. 505). Inquiries regarding this organization should be sent to:

Northeastern Environmental Education Development
New York State Education Department
Division of General Education
Albany, New York 12224

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BOOKLET NUMBER

Open this booklet and read the general directions on the inside front cover.

DO NOT BEGIN THIS TEST UNTIL TOLD TO DO SO.

General Directions:

This survey consists of 105 paired statements. Some describe things that you think are important, others describe things that you believe are important enough for you to do something about them. Look at the example below.

It is more important to me to:

- 1) eliminate air pollution from our major cities.
- 2) develop recycling techniques for solid waste.

Which of these two statements is more important to you? If it is more important to you to "eliminate air pollution from our major cities" than to "develop recycling techniques for solid waste," then you should mark 1 on the answer sheet. If it is more important to you to "develop recycling techniques for solid waste," then you should mark 2. Sometimes 1 and 2 may both seem to be equally important. In this case you should choose the one that on reflection is a little bit more important to you. Make this choice even though the two options are so close that you can hardly express a preference. Do not omit any items.

Some of the pairs of statements describe actions which you might be willing to undertake because of your concern about certain issues. Look at the following example:

I would rather picket a company that pollutes:

- 1) water in my area.
- 2) air in my area.

Which of these activities would you be more willing to do? You may actually be against picketing for any purpose. However, which cause is the more important to you and would be your choice if you had to serve as a picket? Again, choose the one you prefer. Do not skip any items.

Work carefully and quickly. Do not spend too much time on any one question. After you are finished go back and be certain you have not skipped any of the items.

Mark your answers on the answer sheet provided. Be sure your marks are heavy and black. Erase completely any answer you wish to change. Do not mark on this test booklet.

When the examiner gives the signal, begin work.

DO NOT BEGIN UNTIL TOLD TO DO SO.

1. I would rather watch a television program about
 - 1) defense spending
 - 2) air pollution
2. I would rather listen to someone who calls on the phone to tell me about
 - 1) inflation
 - 2) land pollution
3. I would rather watch a television program about
 - 1) noise pollution
 - 2) war
4. I would rather circulate a petition calling for
 - 1) limits on the amount of water a company can use
 - 2) stronger auto safety regulations
5. I would rather circulate a petition about
 - 1) defense spending
 - 2) population problems
6. I would rather sign a petition
 - 1) to reduce a technology growth problem
 - 2) for better crime control
7. I would rather write my congressman asking for
 - 1) restriction on the cutting down of forests
 - 2) changes in foreign policy
8. I would rather donate a large part of the money I earn to
 - 1) an ecology society
 - 2) disaster relief
9. I would rather donate 10% of my income to
 - 1) a fund for assistance to underprivileged children
 - 2) Planned Parenthood
10. I would rather sign a petition to
 - 1) reduce the noise level in my area
 - 2) change policy on educational spending in my area
11. I would rather donate 10% of my income to
 - 1) the American Cancer Society
 - 2) a group crusading for cleaner air
12. I would rather make a speech in favor of banning
 - 1) welfare cuts
 - 2) strip mining which ruins the land

13. I would rather picket a government agency asking them to do something about
 - 1) sewage dumped into water near my home
 - 2) the welfare program in my area
14. It is more important to me to
 - 1) increase the welfare budget
 - 2) develop more efficient waste disposal systems
15. I would rather sign a petition to
 - 1) stop highway construction through a park near my home
 - 2) change policy on educational spending in my area
16. I would rather watch a television program
 - 1) which deals with drug abuse
 - 2) about water pollution
17. I would rather call a local politician to complain about
 - 1) a case of air pollution
 - 2) his position on welfare
18. I would rather donate 10% of my income to
 - 1) the American Cancer Society
 - 2) a noise reduction program
19. I would rather watch a television program
 - 1) which deals with drug abuse
 - 2) about the dangers of technological growth
20. I would rather go door-to-door to convince people to
 - 1) avoid using plastic containers
 - 2) vote for a specific political candidate
21. I would rather listen to some who calls on the phone to tell me about
 - 1) a local political problem
 - 2) population problems
22. I would rather sign a petition complaining about
 - 1) burning trash at the city (town) dump
 - 2) narcotics abuse in my community
23. It is more important to me to
 - 1) reduce noise from aircraft
 - 2) campaign for my political favorite
24. I would rather donate 10% of my income to
 - 1) Planned Parenthood
 - 2) the American Heart Fund
25. I would rather donate 10% of my income to
 - 1) The Lighthouse for the Blind
 - 2) a group for preservation of endangered species

