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MAN NATURE VALUE ORIENTATIONS

by

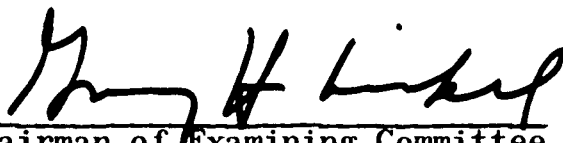
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Abstract

MAN NATURE VALUE ORIENTATIONS

by

JOEL KAMERON

Adviser: Professor Gary Winkel

The values that men hold toward nature must be understood if the current ecological crisis is to be solved. Prior efforts aimed at tapping those values were both few and inadequate. In this dissertation an attitude survey designed to tap man-nature values was developed and validated. The man-over-nature (in control of nature), man-with-nature (control is reciprocal), man-under-nature (nature controls man) typology was employed as an aid in generating an initial item pool of 267 items after a prejudging procedure designed to eliminate ambiguous or irrelevant items. This 182 item test was then administered to a sample of 284 college students. The results were factor analyzed using an orthoganal solution rotated to a varimax criterion. Five interpretable factors were found. On the basis of factor loadings the item pool was reduced to 93 items. These

items were mixed with 33 items of the Marlowe-Crowne social desirability scale to make up the final version of the test. This version was then administered to a sample of 522 college students. A criterion measure tapping demographic information, involvement in a variety of sports and ecological activities, exposure to natural hazards, vacation preferences and overt ecological views was also employed. The results of the attitude survey were again factor analyzed and eight interpretable factors were obtained. These factors were labeled: (1) conservationist-exploitationist, (2) non-man-under nature-man under nature, (3) non-fear outdoors-fear outdoors, (4) anti-technology-pro-technology, (5) anti-gardens-pro-gardens, (6) accept natural lifestyles-reject natural lifestyles, (7) pro-gasoline engines-anti-gasoline engines, (8) non-man-under (medically) vs. man-under nature. The factor scores were correlated with the criterion measures. The results were complex but generally clear. Those holding conservationist views on factor #1 were involved in ecological activities and preferred quiet (asocial) and naturalistic vacations. On factor #2 the non-man under nature type reported the most exposure and loss to natural hazards. This was attributed to the fact that their greater exposure to natural hazards resulted from a greater involvement in outdoor life. On factor #3, those who are unafraid of outdoor life are more involved

in outdoor life and in ecological activities. The rejection of technology on factor #4 was mildly related to involvement in ecological activities but was more clearly related to a rejection of soft and sociable vocations. Those individuals who were pro-gardens on factor #5 showed similar concerns to those who were conservationist minded on factor #1. The acceptance of natural lifestyles on factor #6 was related to a preference for natural vocations and outdoor life but not to strong ecological views. Those who were anti-gasoline engines on factor #7 showed similar criteria relationships to those who were conservationist on factor #1. Factor #8 showed few meaningful correlations. In general the results indicated that only explicit conservationist views were likely to lead to ecological activities, whereas general alienation with the modern world (pro-natural lifestyles, rejection of technology) would not. A general conclusion is that man-nature values were operating independently on four different levels. These levels were concerned with: (1) abstract ecological issues, (2) outdoor life, (3) everyday lifestyles, and (4) medical issues. A key problem then is the tendency for individuals to hold conservationist views on abstract issues while holding contradictory views on the level of everyday lifestyle. The relationship of this study to others and suggestions for further methodological and theoretical studies are given. In an appendix, the preliminary

results from a parallel project involving the development of a thematic test designed to tap man-nature values are discussed.

CHAPTER I

INTRODUCTION

The values that men have had toward nature have been considered by the great philosophers and writers of almost every era since the dawn of recorded history. Anthropological evidence indicates that in almost every society some belief system concerning nature existed (Diamond, 1964; Thompson, 1969). Clarence Glacken has written a monumental history of the idea of Western man's relationship to nature covering the period from the early Greeks to the eighteenth century (Glacken, 1967). He concludes that: "In exploring the history of these ideas from the fifth century B.C. to the end of the eighteenth century, it is a striking fact that virtually every great thinker who lived within this 2,300 year period had something to say about one of the ideas; and many had something to say about all of them" (Glacken, 1967, p. 713). Florence Kluckhohn regards man's relationship to nature as being one of "a limited number of basic human problems for which all peoples at all times and in all places must find some solution" (Kluckhohn, 1959, p. 346).

American values toward nature have been discussed by many writers, including Nash (1967), Ekrich (1963), Lowenthal (1968), and Huth (1957), among others. The history of American values toward nature is complex and intimately entwined with the general intellectual currents of the times (Miller, 1956); however, one generalization about these values can be made. Most of these writers tend to view American values as vacillating between pragmatic utilitarianism and idealistic preservationism. In Florence Kluckhohn's terms, American values vary from "man-over-nature" to "man-with-nature" (this typology will be discussed in detail later in this section). Although this conceptualization clearly oversimplifies a complex issue, it is still a reasonable description of what has occurred in our history. Means (1972) describes the course of American values toward nature as a shifting from Calvinistic to anarchistic views, namely:

The Calvinist mood plays on the role of natural processes, searching for a deterministic scientific sequence of cause and effect, and calls for more technical scientific knowledge to enable us to clean up the pollution, recycle our wastes, and protect the beauties of the landscape. The anarchistic mood stresses the role of individual decision, of deed and misdeed, of freedom and autonomy both to act and to react to man's depredations (p. 203).

McEvoy (1972) describes a similar polarity, which he labels "transformational-preservationist." The transformational orientation includes "not only the agrarian pastoralism which motivated the Puritan settlers and their westward-migrating descendants, but also the view of the natural environment which embraces the value of maximum economic return from the exploitation of natural resources" (p. 215). Those who held the preservationist view had the goal of "preserving, in their natural states, tracts of wilderness for the spiritual, esthetic, tradition-evoking and scientific values . . . that were inherent in undisturbed nature" (p. 216).

Santmire (1970), a theologian, defines this dimension as "the cult of compulsive manipulation vs. the cult of adoration." He writes that the "cult of compulsive manipulation" comes about in a society where the ego suppresses passion (the id) and moral fervor (the superego). Referring to our current ecological crisis, he writes that "It can be no surprise, then, that we who habitually manipulate our world and our inmost selves without much reflection, continue to deplete and deface the resources and the beauty of our natural environment much as our nineteenth century forebears did" (p. 47). Santmire views the "cult of adoration" as being mainly an escapist tendency which quickly leads to social irresponsibility: "Still, there

can be little doubt that the cult of the simple rustic life does reinforce a commitment to the status quo, especially in the ranks of small town, suburban, and the affluent urban citizenry" (p. 43). He continues in this vein, pointing out that Americans hold both values simultaneously because both are in essence a response to anxiety. In one case—the cult of adoration—the response is to turn away from social problems and escape to nature; in the other case—the cult of compulsive manipulation—the response is to ruthlessly exploit nature to obtain wealth and hence security. Leo Marx (1964) reveals the same contradiction in his discussion of the role played by the pastoral ideal in American literature. "In this sentimental guise, the pastoral ideal remained of service long after the machine's appearance on the landscape. It enabled the nation to continue defining its purpose as the pursuit of rural happiness while devoting itself to productivity, wealth, and power" (p. 226). Perhaps Merton (1970) describes this contradiction best when he states that: "We all proclaim our love and respect for wild nature, and in the same breath we confess our firm attachment to values that inexorably demand the destruction of the last remnant of wilderness" (p. 38).

Roderick Nash (1967) has written one of the most comprehensive histories of American attitudes toward nature. Although it would be impossible to review all of his

thoughts here, a brief review of his work reveals that the better part is concerned with an historical examination of the exploitative-preservationist dimension described above. Nash discusses variants from the main exploitationist-preservationist dimension; however, most of these variants are closely related to it. One variant was an enthusiasm for nature based on "Romanticism, deism, and the sense of the sublime" (p. 51) which developed among sophisticated urbanites in the early eighteenth-century. This enthusiasm was seldom pure; "to some extent the Romantic enthusiasm was a cover over contrary attitudes" (p. 53). Enthusiasm for nature also developed after the Revolutionary War. Since wild nature appeared to be one thing which had no counterpart in the Old World, it could act as a source of national pride. Nash states that "pride continued to stem from the conquest of wild country" (p. 67). A cultist enthusiasm to get away to nature which swept the country in the early twentieth century is also discussed (p. 141; see also Schmitt [1969]).

Kluckhohn's typology of man-nature values includes three orientations; "man-over nature," "man-with nature," and "man-under nature." The first two value orientations are closely related to the "exploitationist" and "preservationist" types discussed above. The third orientation, "man-under nature," is most commonly found in certain

societies which hold highly fatalistic views concerning their relationship to nature. Although this orientation is not mentioned explicitly in most discussions of American values, it may be characteristic of some Americans. Nash (1967) feels that fear of nature and the precariousness of life in the early colonies led to Americans' negative exploitative attitudes toward nature. In one recent study, Saarinen (1967) found that "man-under nature" values were commonly held by midwestern farmers. Studies of responses to flooding (Kates, 1962) show that fatalistic responses to the possibility of future floods are not uncommon. Thus, although the "man-under nature" value does not appear to be as predominant as the "over" or the "with" nature values, it would appear to be present, to an extent, among American values toward nature.

Most writers agree that a key element in any solution to the ecological crisis will be the attitudes held by the general public toward nature. In one recent general discussion of the environment (Sprout, H., and Sprout, M., 1971), the authors state: "Public sentiment is important for still broader reasons. Strong environmental regulations are unlikely to be enacted—or if enacted, rigorously enforced—without a broad base of public support, promoted as well as expressed by civic leaders and organizations" (p. 16). Other writers (Trop & Roos, 1971) point out that

the role of public opinion in actual decision making processes may be somewhat more complex than the simple model outlined above. In any case, most writers believe that any long range solution to the over-all environmental crisis will involve profound changes in individual lifestyles and values (Dubos, 1972). This line of reasoning ultimately leads to the notion that rather profound shifts in the public's attitudes toward nature, as well as shifts in their definition of what constitutes "quality of life" will have to occur sometime in the future.

It is surprising that given the long and complex history of our values toward nature, and given the importance of these values in today's world, little or no empirical research has been done in this area. My own review of the literature reveals only a few studies, which I will discuss below. Another author (McEvoy, 1972) states that a brief study done by the Gallup Organization in 1969 is "the first, and as far as I know, the only national survey thus far to assess public concern for a comprehensive set of environmental problems" (p. 224). I have found two previous attempts to measure man-nature values, both of which were methodologically weak. Florence Kluckhohn (1959) studied the problem of "man's relationship to nature." In this case, she conceived (on an a priori basis) of the three possible solutions to this problem as:

1. Man subjugated to (under) nature
2. Man with nature
3. Man over nature.

Kluckhohn tested a sample consisting of Navahos, Zunis, Spanish Americans, Texans, and Mormons. Each subject's man-nature score was based on his response to five questions concerning nature. Since no testing of these five questions to check for their internal consistency, reliability or validity was done, this device cannot be considered adequate for research purposes.

Saarinen (1966) adopted Kluckhohn's typology in his study of farmers' perception of drought risk. He assessed man-nature values by using a thematic device consisting of TAT cards and original cards of farming scenes. The themes generated by only one picture are discussed and evaluated. Although the method showed promise, the instrument did not provide enough of a range of responses to be adequate (most of the farmers scored man-under nature on a picture which was highly suggestive of just that: a farmer looking forlornly at a drought-ruined field). Thus, although Saarinen's method is interesting, his instrument suffered from a lack of adequate pre-testing and an insufficient number of pictures.

There are many aspects of the man-nature relationship that could be studied, and many levels on which these

aspects operate. As one example, Yi-Fu Tuan (1967) lists six approaches to the study of man's attitudes toward nature: "1. An individual's attitudes toward a particular aspect of the environment. 2. An individual's attitudes toward a region. 3. An individual's conception of the man-nature synergism. 4. The attitude of a people toward environment. 5. Native cosmographies. 6. Focusing attention on landscapes that have acquired special symbolic significance" (p. 5). This work is limited to Tuan's category three, an individual's conception of the man-nature synergism. It is the viewpoint of this author that it is this aspect of man-nature attitudes which is most central to our current ecological problems. The other approaches are certainly interesting and merit further study elsewhere. In general, they would include work relevant to landscape preferences (categories 1 and 6), religious beliefs (categories 5 and 6), mental mapping (category 2), and cultural values (category 4).

There are many ways in which the conceptions of the synergism can be structured. Each structure will reflect the culture of which it is a part. As a starting point in this study, I will employ the man over-with-under nature typology of conceptions of the synergy (also employed by Kluckhohn and Strodtbeck, 1961; Kluckhohn, 1959; Saarinen, 1966). This typology, concerned mainly with perception of

locus of control vis-a-vis nature, is undoubtedly a very "Western" way of structuring the problem. It must be emphasized, however, that this typology is only being used as a first approximation of how the conceptions may be organized. It will act as an aid in the selection of both test material and criterion measures during the early stages. As this study proceeds, data analysis will proceed in ways which permit other structures to emerge; thus, the man over-with-under typology has been chosen mainly as a heuristic aid.

The man over-with-under nature typology was chosen for three reasons:

1. It covers a wide range of possible values and is unlikely to exclude any of a basic sort.
2. It is clearly related to the exploitationist-preservationist dichotomy described at the start of this work.
3. Most of the previous empirical research in this area has used this typology as described earlier. Although this work is generally weak, comparisons with it may still be useful.

If the man over-with-under nature typology is to be used, it is imperative that the meaning of each value is clear. A number of guidelines are available, including Kluckhohn (1959, p. 347) who gives somewhat anecdotal

descriptions of each of them. She illustrates the man-under nature value by describing the Spanish-American culture of the Southwest.

To the typical Spanish-American sheepraiser in that region there is little or nothing which can be done if a storm comes to damage his range lands or destroy his flocks. He simply accepts the inevitable as the inevitable. His attitude toward illness and death is the same fatalistic attitude. "If it is the Lord's will that I die, I shall die" is the way he expresses it. Many a Spanish-American has been known to refuse the help of any doctor because of this attitude.

It is clear that Kluckhohn considers fatalism to be the major element of the man-under-nature value.

The man-with-nature value involves the belief that "all the natural forces and man himself constitute one harmonious whole. One is but an extension of the other and both are needed to make the whole" (p. 347). Kluckhohn characterizes the China of past centuries as holding the man-with-nature value as dominant.

The man-over-nature value involves the belief that "natural forces are something to be overcome and put to the use of human beings. . . . In general, this means that we have an orientation to life that is one of overcoming obstacles or even the people who stress the harmonious oneness of man and nature" (p. 347). Americans are chosen to illustrate this value; however, as the Saarinen (1966)

study suggested, midwestern farmers were predominantly man-under-nature types. Thus the necessity for clarity in this field, since generalizations probably will not hold true.

In a later publication, Kluckhohn (1961) has written a questionnaire designed to measure an individual's man-nature values. These questions, reproduced here, further help to clarify the definitions of the three attitudes.

Question MN1, #4 on the entire test (Kluckhohn, 1961:p. 81). "One time a man had a lot of livestock. Most of them died off in different ways. People talked about this and said different things.

- A. (under) Some people said that you just can't blame a man when things like this happen. There are so many things that can happen, and a man can do almost nothing to prevent such losses when they come. We all have to learn to accept the good with the bad.
- B. (over) Some people said that it was probably the man's own fault that he lost so many. He probably didn't use his head to prevent the losses. They said that it is usually the case that men who keep up on new ways of doing things, and really set themselves to it, always find a way to keep out of such trouble.
- C. (with) Some people said that it was probably because the man had not lived his life right, had not done things in the right way to keep harmony between himself and the forces of nature (i.e., the ways of nature, such as the rains, winds, snow, etc.)."

This question is probably only valid for those who have had experience with farming. Question MN3 is similar to this question except that it is concerned with crops instead of livestock. It will not be reproduced here. Every question is followed by three response requests:

1. Which do you most agree with?
2. Which do you agree most with of the other two?
3. How do you think most others in your group would answer the first question?

Question MN2 #6 on entire test (Kluckhohn, 1961: p. 83). "There are many different ways of thinking about how God (the gods) is (are) related to man and to weather and to all other natural conditions which make the animals and crops live or die. Here are three possible ways.

- A. (under) Just how God (the gods) will use his (their) power over all the conditions which affect the growth of crops and animals cannot be known to man. But it is useless to think that they can change conditions very much for very long. The best way is to take conditions as they come and do as well as one can.
- B. (over) God (the gods) does (do) not directly use his (their) power to control all the conditions which affect the growth of crops or animals. It is up to the people themselves to figure out the ways in which conditions change and to try to find ways of controlling them.
- C. (with) God (the gods) all work together all of the time; whether the conditions which make the crops and animals grow are good or bad depends on whether people themselves do all the proper things to keep

themselves in harmony with their God (gods) and with the forces of nature."

Question MN4 is expressly concerned with who controls the weather and other natural forces. It is somewhat similar to those already mentioned. It will not be reproduced here as it does not yield any new information. In this case, as would be expected, a degree of consistency with answers on MN2 is found.

Question MN5 #19 of the entire test (Kluckhohn, 1961:p. 89). "Three men were talking about whether people themselves can do anything to make the lives of men and women longer. Here is what each said:

- A. (under) The second one said: "I really do not believe that there is much human beings can do to make the lives of men and women longer. It is my belief that every person has a set time to live, and when that time comes, it just comes."
- B. (over) One said: "It is already true that people like doctors and others are finding the way to add many years to the lives of most men by discovering (finding) new medicines, by studying foods, and doing other such things as vaccinations. If people will pay attention to all these new things they will almost always live longer."
- C. (with) The third one said: "I believe that there is a plan to life which works to keep all living things moving together, and if a man will learn to live his whole life in accord with that plan, he will live longer than other men."

This question indicates that Kluckhohn considers control of

"internal" as well as "external" nature relevant to the man-nature value system of an individual. This fact influenced this author to include material relevant to "internal" nature in this study.

Saarinen (1966) has adopted Kluckhohn's categories and thus his formal definitions of the values do not contribute substantially to our understanding. However, he has given interesting examples of the types of themes that he has classified in each category. "Where the story suggested the attitude that man was in control, that he could overcome or change the situation, and no mention was made of the role of nature, it was classified as man-over-nature" (p. 113). Saarinen then gives the following examples of the man-over-nature themes:

1. . . . that man is probably inspecting his ground to see what he should do to it. Probably ended up tilling it to stop the dust from blowing.
2. I see a real problem that should be, could be easily remedied with strip cropping or stubble mulch. (Control, as opposed to the nature of the method, which is natural, is considered paramount.)
3. He's thinking of some way he's going to control it.

Saarinen continues that "Man in harmony with nature was scored in those cases in which there was some explicit mention of the need to adjust to nature or of the importance

of the role of nature. Usually this involved some combination of the need to work but along with this an awareness that the work might be in vain if nature did not do her part." The examples given are:

1. . . . Lot of this could be prevented, can be prevented. Not all of it. It'll take different farming practices and nature.
2. . . . They decided to put it back to grass so it wouldn't blow.
3. You have to try to keep this from blowing, even if you're sure you can't when you begin. . . . Nature will take care of it if he gives it a little help.