26. It is more important to me to
 - 1) campaign for my political favorite
 - 2) limit America's industrial expansion
27. It is more important to me to
 - 1) fight pollution in the Great Lakes
 - 2) reduce federal income taxes
28. It is more important to me to provide funds
 - 1) for drug rehabilitation centers
 - 2) to reduce land pollution
29. I would rather picket a factory that
 - 1) treats its employees in a very unfair fashion
 - 2) badly damages the environment
30. I would rather watch a television program about
 - 1) the dangers of technological growth
 - 2) poverty in America
31. I would rather listen to someone who calls on the phone to tell me about
 - 1) population problems
 - 2) inflation
32. I would rather hear a talk about
 - 1) civil rights
 - 2) water pollution
33. I would rather listen to someone who calls on the phone to tell me about
 - 1) a local political problem
 - 2) noise pollution
34. I would rather watch a television program about
 - 1) land pollution
 - 2) civil rights
35. I would rather make a speech
 - 1) to a group asking for stronger air pollution controls
 - 2) asking for an increase or a decrease in foreign aid
36. I would rather telephone people in my area about
 - 1) air pollution
 - 2) the need for a narcotics treatment center
37. I would rather read a leaflet about
 - 1) avoiding land pollution
 - 2) stronger auto safety regulations
38. I would rather stand on a corner to get signatures
 - 1) for a petition advocating my position on education
 - 2) in support of antinuclear legislation

39. I would rather read a leaflet telling me how to
 - 1) beat inflation
 - 2) avoid polluting the water
40. I would rather sign a petition which deals with
 - 1) the problems of population in America
 - 2) drug abuse
41. I would rather read a pamphlet about the
 - 1) necessity to support actively one's favorite political candidate
 - 2) dangers of technological growth
42. I would rather donate some money to
 - 1) medical research
 - 2) preserve vanishing species of wildlife
43. I would rather stand on a corner to get signatures for a petition
 - 1) advocating my position on civil rights
 - 2) supporting a law which bans DDT
44. I would rather watch a television program about
 - 1) population problems
 - 2) inflation
45. I would rather picket a government agency to stop
 - 1) overspending
 - 2) construction of an airport near a populated area
46. I would rather read a leaflet telling me how to
 - 1) avoid polluting the air
 - 2) beat inflation
47. I would rather sign a petition complaining about
 - 1) use of plastic containers
 - 2) narcotics abuse
48. I would rather donate 10% of my income to a
 - 1) drug rehabilitation program
 - 2) clean water association
49. I would rather volunteer to phone people about
 - 1) reducing the growth of industry
 - 2) joining the Committee for Peace
50. I would rather write a community official asking for
 - 1) drug rehabilitation programs in my community
 - 2) more park and recreation land in my community
51. I would rather hear a talk about
 - 1) water pollution
 - 2) defense spending

52. I would rather watch a television program about
 - 1) urban renewal
 - 2) air pollution
53. It is more important to me to
 - 1) provide the funds for drug rehabilitation centers
 - 2) control the noise level from aircraft
54. I would rather circulate a petition about
 - 1) the dangers of technological growth
 - 2) civil rights
55. I would rather make a speech in favor of banning
 - 1) racial discrimination
 - 2) strip mining that ruins the land
56. I would rather make a speech urging people to
 - 1) have no more than two children
 - 2) fight tax increases
57. I would rather listen to someone who calls on the phone to tell me about
 - 1) a local political problem
 - 2) air pollution
58. It is more important to me to
 - 1) curb inflation
 - 2) control the noise level from aircraft
59. I would rather listen to someone who calls on the phone to tell me about
 - 1) civil rights
 - 2) population problems
60. I would rather make a speech about the necessity to
 - 1) stop mercury poisoning of water life
 - 2) support actively my political favorite
61. I would rather listen to someone who telephones about
 - 1) the dangers of technological growth
 - 2) inflation
62. I would rather watch a television program about
 - 1) water pollution
 - 2) urban renewal
63. I would rather donate 10% of my income to
 - 1) a group starting a recycling operation
 - 2) The American Heart Fund
64. I would rather watch a television program about
 - 1) mercury poisoning from fish
 - 2) inflation

65. I would rather write to my congressman
 - 1) asking for changes in Defense Department spending
 - 2) about the dangers of technological growth
66. I would rather make a speech
 - 1) in favor of banning welfare cuts
 - 2) urging people to have no more than two children
67. I would rather listen to someone who calls on the phone to tell me about
 - 1) water pollution
 - 2) a local political problem
68. I would rather make a speech supporting a new
 - 1) antinoise law
 - 2) crime control law
69. I would rather listen to someone who calls on the phone to tell me about
 - 1) a local political problem
 - 2) land pollution
70. I would rather boycott a company which
 - 1) violates laws against discrimination in hiring
 - 2) severely pollutes the air
71. I would rather listen to someone who calls on the phone to tell me about
 - 1) inflation
 - 2) air pollution
72. I would rather watch a television program about
 - 1) urban renewal
 - 2) land pollution
73. I would rather donate 10% of my income to a/an
 - 1) organization campaigning against noise pollution
 - 2) fund for job training for poor
74. I would rather sign a petition calling for
 - 1) a new sewage treatment plant
 - 2) reduced taxes
75. I would rather watch a television program about
 - 1) urban renewal
 - 2) population problems
76. I would rather make a speech
 - 1) in favor of my community stopping industrial expansion
 - 2) urging people to fight tax increases
77. I would rather write my congressman about
 - 1) preserving more of American forests and natural beauty
 - 2) my position on war

78. I would rather stand on a corner to get signatures
 - 1) supporting a law which bans DDT
 - 2) for a petition advocating my position on education
79. I would rather write my congressman about my position on
 - 1) war
 - 2) population problems
80. It is more important to me to
 - 1) reduce noise pollution
 - 2) increase aid to America's poor
81. I would rather watch a television program about
 - 1) inflation
 - 2) air pollution
82. I would rather watch a television program about
 - 1) defense spending
 - 2) land pollution
83. I would rather stand on a corner to get signatures
 - 1) supporting a law which bans detergents that pollute water
 - 2) for a petition advocating my position on education
84. I would rather join a demonstration to stop
 - 1) a meeting of a violence action group in my town or city
 - 2) industrial expansion in my town or city
85. It is more important to me to
 - 1) restore the ecological balance in the Great Lakes
 - 2) maintain a strong national defense
86. I would rather watch a television program about
 - 1) war
 - 2) water pollution
87. I would rather read a leaflet telling me how to
 - 1) avoid polluting the air
 - 2) lower taxes
88. I would rather sign a petition calling for
 - 1) better crime control
 - 2) a new antinoise law
89. I would rather donate 10% of my income to a
 - 1) drug rehabilitation center
 - 2) group starting a recycling operation
90. I would rather sign a petition about
 - 1) land pollution
 - 2) civil rights

91. I would rather volunteer to work Saturdays
 - 1) to promote my views about war
 - 2) at Planned Parenthood
92. I would rather sign a petition
 - 1) calling for stricter laws controlling pollution from automobile exhausts
 - 2) to change a policy on educational spending in my area
93. I would rather sign a petition complaining about
 - 1) excessive noise in my community
 - 2) narcotics abuse in my community
94. I would rather go to a film that describes the tragic results of
 - 1) overpopulation
 - 2) war
95. I would rather watch a television program about
 - 1) war
 - 2) mercury poisoning from fish
96. I would rather sign a petition
 - 1) to change policy on educational spending in my area
 - 2) about the dangers of technological growth
97. I would rather listen to someone who calls on the phone to tell me about
 - 1) water pollution
 - 2) civil rights
98. I would rather read a leaflet telling me how to
 - 1) lower taxes
 - 2) avoid polluting the land
99. It is more important to me to
 - 1) campaign for my political favorite
 - 2) save the coral reefs along our coast lines
100. I would rather sign a petition about
 - 1) the dangers of technological growth
 - 2) war
101. I would rather read a pamphlet about
 - 1) population problems
 - 2) civil rights
102. I would rather donate 10% of my income to
 - 1) The Committee for Peace
 - 2) cleaning up oil-soaked beaches

103. It is more important to us to
 - 1) rehabilitate slums in inner cities
 - 2) reduce noise from aircraft

104. I would rather make a speech in favor of banning
 - 1) strip mining which ruins the land
 - 2) education cuts

105. I would rather make a speech calling for stricter
 - 1) laws controlling pollution from automobile exhausts
 - 2) drug laws in my community

Mach V Attitude Inventory

You will find 20 groups of statements listed below. Each group is composed of three statements. Each statement refers to a way of thinking about people or things in general. They reflect opinions and not matters of fact -- there are no "right" or "wrong" answers and different people have been found to agree with different statements.