The man-under-nature category is evidenced in "cases in which the solution depended on nature, where man was the helpless victim of nature, or where there was no suggestion that man could do anything about the drought conditions depicted."

1. Haven't got very much to look ahead for, very black. They never will have anything unless it gets better or they move away.
2. . . . This old farmer is pretty disgusted and he's wondering if it would ever rain or things would get better.
3. . . . Well, there's been a big wind. . . . He went out to his wheatfield to see if there'd be any chance of wheat left. 'Bout the most helpless feeling there is in the world.

I will now give the definitions of these three values as I have interpreted them.

1. Man-Over-Nature: The man over nature orientation is held by individuals who have almost complete confidence in the ability of themselves and mankind to overcome any of nature's hazards; to overcome any natural weaknesses in themselves, and to exploit any of nature's resources. They view nature as something that exists primarily for man's benefit and, hence, as something to be exploited. They feel that man's control over nature is virtually total.

2. Man-With-Nature: The man with nature orientation is held by individuals who feel that man must cooperate with the forces of nature in a harmonious fashion. They may base this belief on ecological grounds, fearing that we will destroy nature (including ourselves) if we don't take its needs into account; or, on philosophical or religious grounds, feeling that a life in harmony with nature is more spiritually satisfying than any other. They view their natural limitations as facts that can be lived with. They feel that control is reciprocal between man and nature.

3. Man-Under-Nature: The man-under-nature orientation is held by individuals who feel that man is dominated by the forces of nature. They fear natural hazards and obstacles. They feel that nature's resources are often

inadequate to meet even our minimal needs. They feel that the forces of nature control man.

Purpose and Method

Before further progress can be made in this field, an adequate assessment device must be developed. Also, a broad survey of the role that these man-nature values play in our everyday lifestyles would be of value. The purpose of this dissertation will be to provide an adequate assessment device of man-nature values and to begin the exploration into their role in our lives.

An attitude survey designed to tap man-nature values will be developed in the initial stages of this project. The first step will be the writing of a large number of attitude statements, each representing a different value (e.g., man over nature) on a variety of topics such as air and water pollution, automobile use, wildlife protection, weather, and technology. This initial pool of items will then be put through a prejudging designed to eliminate ambiguous or irrelevant items. Both of these stages are discussed in Chapter II. The third step in developing the attitude survey will be a pilot testing on a large and varied sample of subjects. After a factor analysis of these results, those items not significantly related to any other

items (in terms of factor loadings) will be eliminated from the test. This aspect of the test development procedure is discussed in Chapter III. The final step in the test development procedure will be the administration of the final version of the attitude survey and a criterion battery to a varied sample of subjects. The criterion battery will assess such things as a person's demographic background, his involvement in ecological activities, his losses to natural hazards, and his vacation preferences. The factors generated in this final stage, as well as their relevance to the various criteria are discussed in Chapter IV. An overall discussion and analysis of the attitude-criteria relationships and a summary of the results found in this study will be found in Chapter V.¹

¹While the attitude survey was under development a parallel project involving the development of a thematic form of man-nature values test was also undertaken. This type of test is far more difficult to develop and analyze than the attitude survey form. As a result, at the time of the completion of the attitude survey, the thematic test was still in a relatively early stage of development. Since the reader who finds the attitude survey results of value is also likely to be interested in the thematic test results, despite their preliminary nature, I have included them in the form of appendices at the end of this dissertation (see Appendices VII-X).

CHAPTER II

WRITING AND PREJUDGING OF ATTITUDE STATEMENTS

The first stage of this research included the writing, editing, and prejudging of attitude statements relating to man-nature value orientations. A number of other attitude surveys were helpful; they included Winkel's (1969) Environmental Personality Inventory and McKechnie's (1970) Environment Response Inventory. These tests were used as guides to the tone and form of environmentally relevant items; however, none of the items contained in them was used directly. Thus, in the editing, prejudging, and pilot testing stages only original items were used. The relationship of the scales developed here to those mentioned above could be measured in later research, if desired, by employing those inventories as separate entities.

Initially, a list was made up of all the topics on which items could be written. This first list included typical "ecological" topics, such as air pollution, water pollution, pesticide use, automobile use, industrialization, etc. Also included were such topics as weather, storms,

floods, farming, and camping, which—although not directly linked to ecological issues—were related to man-nature interactions in general. This list included most of those topics which are generally related to the man-nature values area; however, these topics related mainly to external nature, or nature "out there." As was pointed out in Chapter I, Kluckhohn (1961) also considers attitudes concerning "internal" nature (i.e., control of weight, illness, length of life, etc.) to be part of an individual's over-all man-nature value system. Thus, additional topics were added to cover these "internal" nature areas. These included such things as dieting, health, length of life, and so on. (See Table 1 for a complete list of topics.) In general, an attempt was made to make the statements clearly relevant to the average urban and suburban dweller. Highly abstract or esoteric statements concerning complex ecological issues were avoided.

Items were initially written on index cards. In general from three to five statements were written in each area. This list of 267 items was then edited for ease of reading, clarity, relevance, and elimination of ambiguity. Each statement was assigned a number from 1 to 267 at random, and the list was typed up in this order for prejudging. (See Appendix I.)

Nine judges were used to assess the content validity of the item pool. Each was given a staggered starting point as follows: The first judge began with statement #1; the second with #30; the third with #60, and so on to the ninth with #240. Thus, each statement was judged in a different position relative to the start of the judging. This procedure was intended to distribute "start-up" and "fatigue" effects evenly across the list of items. The judges were given a direction sheet which explained the purpose of the judging task, and were also given the definitions of the man-nature value orientations. (See Appendix I.)

The judges were chosen on the basis of both general intelligence and exposure to the literature on man-nature values. They included a faculty member of the Environmental Psychology department of C.U.N.Y., Dr. Dale Jorgenson; four graduate students in that department, Emilee O'Mara, Sheree West, Natalia Krawetz, and Arlene Gehring; a faculty member of the School of Human Environment at Ramapo College (field of study, environmental values), Dr. Richard Bond; and three seniors at Ramapo College who had taken extensive environmental coursework, June Shapiro, Robert Beland, and Deane Warde. Because of the personal involvement of each of the judges in environmental issues, it is quite possible that many of the judges had preconceived definitions of each of the three orientations, and thus, an item might have to fit

a number of somewhat divergent definitions in order to be judged acceptable.

Each judge was given a four page answer sheet on which to record his response to each statement. (See Appendix I.) Items were rated as being over, with, or under nature and also for extremity (extreme, moderate, and weak). A space for any comments was also provided next to each item. Although no space was provided for indicating the feeling that an item had nothing to do with man-nature values, some of the judges did indicate this feeling by non-response, by comments, or both. Extremity ratings were taken in order to measure whether, on the average, the items retained were of equal extremity for each value orientation.

The results of the prejudging were recorded on a worksheet and items were discarded on the basis of the consistency of the judges' ratings. Any item on which fewer than seven of the nine judges agreed as to appropriate value orientation was eliminated. Fifty-two items were eliminated on this basis. The remaining items illustrated eighteen major topics. This group of items was then further reduced on the following basis:

1. Items were eliminated which, in this author's opinion, were essentially rewordings of other items.

2. Items which received negative comments from four or more judges were eliminated.

3. An attempt was made to obtain an approximately equal number of over, with, and under statements in each topic area. The results of this last operation are shown in Table 1. Although not perfectly attained, a general balance within the topic areas was achieved.

As Table 1 indicates, the total number of over, with, and under statements is nearly identical (60, 62, 60), with a total of 182 items retained. A total of 33 items was eliminated, due to this balancing procedure.

TABLE 1
NUMBER AND TYPE OF ITEMS IN EACH CATEGORY AREA

Topic Number	Topic	Over	With	Under	Total
1	Weather	9	8	11	28
2	Health	5	4	6	15
3	Camping	3	4	4	11
4	Animals	3	4	1	8
5	Automobile	3	3	1	7
6	Ocean	4	4	3	11
7	Water Sports	4	5	3	12
8	Floods	4	4	3	11
9	Jobs	4	4	3	11
10	Outdoor Sports*				
11	Pests	3	7	7	17
12	Vices	2	3	3	8
13	Mind	3	2	4	9
14	Diet	6	4	6	16
15	God*				
16	Airplanes	1	0	1	2
17	Clothing	3	3	1	7
18	Gardens	3	3	3	9
Total Items		60	62	60	182

*Deleted for total lack of items in two categories.

The extremity ratings were also recorded and averaged as shown below. (See Table 2.) Ratings of extreme each got three points; ratings of moderate, two points; and weak ratings one point. The average extremity rating for each items was thus: $(\# \text{ extreme ratings} \times 3) + (\# \text{ moderate ratings} \times 2) + (\# \text{ weak ratings} \times 1)$ divided by $(\# \text{ of judgments})$.

The means of the three groups were averaged and compared with each other using a t test. The results of this comparison showed that no significant differences existed between any of the means ($P > .01$).

On the basis of these figures, it can be safely concluded that the prejudging yielded items in a balanced way. On the basis of categories, extremity, and values, the initial pretest produced a balanced instrument.

TABLE 2
EXTREMITY RATINGS DISTRIBUTION

Scale Value	# Over Items	# With Items	# Under Items
3.0 = extreme	3	1	3
2.9	0	0	4
2.8	3	2	1
2.7	5	4	9
2.6	4	3	6
2.5	0	0	0
2.4	5	6	6
2.3	9	2	7
2.2	9	17	7
2.1	4	9	4
2.0 = moderate	5	8	4
1.9	6	5	2
1.8	2	4	1
1.7	2	2	1
1.6	2	0	2
1.5	0	0	0
1.4	0	1	0
1.3	1	0	1
1.2	0	0	0
1.1	0	0	0
1.0 = weak	0	0	0
Total n	60	62	60
Mean	2.09	2.26	2.14

The figures shown in the table above are the number of items of each type having the given average extremity rating. Thus 3 over nature items received 3.0 ratings from every judge, whereas 5 over nature items received extremity ratings which averaged 2.7.

CHAPTER III

ATTITUDE SURVEY PILOT TESTING

As outlined in Chapter II, the prejudging of the original pool of items led to a reduced item pool of one hundred eighty-two items. In order to determine the relationships among items, the reduced item pool was pilot tested on a large sample of subjects. In this chapter, that procedure as well as the data analysis that followed it will be described.

The sample of subjects used in this stage of the research was drawn from colleges in the New York City metropolitan area. All of the tests were administered between May 15 and July 26, 1972. (See Appendix II for a copy of that test.) With the exception of the first forty subjects, who were tested at the end of the spring semester, all of the subjects were registered in summer session. The respondents were tested in groups. Sections were obtained for testing through personal contacts and through requests mailed to local colleges. An attempt was made to include a wide range of individuals in the sample by testing at suburban and urban schools, by testing day and evening

sessions, by using summer sessions, and by including undergraduates and graduates. The sections tested are listed in Table 3. Of these sections, only #1 was a spring semester course. All others were summer session. Numbers 5, 12, 13, 14, and 15 were evening sessions. Numbers 13 and 14 were graduate sections. Numbers 6, 7, 8, and 12 included large numbers of minority group members (a piece of information I did not "officially" record intentionally). Numbers 1-16 and 15 came from suburban, small town colleges; numbers 7, 8, 9, 10, 11, 13, and 14 from urban, borough colleges; and number 12 from an urban college. Thus, although this sample was by no means a national sample, or even a random sample of the New York metropolitan area, it did potentially include people from significantly different backgrounds. Subjects' homes ranged from small New Jersey towns to the New York ghettos. Subjects' incomes also varied. Out of the 305 subjects tested, 284 provided usable data. The composition of the sample is given in Tables 4-10.

TABLE 3
SECTIONS USED IN ATTITUDE SURVEY PILOT TEST

College	Course	Teacher
1. Ramapo College	Environmental Psychology	Joel Kameron
2. Ramapo College	Sociology	Mitchell Kahn
3. Ramapo College	Abnormal Psychology	Henry Seligson
4. Ramapo College	Industrial Psychology	Henry Seligson
5. Ramapo College	Developmental Psychology	Susan Gurock
6. Ramapo College	Educational Sociology	Michael Holden
7. York College	Introductory Psychology	Don Wynne
8. York College	Introductory Psychology	Don Wynne
9. Queens College	Physical Anthropology	Elizabeth Cole
10. Queens College	Primitive Religion	Elizabeth Cole
11. Queens College	Introductory Anthropology	Fred Roberts
12. Hunter College	Introductory Psychology	Ira Goodman
13. Jersey City St. Coll.	College Counseling (Grad.)	David Halloran
14. Jersey City St. Coll.	Adv. College Counseling (Grad.)	David Halloran
15. Bergen Cty., Comm. Coll.	General Psychology	Barbara Hartman

TABLE 4
SEX OF SUBJECTS ATTITUDE SURVEY PILOT TEST

Sex of Subjects	No. of Subjects	%
Males	138	48.6
Females	142	50.0
No Response	4	1.4
	284	100.0*

*Rounded

TABLE 5
AGE OF SUBJECTS ATTITUDE SURVEY PILOT TEST

Age of Subjects	No. of Subjects	%
No Response	4	1.4
17-20	126	44.3
21-25	81	28.5
25-30	39	13.7
31-35	7	2.5
Over 35	27	9.5
	284	100.0*

*Rounded

TABLE 6
OCCUPATION OF SUBJECTS ATTITUDE SURVEY PILOT TEST

Occupation of Subjects	No. of Subjects	%
No Response	8	2.8
Professional	49	17.2
Semi-professional	23	8.1
Farmer	0	0.0
Proprietor-Manager	3	1.1
Clerical-Sales	21	7.4
Craftsman-Foreman	5	1.8
Operative	1	.4
Domestic	0	0.0
Laborer	1	.4
Housewife	9	3.2
Student (part-time job)	164	57.7
	284	100.0*

*Rounded

TABLE 7
FAMILY INCOME
ATTITUDE SURVEY PILOT TEST

Family Income	No. of Subjects	%
\$15,000 and up	48	16.9
\$10,000-\$14,999	60	21.1
\$ 5,000-\$ 9,999	65	22.9
Under \$5,000	9	3.2
Student (part-time income listed)	38	13.4
	284	100.0*

*Rounded

TABLE 8
EDUCATION
ATTITUDE SURVEY PILOT TEST

Education	No. of Subjects	%
No Response	34	12.0
High School	28	9.9
Freshman College	69	24.2
Sophomore College	51	18.0
Junior College	36	12.7
Senior College	20	7.0
Graduate School	46	16.2
	284	100.0*

*Rounded

TABLE 9
MAJOR IN COLLEGE
ATTITUDE SURVEY PILOT TEST

Major	No. of Subjects	%
No Response	25	8.8
English Lit.	13	4.6
Language	4	1.4
Psychology	48	16.9
Sociology	19	6.7
Anthropology	2	0.7
Life Science	20	7.0
Physical Science	15	5.3
Economics-Business	18	6.3
Political Science	3	1.1
History	11	3.9
Nursing	5	1.8
Education	56	19.7
Other and Undecided	45	15.8
	284	100.0*

*Rounded

TABLE 10
HOMETOWN SIZE
ATTITUDE SURVEY PILOT TEST

Size of Hometown	No. of Subjects	%
No Response	44	15.5
1,000,000 and over	114	40.1
250,000-999,999	16	5.6
50,000-249,999	83	29.2
25,000-49,999	0	0.0
Under 2,500	2	0.7
	284	100.0*

*Rounded

Going over the nature of this sample in more detail: Men and women each represent about 50 per cent of the sample. The sample is skewed toward the younger end of the age dimension; however, more subjects are over 21 (154, or 53.4 per cent) than under (126, or 44.4 per cent). Senior citizens are not included.

The occupational data are not entirely valid, since most of the subjects were still students and listed their part-time jobs. (In the final biographical inventory this problem was ameliorated by asking students to give their

future occupational plans.) The sample did include significant numbers of professionals (17.2 per cent), semi-professionals (8.1 per cent), and clerical-sales people (7.4 per cent). The data on the major is perhaps more revealing. Although the social sciences are the most heavily represented, other fields in the humanities, sciences, and business are strongly represented. Thus, in terms of "future probable occupations," a fairly good diversity is evident in the subject pool.

The family incomes of the subjects show a typical pattern of variation. Most of the subjects came from middle income homes, with some from higher income families, and some from lower. Once again, many students listed their part-time incomes instead of the family incomes. (In the final sample, family income was requested.)

The educational level of the subjects was fairly evenly distributed from high school through graduate level. The hometown data indicate that about 50 per cent of the subjects come from New York City and the remainder from smaller outlying communities.

In conclusion, the sample did contain people of fairly diverse backgrounds. Insufficient variation in age, education, and size of current place of residence contributed the most serious biases to the pretest. The typical subject was a twenty year old college student from

the New York metropolitan area.

Having administered the survey to a fairly diverse sample, a decision was required regarding the method to be employed in determining the underlying "dimensions" in the data. Essentially two major approaches are possible, the rational and the empirical. In the rational approach the experimenter determines a priori that each specific item belongs on a certain scale. He then calculates scale scores based on a subject's responses to all of the items on a given scale. The difficulty here is in determining in advance exactly what the psychodynamic implications of a given response to an item are. The other major approach, the empirical method, has been more widely employed by psychologists. Within it there are two varieties of data analysis, the criterion group method and the factor analytic method. The strengths and weaknesses of these two approaches have been discussed by McKechnie (1970). In the criterion group method, groups which are expected to represent an extreme position on a dimension as well as control groups are tested. Only those items which clearly differentiate between the extreme group and the control group are retained. The advantage of this approach is that only items which show a clear relationship to an external criterion are retained. The major disadvantage is that it requires the experimenter to conceive of the structure of the dimensions

which he is investigating in advance of data gathering. Although this may be feasible in areas which have already been intensively studied, it is a limiting factor in exploratory studies. Other disadvantages are the possible intercorrelation of scales and the possibility that a scale is actually relevant to some other factor which distinguishes the criterion group from the control group (i.e., general intelligence may also distinguish high achievers from low achievers). The second major empirical approach is the factor analytic method. In this approach no a priori assumptions are made. Instead an analysis is performed which yields a set of factors which are based on actual item covariance. Thus each factor represents a group of items which have shown a common pattern of variation. In general the scales are independent from each other (orthogonal). This approach is especially valid for exploratory research (Rummel, 1970) since no a priori assumptions need be made concerning factor structure. The potential disadvantage is that since the method is entirely based on data internal to the test, the relevance of factors to external criteria may be limited. In this study a factor analytic approach was employed due to the exploratory nature of the study.

The data were factor analyzed using a principal axis solution rotated to a varimax criteria (Rummel, 1970).

This solution located independent dimensions in the data and then shifts or rotates the dimensions until they account for the maximum amount of variance. In this case eight factors were defined and rotated. Five of those factors were interpretable. The eight factors which were rotated accounted for 25.6 per cent of the variance in the data. Among the interpretable factors the first factor accounted for 8.9 per cent, the second 4.6 per cent, the third 3.2 per cent, the fourth 3.2 per cent, and the sixth 1.7 per cent.