Please read each of the three statements in each group. Then decide first which of the statements is most true or comes the closest to describing your own beliefs. Circle a plus (+) in the space provided on the answer sheet.

Just decide which of the remaining two statements is most false or is the farthest from your own beliefs. Circle the minus (-) in the space provided on the answer sheet.

Here is an example:

| | <u>Most True</u> | <u>Most False</u> |
|---|----------------------|-----------------------|
| A. It is easy to persuade people but hard to keep them persuaded. | + | - |
| B. Theories that run counter to common sense are a waste of time. | (+) | - |
| C. It is only common sense to go along with what other people are doing and not be too different. | + | (-) |

In this case, statement B would be the one you believe in most strongly and A and C would be ones that are not as characteristic of your opinion. Statement C would be the one you believe in least strongly and is least characteristic of your beliefs.

You will find some of the choices easy to make; others will be quite difficult. Do not fail to make a choice no matter how hard it may be. You will mark two statements in each group of three -- the one that comes the closest to your own beliefs with a + and the one farthest from your beliefs with a -. The remaining statement should be left unmarked.

Do not omit any groups of statements.

MACH 7

1. A. It takes more imagination to be a successful criminal than a successful business man.
 B. The phrase "the road to hell is paved with good intentions" contains a lot of truth.
 C. Most men forget more easily the death of their father than the loss of their property.
2. A. Men are more concerned with the car they drive than with the clothes their wives wear.
 B. It is very important that imagination and creativity in children be cultivated.
 C. People suffering from incurable diseases should have the choice of being put painlessly to death.
3. A. Never tell anyone the real reason you did something unless it is useful to do so.
 B. The well-being of the individual is the goal that should be worked for before anything else.
 C. Once a truly intelligent person makes up his mind about the answer to a problem he rarely continues to think about it.
4. A. People are getting so lazy and self-indulgent that it is bad for our country.
 B. The best way to handle people is to tell them what they want to hear.
 C. It would be a good thing if people were kinder to others less fortunate than themselves.
5. A. Most people are basically good and kind.
 B. The best criteria for a wife or husband is compatibility--other characteristics are nice but not essential.
 C. Only after a man has gotten what he wants from life should he concern himself with the injustices in the world.
6. A. Most people who get ahead in the world lead clean, moral lives.
 B. Any man worth his salt shouldn't be blamed for putting his career above his family.
 C. People would be better off if they were concerned less with how to do things and more with what to do.
7. A. A good teacher is one who points out unanswered questions rather than gives explicit answers.
 B. When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which might carry more weight.
 C. A person's job is the best single guide as to the sort of person he is.
8. A. The construction of such monumental works as the Egyptian pyramids was worth the enslavement of the workers who built them.
 B. Once a way of handling problems has been worked out it is best to stick to it.
 C. One should take action only when sure that it is morally right.

9. A. The world would be a much better place to live in if people would let the future take care of itself and concern themselves only with enjoying the present.
B. It is wise to flatter important people.
C. Once a decision has been made, it is best to keep changing it as new circumstances arise.
10. A. It is a good policy to act as if you are doing the things you do because you have no other choice.
B. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.
C. Even the most hardened and vicious criminal has a spark of decency somewhere within him.
11. A. All in all, it is better to be humble and honest than to be important and dishonest.
B. A man who is able and willing to work hard has a good chance of succeeding in whatever he wants to do.
C. If a thing does not help us in our daily lives, it isn't very important.
12. A. A person shouldn't be punished for breaking a law which he thinks is unreasonable.
B. Too many criminals are not punished for their crime.
C. There is no excuse for lying to someone else.
13. A. Generally speaking, men won't work hard unless they're forced to do so.
B. Every person is entitled to a second chance, even after he commits a serious mistake.
C. People who can't make up their minds aren't worth bothering about.
14. A. A man's first responsibility is to his wife, not his mother.
B. Most men are brave.
C. It's best to pick friends that are intellectually stimulating rather than ones it is comfortable to be around.
15. A. There are very few people in the world worth concerning oneself about.
B. It is hard to get ahead without cutting corners here and there.
C. A capable person motivated for his own gain is more useful to society than a well-meaning but ineffective one.
16. A. It is best to give others the impression that you can change your mind easily.
B. It is a good working policy to keep on good terms with everyone.
C. Honesty is the best policy in all cases.
17. A. It is possible to be good in all respects.
B. To help oneself is good; to help others even better.
C. War and threats of war are unchangeable facts of human life.