Items were chosen for retention in the final version of the survey on the basis of two criteria:

1. The highest loading items on a scale were retained.
2. When very similar items both appeared on a single scale, the one with the lower loading was eliminated.

Of the items retained, only 22 loaded in the .20 to .30 range, whereas 85 loaded in the .30 to .70 range. Because the factor solution used was orthogonal—that is, independent factors were obtained—only eighteen of the items retained loaded above .20 on a second factor. The items retained are grouped in the following tables (11-16). The actual factor loadings of the items appear in Appendix III.

Factor #1 (see Table 11) includes items related to the man-under nature value. People who score highly on this factor tend to disagree with man-under nature statements.

TABLE 11
FACTOR #1
ATTITUDE SURVEY PILOT TEST

Item No.	+ Loading Items
122	Airplanes will never be a really reliable form of transportation; the weather is just too powerful for them to take.
60	Control of water pollution is practically impossible because we can't accurately predict rainfall and river heights.
121	The oceans will never be a major food source because we can't really control the ocean life itself.
100	The forces that determine the weather are beyond man's power to comprehend.
90	The thought of exploring old homes is really frightening because you could find mice there.
103	A garden is useless unless it provides something useful like vegetables and fruit.
18	You're just fated to be a certain weight.
149	Alcohol and other natural escape drugs are used by nature to subdue men.
25	Worthless animals that provide no furs or meat to men should be hunted whenever desired.

TABLE 11—Continued

Item No.	+ Loading Items
171	Whenever you take a plane, you seem to get delayed by bad weather, fog, or headwinds.
179	Pollution of rivers is the necessary side-effect of economic progress and hence should not be severely limited by legislation.
142	Whenever you play any outdoor activities, it always seems to rain.
145	There is little that we can do to control many of the rivers that flood their banks and damage nearby housing.
75	New species of animals should be domesticated so that they can serve man better.
65	We're all going to live just so long; there's little that we can do to increase our life-span.
106	Air pollution is mainly dependent on changes in the weather; thus, if the weather is right, it'll go down.
159	Planning a garden is virtually impossible; the flowers never grow like you expect them to.
151	The thought of flying on an airplane really frightens me.
146	If you dress in the most recent styles, you'll always look good physically.
129	It is frightening to go on almost any kind of boat.

Factor #2 (see Table 12) clearly involves naturalism versus artificiality. People who score high tend to agree with items (- loadings) which indicate a lack of desire to be close to nature and with items indicating a disdain for growing your own food. They also tend to indicate a liking for the use of drugs to cure natural problems. People who score high tend to disagree with items (+ loadings) which indicate a desire to be close to nature, to grow your own food, and to simply contemplate nature. It is interesting that food, gardens, and drugs, all oral issues, are involved in eleven of the twenty-four items. Although this factor includes entirely "with" nature items on the + loading side, and "over" items on the - loading side (with the single exception of #15 which is "under"), it is not a facsimile of Kluckhohn's "Over"- "With" dimension. Thus, it seems that although the general concept of Kluckhohn's typology is valid, people actually respond to nature in a somewhat more complex fashion. Essentially they differentiate between attitudes involved with everyday life and those which are more abstract or remote. This differentiation will be discussed fully in Chapter IV.

TABLE 12
 FACTOR #2
 ATTITUDE SURVEY PILOT STUDY

Item No.	+ Loading Items
9	It is just lovely being in a garden near the flowers.
181	Gardening and raising plants is great fun.
97	It would be enjoyable raising flowers as a profession.
115	It would be enjoyable being a nature teacher or naturalist.
114	Outdoor walks are a pleasure even when there are lots of bugs around.
94	National parks are most enjoyable when toured on foot rather than in a car.
73	The oceans should be protected from economic exploitation.
24	A strict upper limit should be placed on automobile horsepower.
116	You just can't replace the natural goodness in food with artificial coloring, flavoring, and vitamins.
49	The best hope for increasing your lifespan is to learn to live in a natural, less artificial way.
83	It's better not to eat too much artificial processed food; stick to the basics.
117	It is very enjoyable to go to an ocean or lake simply to enjoy its beauty without actually fishing or boating.

TABLE 12—Continued

Item No.	- Loading Items
176	A patio is more enjoyable than a garden.
50	Gardens are a pain in the neck; they never grow well.
4	No limit should be placed on automobile horsepower.
162	It is more enjoyable to tour a natural area in an automobile than on foot.
15	It is the most fun to camp when you use all the most modern equipment.
159	Planning a garden is virtually impossible; the flowers never grow like you expect them to.
146	If you dress in the most recent styles, you'll always look good physically.
15	Some people are just born fat and there is little that they can do about it.
172	Swimming at a pool is great fun because you can drink and socialize more easily than you can at the ocean.
178	On hot days the best way to keep cool is to spend as much time as possible by the air conditioner.
127	Diet pills are one of the best ways to lose weight.
160	Nervousness can be overcome easily if the proper drugs are used.

Factor #3 (see Table 13) is clearly a technology-anti-technology factor. People who score high agree with items (- loading) which indicate that we should inconvenience ourselves in order to preserve the environment. They tend to disagree with items (+ loading) which indicate that we shouldn't inconvenience ourselves for the sake of the environment. In Kluckhohn's (1961) terms, it is an "over" versus "with" nature factor.

TABLE 13
FACTOR #3
ATTITUDE SURVEY PILOT TEST

Item No.	+ Loading Items
43	The ocean floor should be explored for valuable minerals.
79	Oil found beneath the ocean should be tapped for man's use.
135	Dams should be built wherever they will yield significant amounts of power or water.
26	We should develop modern snow removal equipment that will clear the highways promptly after any size storm.
102	Forests should be developed with roads and camping areas so that as many people as possible can enjoy them.
164	Adequate dikes and levees can and should be built wherever flood waters might cause damage to nearby housing.

TABLE 13—Continued

Item No.	+ Loading Items
36	Modern forms of therapy such as shock treatments, drug treatments, and behavior therapy hold great promise for mankind.
119	Scientists should build planes that hardly ever get delayed by bad weather.
147	Doctors should develop artificial organs that could replace any defective body organs.
40	Using the proper coolants, a car can take almost any heat.
75	New species of animals should be domesticated so that they can serve man better.
30	The water is enjoyable mainly because of the activities such as waterskiing and boating that it makes possible.
	- Loading Items
70	Instead of wasting your property on a patio, you should plant something green almost everywhere.
12	The drilling of undersea oil should be banned even if it eventually means a power shortage.
168	The millions of dollars spent on snowplows and snow removal are wasted; people could just stay put when it snows.
54	It is rewarding to camp with a minimum of equipment so that you can feel close to nature.
182	Automobiles are a threat to the environment, and thus a complete changeover to mass transit is essential.

TABLE 13—Continued

Item No.	- Loading Items
133	Women should wear only fake furs.
73	The oceans should be protected from economic exploitation.
99	Instead of building more hydroelectric dams, we should conserve existing supplies of electricity.
107	Sailing is more enjoyable than motorboating.
45	The best solution to the automobile exhaust problem would be to have people live within walking distance of work, shopping, and recreational facilities.
6	The oceans and lakes are better places to swim than swimming pools.
82	The ocean must not be fished too heavily or it will soon be depleted of edible fish.

Factor #4 (see Table 14) involves the fear of the outdoor life. People who score high tend to agree with items (- loading) indicating a fear of animals, bugs, bad weather, and wilderness. They tend to disagree with items (+ loading) indicating the opposite. This factor differs from the first in terms of range and comprehensiveness. Factor #1 represents an over-all fatalism; this factor relates more specifically to fear in rather common settings.

TABLE 14
 FACTOR #4
 ATTITUDE SURVEY PILOT TEST

Item No.	+ Loading Items
34	Insects don't really bother me because they all have their place in nature.
84	Ants on a picnic aren't so bad; they don't eat much.
120	Violent weather, such as wind and thunderstorms, is so beautiful to watch.
86	Many insects are so beautiful that they dispel any fear that you might have of them.
53	The birds tend to keep the insect population under control, so one should never use sprays.
48	Animals don't frighten me; most won't harm man unless provoked by him.
114	Outdoor walks are a pleasure even when there are lots of bugs around.
54	It is rewarding to camp with a minimum of equipment so that you can feel close to nature.
140	The best clothes are nice old comfortable ones; style is not as important as comfort.
6	The oceans and lakes are better places to swim than swimming pools.
107	Sailing is more enjoyable than motorboating.
115	It would be enjoyable being a nature teacher or naturalist.

TABLE 14—Continued

Item No.	- Loading Items
148	Thunder storms are so frightening.
95	Camping in the forest is frightening.
167	Screens usually keep out insects, but use sprays as well to be sure.
113	I prefer to see animals only in zoos because many of them are so dangerous.
13	It is the most fun to camp when you use all the modern equipment.
144	When the weather gets cold, I prefer to stay indoors in a nice warm place.
52	Cockroaches and other household pests are really frightening.
129	It is frightening to go on almost any kind of boat.
59	The only safe way to enter the forest is with a trained guide.
17	The water is very frightening to me.
44	Motorboating is more enjoyable than sailing.
20	Animals should be avoided because they injure many people.
51	When there are a lot of bugs in the air it's better to stay indoors than to risk getting bitten.

The sixth factor (see Table 15) is concerned with both the ability and need for science to control nature. (Factor #5 was not analyzed due to lack of clarity.) People who score high agree with statements (- loading) which indicate that science can't or shouldn't assume control of natural forces. They tend to disagree with statements (+ loading) which indicate that science can and should learn to control nature. A summary of the dimensions retained is given in Table 16.

TABLE 15
FACTOR #6
ATTITUDE SURVEY PILOT STUDY

Item No.	+ Loading Items
37	Using scientific methods, anyone can grow a well-planned garden.
28	It would be wonderful if scientists could control the weather.
93	Scientists will soon find a drug that will cure the common cold.
66	Hunting is one of the best ways to regulate the animal population.
67	People can now regulate their weight through the use of modern scientific principles.
173	Some people just seem to be naturally superior to others.
87	Using modern fishing equipment and techniques, you'll almost always make a good catch.

TABLE 15—Continued

Item No.	- Loading Items
2	Scientists should try to understand the weather, but not how to control it.
31	The common cold is with us to stay.
65	We're all going to live just so long; there's little that we can do to increase our life-span.
77	Every animal plays its part in preserving the balance of nature and thus should not be hunted by man.
76	It's useless to use insect sprays; if they want to they'll bite you anyway.
121	The oceans will never be a major food source because we can't really control the ocean life itself.
12	The drilling of underseas oil should be banned even if it eventually means a power shortage.

TABLE 16
SUMMARY OF FACTORS RETAINED
ATTITUDE SURVEY PILOT TEST

Factor	High Score	Low Score
Factor #1	Rejection of Man-Under-Nature	Acceptance of Man-Under-Nature
Factor #2	Acceptance of Artificiality	Acceptance of Naturalism
Factor #3	Conservationist	Exploitative
Factor #4	Fear of Outdoors	Love of Outdoors
Factor #6	Anti-Science	Pro-Science

CHAPTER IV

ATTITUDE SURVEY—FINAL STUDY

The pilot study of the 182 item set of statements yielded a reduced pool of 93 items. (See Chapter III.) These items were then combined in a random sort with 33 items of the Marlowe-Crowne social desirability scale to yield a final version of the attitude survey consisting of 126 items (see Appendix IV). This test was then administered to a sample of 522 college students along with a number of validation measures. These measures included a Gallup survey of environmentally relevant opinions (Gallup, 1969, 1971). This instrument was designed to determine a person's stand on a number of "gut" environmental issues, e.g., population control, preservation of national parks, willingness to pay taxes, etc. (See Appendix V.) Also included as a validation device was a biographical survey designed for this study (see Appendix VI). The biographical survey was designed to tap demographic information on each subject and to measure his involvement in outdoor life activities and environmentally sensitive groups. The survey also included measures of a person's exposure to natural hazards and of his vacation preferences.

Each element in the criterion battery was included with a specific end in mind. The demographic measures would reveal any relationship between such things as a subject's age, sex, home town or college major, and his environmental attitudes. Other studies (Gallup, 1969, 1971) have indicated that such differences are likely to exist. The outdoor life activities scales were included to determine whether involvement in such "supposedly" environmentally insensitive sports as hunting, motorboating, or snowmobiling is in fact related to "exploitationist" attitudes and conversely, whether involvement in such "supposedly" environmentally sensitive activities as backpacking and nature walking is related to "conservationist" attitudes. The validation measures also included an assessment of a subject's prior exposure to, and resulting losses from, natural hazards. This measure was employed in order to determine whether the degree of such exposure and loss was related to his environmental attitudes, especially those of a "man-under" nature type (Saarinen, 1966). The vacation preference section was based on Klausner's (1971) typology of vacations. Klausner gives three dimensions along which vacations can vary. The first is active-passive. "Active" vacations are supposed to test the ego and involve personal growth and enlightenment, whereas "passive" vacations involve mainly sedentary, leisurely activities

which do not challenge the ego. The second dimension is sociopetal-sociofugal. "Sociopetal" vacations are those in which new friendships are actively sought whereas in "sociofugal" vacations, new friendships are not sought; in fact, seclusion from other people is often the intent. The final dimension is closed-nomadic-open space. "Closed" space vacations are to forest glens and mountains and are said to involve introversion or a looking into one's self. "Open" space vacations are to the seashore or other open areas and are said to involve extroversion. A nomadic vacation is a wandering between both types of space. The vacation preference scales then would make possible a determination of whether variations on these three dimensions are related to environmental attitudes.

Sample Composition

In gathering the sample for this stage of the research, an attempt was made to include individuals from a variety of backgrounds, e.g., differing age groups, hometowns, occupations, college majors, etc. The basic rationale was to insure enough spread in both the attitude survey scores and the criterion scores of the subjects to allow test-criterion correlations to occur if indeed any existed. Lack of range in either instance could obscure

a correlation that was really there. The above goal was generally met. No effort was made to sample in a way that would permit generalizations to be made about subgroups in general, e.g., all engineers, all midwesterners, etc. This would require a sampling scheme beyond the scope of this study.

The sample was comprised of students from a variety of colleges. These are listed in Table 17.



TABLE 17
COLLEGE BACKGROUND OF SUBJECTS IN FINAL SURVEY

College	Subject	N
Pennsylvania State University, Pa.	Psychology	39
York University—Ontario	Psychology	9
Montclair State College, N.J.	Advanced Psychology	24
Montclair State College, N.J.	Adolescent Psychology	11
Montclair State College, N.J.	Sociology of Education (evening)	26
Montclair State College, N.J.	Environmental Psychology (evening)	36
Montclair State College, N.J.	Social Psychology	29
Montclair State College, N.J.	Social Psychology (evening)	13
Long Beach State, California	Psychology (evening)	30
Baruch College, N.Y.C.	Abnormal Psychology	23
Baruch College, N.Y.C.	Industrial Psychology	18
Queens College, N.Y.C.	Evolution	34
Queens College, N.Y.C.	Anthropology	52
Paterson State College, N.J.	Environmental Psychology (evening)	26
Springfield College, Massachusetts	Philosophy	29
Springfield College, Massachusetts	Environmental Studies	44
Smith College, Massachusetts	Social Psychology	25
Stevens Institute of Technology, N.J.*	Engineering	10
Rutgers University, New Jersey*	Agriculture and Environmental Studies	13
Ramapo College, New Jersey*	General	34
		525*

*Also took thematic tests, recruited individually.

*Loss of three due to keypunching errors, final N = 522.

The colleges included in the sample cover a geographic area from California to Massachusetts. Included were colleges located in urban, suburban, and small town locations. The classes are mainly in the social sciences but most were of an "introductory" nature and included students from a wide variety of majors. Adults were included in the sample by testing evening sessions. Subjects potentially holding a range of environmental attitudes were included by testing at a business school (Baruch), an engineering school (Stevens), a college of physical education (Springfield), as well as at general universities. The actual sample composition, broken down along a number of demographic variables, is given in Tables 18-23.

As can be seen from an examination of the tables, the sample included a wide variety of individuals. It was biased toward young, eastern, social science majors. Despite this, 94 subjects were over 25 years of age, and 291 were enrolled in non-social science fields and about 100 were raised in other parts of the country.

TABLE 18
SEX OF SUBJECTS IN FINAL SAMPLE

Sex	Number	%
Males	274	52.4
Females	245	46.9
No Response	3	0.6
		100.0*

*Rounded

TABLE 19
AGE OF SUBJECTS IN FINAL SAMPLE

Age	Number	%
Below 20	174	33.3
20-25	254	48.6
25-30	45	8.6
30-35	21	4.0
35-40	12	2.3
40-45	7	1.3
Over 45	9	1.7
	522	100.0*

*Rounded

TABLE 20
MAJOR IN COLLEGE OF SUBJECTS
IN FINAL SAMPLE

Major in College	Number	%
No Response	26	5.0
Literature	14	2.7
Language	6	1.1
Psychology/Sociology	198	37.9
Anthropology	3	0.6
Life Science	31	5.9
Physical Science	10	1.9
Economics/Business	43	8.2
Political Science	12	2.3
Nursing	8	1.5
History	10	1.9
Engineering	13	2.5
Education	48	9.2
Physical Education	38	7.3
Social Work	1	0.2
Environmental Studies	12	2.3
Physical Therapy	3	0.6
Pre-Professional	5	1.0
Art	7	1.3
Accounting	6	1.1
Agriculture	3	0.6
Meteorology	1	0.2
Other	24	4.5
	522	100.0*

*Rounded

TABLE 21
FUTURE OCCUPATIONAL PLANS OF
SUBJECT IN FINAL SAMPLE

Future Plans	Number	%
Unknown	106	20.3
Counseling	101	19.3
Physical Therapy	5	1.0
College Professor	2	0.4
Physical Education	22	4.2
Teacher	107	20.5
Journalism	6	1.1
Armed Forces	2	0.4
Law	19	3.6
Medicine (incl. nursing)	24	4.6
Nature Work—Guide	3	0.6
Police	3	0.6
Research	14	2.7
Marketing	6	1.1
Sales	7	1.3
Management	26	4.9
Psychology	28	5.4
Art	9	1.7
Technical	15	2.9
Advertising	2	0.4
Accounting	7	1.3
Pilot	1	0.2
Agriculture	4	0.8
Planner	3	0.6
	522	100.0*

*Rounded

TABLE 22
BIRTHPLACE OF SUBJECTS IN FINAL SAMPLE

Birthplace	Number	%
No Response	7	1.3
East—U.S.	422	81.0
Midwest—U.S.	17	3.3
West—U.S.	24	4.6
South—U.S.	8	1.5
Europe	19	3.6
Orient	11	2.1
Africa	2	0.4
South America	6	1.1
Canada	6	1.1
	522	100.0*

*Rounded

TABLE 23
SIZE OF BIRTHPLACE OF SUBJECTS IN FINAL SAMPLE

Size of Birthplace	Number	%
No Response	11	2.1
1 million and over	225	43.1
250,000-1 million	51	9.8
50,000-249,999	83	15.9
2,500-49,999	137	26.2
Under 2,500	15	2.9
	522	100.0*

*Rounded

One interesting means of assessing the representativeness of my sample is to compare its responses to the Gallup questions with the responses of Gallup's random national sample of 1,503 individuals. One of the most direct questions asked was Number 1, which measured concern about pollution. The results on this question are given in Table 24.