18. A. Barnum was probably right when he said that there's at least one sucker born every minute.
B. Life is pretty dull unless one deliberately stirs up some excitement.
C. Most people would be better off if they controlled their emotions.
19. A. Sensitivity to the feelings of others is worth more than poise in social situations.
B. The ideal society is one where everybody knows his place and accepts it.
C. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.
20. A. People who talk about abstract problems usually don't know what they are talking about.
B. Anyone who completely trusts anyone else is asking for trouble.
C. It is essential for the functioning of a democracy that everyone votes.

Statistical Equations Used in this Study

1. The Mann-Whitney U Test:

$$U_1 = n_1 n_2 + \frac{n_1(n_1 + 1)}{2} - R_1$$

$$U = n_1 n_2 + \frac{n_2(n_2 + 1)}{2} - R_2$$

where n_1 = the number of cases in this first sample, and n_2 = the number of cases in the second sample, with R_1 = the sum of the rankings in the first sample, and R_2 = the sum of the rankings in the second sample. The smaller value of U (U or U_1) is compared to the critical value of U for the sample sizes under consideration. If U is less than or equal to the critical value of U, then the null hypothesis is rejected.

2. The Wilcoxon Matched-Pairs Signed-Ranks Test: the data are ranked according to the value of the difference (d_i) of the scores in the two samples under consideration, and assigned a sign (+ or -) indicating the direction of the difference. The Wilcoxon statistic, T, is the smaller sum of like-signed ranks. This value is compared to the critical value of T for the sample sizes under consideration. If T is less than the critical value of T, then the null hypothesis is rejected.

3. The Kendall Rank Correlation Coefficient (τ):

$$\tau = \frac{S}{\sqrt{\frac{1}{2}N(N+1) - T_m} \sqrt{\frac{1}{2}N(N-1) - T_e}}$$

where S = the sum of the ordered differences of ranked data, N = the sample size, T_m = the correction for ties in the ranked Machiavellian data, and T_e = the correction for ties in the ranked Environmental Concern data,

$$T = \frac{1}{2} \sum t(t-1)$$

where t = the number of tied rankings.

The "z" statistic is used to adjust the Kendall coefficient for larger sample sizes (approaching normal distribution):

$$z = \frac{\tau}{\sqrt{\frac{2(2N+5)}{9N(N-1)}}}$$

Appendix B

Equations Used in the Content Analysis

1. Strength of Assertion or Intensity:

$$X^+ = \frac{m_i^+ \left(\frac{m_t^+}{r_t^+} \right)}{r_i^+} \quad X^- = \frac{m_i^- \left(\frac{m_t^-}{r_t^-} \right)}{r_i^-}$$

$$I^+ = \frac{\Sigma X^+}{S_t} \quad I^- = \frac{\Sigma X^-}{S_t}$$

m_i^+ = total # of + modifiers per student

m_i^- = total # of - modifiers per student

m_t^+ = total # of + modifiers in category

m_t^- = total # of - modifiers in category

r_t^+ = total # of + references in category

r_t^- = total # of - references in category

r_i^+ = total # of + references per student_i

r_i^- = total # of - references per student_i

S_t = total # of students responding in category

X = relative intensity for student_i (+ or -)

I = intensity per category

2. Ambivalence (AR):

If $r^- = r^+$, then $AR = 1$

If r^- is less than r^+ , then $AR =$

$$= \frac{|r^-| + 1}{r^+ + 1}$$

If r^- is greater than r^+ , then AR =

$$\frac{r^+ + 1}{|r^-| + 1}$$

Appendix C

The Data

The complete participant observation field notes, the composite summary of the interviews, the list of the descriptors and modifiers used in the content analysis, and the anecdotal material from the student journals are available through the Environmental Studies Library, 758 Eddy, at the University of Montana, Missoula, Montana, 59801. These data were simply too lengthy to include in their entirety in the Appendices of this study.