An inspection of Table 24 shows no gross differences between my sample and the national sample on this question. My data are closest to the Gallup data for college educated persons, as expected. The main shift seems to be a larger

proportion in "somewhat concerned" for my sample when compared with Gallup's college group.

A second question concerned the willingness to pay taxes to clean up the environment. The results are given in Table 25. On this question a definite shift is seen toward generosity on the part of my sample. This may be because my sample consisted mainly of college students, whereas Gallup's "College Educated" category is mainly college educated adults. Since adults are most likely to be actually paying large tax bills than students, the students' responses may be somewhat naïve.

A third question concerned the need to control the population. The results are given in Table 26. In this case, the proportion of people in my study feeling that population control is necessary is higher than in the general public or among Gallup's college educated. However, once again, those in Gallup's survey who are considered college educated are more likely to be adults, and hence either have or are planning to have children. There is a shift in my sample toward "Don't Know," which probably indicates some ambivalence in my sample on this issue.

TABLE 24
COMPARISON OF KAMERON SAMPLE WITH
GALLUP SAMPLE ON QUESTION #1

1. You may have heard or read claims that our natural surroundings are being spoiled by air pollution, water pollution, soil erosion, destruction of wildlife, and so forth. How concerned are you about this problem? Circle one:

deeply concerned

somewhat concerned

not very concerned

	<u>Gallup Data</u>				<u>Kameron Data</u>
	<u>January 1969</u>		<u>December 1971</u>		<u>Fall 1972</u>
	<u>Entire Sample</u>	<u>College Educated</u>	<u>Entire Sample</u>	<u>College Educated</u>	<u>N = 522</u>
Deeply concerned	51%	62%	53%	63%	59%
Somewhat concerned	35%	32%	34%	33%	39.5%
Not very concerned	12%	6%	11%	3%	1.5%
Don't know*	2%	0%	2%	1%	0%

*Not an option on my form.

TABLE 25
COMPARISON OF KAMERON SAMPLE WITH
GALLUP SAMPLE ON QUESTION #2

2. How much would you be willing to pay each year in additional taxes earmarked to improve our natural surroundings? Circle one:

a small amount
(such as \$10 or less)

a moderate amount
(such as \$50)

a large amount
(such as \$100 or more)

	<u>Gallup Data</u>				<u>Kameron Data</u>
	<u>January 1969</u>		<u>December 1971</u>		<u>Fall 1972</u>
	<u>Entire Sample</u>	<u>College Educated</u>	<u>Entire Sample</u>	<u>College Educated</u>	<u>N = 522</u>
Small amount	51%	45%	46%	32%	18.2%
Moderate amount	18%	30%	22%	32%	51%
Large amount	4%	12%	8%	20%	30.8%
None*	9%	5%	5%	4%	0%
Don't Know*	18%	8%	19%	12%	0%

*Not an option on my form.

TABLE 26
COMPARISON OF KAMERON SAMPLE WITH
GALLUP SAMPLE ON QUESTION #3

3. It has been said that it will, at some time, be necessary to limit the human population (number of people) if our present living standards are to be maintained. Do you think this will be necessary or not? Circle one:

	necessary	not necessary	don't know
	<u>Gallup Data</u>		<u>Kameron Data</u>
	<u>January 1969*</u>		<u>Fall 1972</u>
	<u>Entire Sample</u>	<u>College Educated</u>	<u>N = 522</u>
Necessary	44%	60%	64.7%
Not necessary	43%	34%	12.7%
Don't know	13%	6%	22.0%

*Not asked in 1971.

Finally, a question was asked concerning the subject's judgment of the most pressing environmental problem. The results are given in Table 27. On this question, the similarity between my sample and the Gallup sample is clear. Comparing my sample with the Gallup college educated group, in both cases air and water pollution rank 1 and 2 respectively. The relative proportions are about the same in each case. "Preservation of Open Green Spaces" ranks third in all cases and "Soil Erosion" ranks last in all cases. "Pesticides" and "Wildlife Preservation" draw slightly ahead of "Soil Erosion" in all cases. Spearman's rank correlation in this case is 0.97 ($P = .05$).

TABLE 27

COMPARISON OF KAMERON SAMPLE WITH
GALLUP SAMPLE ON QUESTION #5

5. In this country, which one of these do you think is the most pressing problem connected with our natural surroundings? Circle one:

air pollution water pollution soil erosion
wildlife preservation (birds and animals)
 preservation of open green spaces
 pesticides (chemicals used to kill insects)

	<u>Gallup Data</u>		<u>Kameron Data</u>
	<u>January 1969*</u>		<u>Fall 1972</u>
	Entire Sample	College Educated	N = 522
Air Pollution	36%	40%	54.4%
Water Pollution	32%	34%	25.8%
Pesticides	7%	5%	2.1%
Open Green Spaces	6%	8%	10.5%
Wildlife Preservation	5%	4%	4.4%
Soil Erosion	4%	3%	.75%
Don't Know	10%	6%	1.95%

*Not asked in 1971.

Results of Factor Analysis

The responses to the attitude survey were factor analyzed using the same technique as that used in the pilot study (orthogonal factors, varimax criterion). The factor analysis was done using only the 93 items related to nature. The 33 social desirability items were deleted and scored together later in order to preserve their integrity as a scale. The analysis yielded eight factors,¹ all of which were interpretable. The items loading most highly on each factor and their weights are listed in Tables 28-36.²

The people who score high on Factor #1 (see Table 28) are clearly conservationist minded. There seems to be an especially strong emphasis on wildlife preservation. At least six items indicate some change in behavior or lifestyle on behalf of the environment. It is interesting to note that the correlation of this factor with the social desirability scale is only .04, which is not significant. Thus, it appears that indicating conservationist beliefs

¹An eigenvalue cutoff value of 1.0 was employed. The eight factors together accounted for 25.7% of the total variance in the data. The breakdown was as follows: #1—10.4%, #2—4.5%, #3—2.9%, #4—2.4%, #5—1.6%, #6—1.4%, #7—1.3%, #8—1.2%.

²Because of the keypunching format used (strongly agree = 1 through strongly disagree = 6), subjects who have high scores on a factor are those who tended to agree with negatively loaded items and to disagree with positively loaded items.

was not related to the need to give socially desirable responses.

Factor #2 (see Table 29) appears to be a classic man-under-nature dimension. There appears to be a fear of animals and a belief in the power of the weather. It is interesting, however, that this fear tends to lead to a reaction involving hostility toward animals (items 119, 113, 91, and 109).

The third factor (see Table 30) is clearly related to the desire to be close to nature. Those who score high have little fear of insects, animals, or bad weather. They prefer to camp in natural ways. Those who score low fear insects, animals, bad weather, camping, and water. They prefer to camp using "modern equipment" and "trained guides."

The fourth factor (see Table 31) is similar to number 1 in many ways. Number 1 indicated concern or lack of concern for conservation. This factor seems to indicate acceptance or non-acceptance of some of the modern beliefs that stem from an exploitationist, consumerist, homeocentric society. People who score high on this factor disagree with items suggesting that there is a need for science and technology in many areas of life. They also disagree that technology can solve our problems. They reject technologically based recreation. There is no significant correlation between this factor and Factor #1 (Conservationist-

Exploitationist) due to the orthogonal solution employed. Thus, it appears that acceptance of a conservation ethic does not imply an automatic rejection of consumerist technology. It may be that in our society, most people still see ecology as an isolated issue unrelated to larger problems, i.e., that they are either unwilling to accept or are ignorant of any connection between ecology and a technological society.

Factor #5 (see Table 32) appears to be a pro-vs. anti-gardening dimension. People who score high are anti-gardening. They perceive gardens to be difficult to grow and unenjoyable once done. Some of the other items (91, 116, 65, 82) indicate a general dislike of nature oriented activities.

Factor #6 (see Table 33) is related to acceptance or rejection of a natural, "hip" lifestyle. Items 98 and 47 are natural food related, and all the others indicate natural as opposed to mechanized camping styles. Item 34 sums it up: people who score high see the need for a natural lifestyle.

Although only 5 items loaded over .24 on Factor #7 (see Table 34), the meaning is clear. People who score high agree that gasoline engines are desirable. People who score low tend to reject unlimited use of gasoline engines.

Factor 8 (see Table 35) is a man-under vs. man-over dimension based mainly on the effectiveness of medical research; however, since only two items are clearly involved (78 and 56), interpretation of this factor should be cautious.

These factors were related to the factors derived in the pilot study. The first factor in the pilot study was a classic man-under-nature factor which appeared here as Factors 2 and 8. The second factor in the pilot study was a naturalism-artificiality dimension which was delineated in this study into three similar factors 5, 6, and 7. The third factor in the pilot study was a conservationist-exploitationist factor which appeared here as Factor 1. Factor 4 in the pilot study, fear-non-fear, appears here as Factor 3. The last interpretable factor in the pilot study was pro- vs. anti-science, which appears here as Factor 4. No new general concepts appeared in the second study, although some differentiation along content lines did occur. Given the change in the sample size, the smaller number of man-nature items and the addition of social desirability items, the degree of replication is significant.

TABLE 28
ATTITUDE SURVEY-FINAL STUDY
FACTOR 1

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.49	105	The drilling of under-seas oil should be banned even if it eventually means a power shortage.	+.44	49	Oil found beneath the oceans should be tapped for man's use.
-.48	100	The birds tend to keep the insect population under control, so one should never use sprays.	+.41	74	The ocean floor should be explored for valuable minerals.
-.41	55	Instead of buildings more hydroelectric dams we should conserve existing supplies of electricity.	+.34	62	Screens usually keep out insects, but use sprays as well to be sure.
-.41	51	Every animal plays its part in preserving the balance of nature, and thus should not be hunted by man.			
-.36	85	It's useless to use insect sprays; if they want to they'll bite you anyway.			

TABLE 28—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.35	88	The ocean must not be fished too heavily or it will soon be depleted of fish.			
-.34	111	The millions of dollars spent on snowplows and snow removal are wasted; people could just stay put when it snows.			
-.33	54	Many insects are so beautiful that they dispel any fear that you might have of them.			
-.32	116	It would be enjoyable being a nature teacher or naturalist.			
-.32	5	Automobiles are a threat to the environment, and thus a complete changeover to mass transit is essential.			
-.28	46	The oceans should be protected from economic exploitation.			

TABLE 28—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.28	29	Women should wear only fake furs.			
-.25	38	Insects don't bother me because they all have their place in nature.			
-.25	34	The best hope for increasing your lifespan is to learn to live in a natural, less artificial way.			

TABLE 29
ATTITUDE SURVEY-FINAL STUDY
FACTOR 2

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
No negatively loading items			+.46	60	The forces that determine the weather are beyond man's power to comprehend.
			+.42	119	Worthless animals that provide no furs or meat for man should be hunted whenever desired.
			+.40	118	Alcohol and other natural escape drugs are used by nature to subdue man.
			+.38	112	Airplanes will never be a really reliable form of transportation; the weather is just too powerful for them to take.
			+.37	41	We're all going to live just so long; there's little that we can do to increase our lifespan.

TABLE 29—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
			+.37	12	The oceans will never be a major food source because we can't really control the ocean life itself.
			+.36	7	Control of water pollution is practically impossible because we can't accurately predict rainfall and river heights.
			+.34	77	A garden is useless unless it provides something useful like vegetables and fruit.
			+.34	113	New species of animals should be domesticated so that they can serve man better.
			+.33	44	Animals should be avoided because they injure many people.

TABLE 29—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
			+.33	96	Air pollution is mainly dependent on changes in the weather; thus, if the weather is right, it'll go down.
			+.31	95	Whenever you take a plane you seem to get delayed by bad weather, fog, and headwinds.
			+.30	111	The millions of dollars spent on snowplows and snow removal are wasted; people could just stay put when it snows.
			+.30	23	If you dress in the most recent styles, you'll always look good physically.
			+.30	69	Pollution of rivers is the necessary side-effect of economic progress and hence should not be severely limited by legislation.

TABLE 29—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
			+.29	109	Hunting is one of the best ways to regulate the animal population.
			+.29	67	Some people are just born fat and there is little that they can do about it.
			+.27	14	There is little that we can do to control many of the rivers that flood their banks and damage nearby housing.
			+.27	73	People living near the ocean are in great danger.

TABLE 30
ATTITUDE SURVEY-FINAL STUDY
FACTOR 3

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.39	87	Outdoor walks are a pleasure even when there are a lot of bugs around.	+.53	25	The thought of exploring homes is really frightening because you could find mice there.
-.39	8	Ants on a picnic aren't so bad; they don't eat much.	+.53	32	Camping in the forest is frightening.
-.39	38	Insects don't bother me because they all have their place in nature.	+.48	99	Cockroaches and other household pests are really frightening.
-.37	9	Violent weather, such as wind and thunderstorms, is so beautiful to watch.	+.44	37	The only safe way to enter the forest is with a trained guide.
-.36	33	It is rewarding to camp with a minimum of equipment so that you can feel close to nature.	+.40	84	When there are a lot of bugs in the air it's better to stay indoors than to risk getting bitten.

TABLE 30—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.34	82	Animals don't frighten me; most won't harm man unless provoked by him.	+.39	122	It is most fun to camp when you use all the most modern equipment.
-.33	54	Many insects are so beautiful that they dispel any fear that you might have of them.	+.38	86	When the weather gets cold I prefer to stay indoors in a nice warm place.
-.31	79	The oceans and lakes are better places to swim than swimming pools.	+.36	83	It is frightening to go on almost any kind of boat.
-.24	40	National parks are most enjoyable when toured on foot rather than in a car.	+.35	20	On hot days the best way to stay cool is to spend as much time as possible by the air conditioner.
			+.33	62	Screens usually keep out insects, but use sprays as well to be sure.
			+.33	73	People living near the ocean are in great danger.

TABLE 30—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
			+.34	107	The water is very frightening to me.
			+.31	15	We should develop modern snow removal equipment that will clear the highways promptly after any size storm.
			+.39	35	Dams should be built wherever they will yield significant amounts of power or water.

TABLE 31
ATTITUDE SURVEY-FINAL STUDY
FACTOR 4

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.38	2	Scientists should try to understand the weather, but not how to control it.	+.51	61	Doctors should develop artificial organs that could replace any defective body organs.
			+.48	10	It would be wonderful if scientists could control the weather.
			+.40	68	Scientists should build planes that hardly ever get delayed by bad weather.
			+.38	49	Oil found beneath the oceans should be tapped for man's use.
			+.35	113	New species of animals should be domesticated so that they can serve man better.

TABLE 31—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
			+.32	120	Using scientific methods, anyone can grow a well planned garden.
			+.29	27	The water is enjoyable mainly because of the activities such as water-skiing and boating that it makes possible.
			+.28	74	The ocean floor should be explored for valuable minerals.
			+.28	36	Using modern fishing equipment and techniques, you'll almost always make a good catch.
			+.27	15	We should develop modern snow removal equipment that will clear the highways promptly after any size storm.

TABLE 31—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
			+.26	102	Swimming at a pool is great fun because you can drink and socialize more easily than at the ocean.
			+.25	31	Some people just seem to be naturally superior to others.
			+.25	26	People can now regulate their weight through the use of modern scientific principles.
			+.24	114	A patio is more enjoyable than a garden.
			+.24	80	Modern forms of therapy such as shock therapy, drug therapy, and behavior therapy hold great promise for mankind.
			+.24	124	Forests should be developed with roads and camping areas so that as many people as possible can enjoy them.

TABLE 32
ATTITUDE SURVEY-FINAL STUDY
FACTOR 5

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.55	126	Gardens are a pain in the neck; they never grow well.	+.68	94	Gardening and raising plants is great fun.
-.44	114	A patio is more enjoyable than a garden.	+.61	115	It would be enjoyable raising flowers as a profession.
-.32	104	Planning a garden is virtually impossible; the flowers never grow like you expect them to.	+.60	72	It is just lovely being in a garden near the flowers.
-.29	77	A garden is useless unless it provides something useful like vegetables and fruit.	+.54	116	It would be enjoyable being a nature teacher or naturalist.
-.25	31	Some people just seem to be naturally superior to others.	+.27	65	It is very enjoyable to go to an ocean or lake simply to enjoy its beauty without actually fishing or boating.

TABLE 32—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.23	91	I prefer to see animals only in zoos because many of them are so dangerous.	+.20	82	Animals don't frighten me; most won't harm man unless provoked by him.

TABLE 33
ATTITUDE SURVEY-FINAL STUDY
FACTOR 6

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.39	98	You just can't replace the natural goodness in food with artificial coloring, flavoring, and vitamins.	+.38	122	It is most fun to camp when you use all the most modern equipment.
-.38	47	It's better not to eat too much artificial processed food; stick to the basics.	+.34	103	It is more enjoyable to tour a natural area in an automobile than on foot.
-.37	33	It is rewarding to camp with a minimum of equipment so that you can feel close to nature.			
-.37	34	The best hope for increasing your life span is to learn to live in a natural, less artificial way.			

TABLE 33—Continued

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.34	79	The oceans and lakes are better places to swim than swimming pools.			
-.26	40	National parks are most enjoyable when toured on foot rather than in a car.			

TABLE 34
ATTITUDE SURVEY-FINAL STUDY
FACTOR 7

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.50	48	No limit should be placed on automobile horsepower.	+.54	19	A strict upper limit should be placed on automobile horsepower.
-.46	58	Motorboating is more enjoyable than sailing.	+.44	43	Sailing is more enjoyable than motorboating.
-.24	35	Dams should be built wherever they will yield significant amounts of power or water.			

TABLE 35
ATTITUDE SURVEY-FINAL STUDY
FACTOR 8

- Loading			+ Loading		
Loading	Item	Content	Loading	Item	Content
-.52	78	The common cold is with us to stay.	+.62	56	Scientists will soon find a drug that will cure the common cold.
-.24	112	Airplanes will never be a really reliable form of transportation; the weather is just too powerful for them to take.	+.20	29	Women should wear only fake furs.
-.21	85	It's useless to use insect sprays; if they want to, they'll bite you anyway.			

TABLE 36
SUMMARY OF EIGHT FACTORS IN FINAL STUDY

Factor No.	People Who Score HIGH	People Who Score LOW
1	Conservationist	Exploitationist
2	Non-man-under (general)	Man-under and hostile toward animals.
3	Non-fear of outdoors.	Fear of outdoors.
4	Anti-technology	Pro-technology
5	Anti-gardens	Pro-gardens
6	Accept natural lifestyle.	Reject natural lifestyle.
7	Pro-gasoline engine.	Anti-gasoline engine.
8	Man-under (medically).	Non-man-under.

Attitude-Criterion Relationships

The criterion group included the Gallup survey and a biographical inventory which have been previously described. (See Appendices V and VI.) The information included in the responses to those questionnaires was coded directly wherever possible. Excluded from this direct coding procedure were the two sections on page two of the biographical survey, namely, the "publications read-club memberships" section and the "natural hazards" section (see Appendix VI). These two sections occurred toward the end of the over-all battery and were of a fill-in type. For these, or perhaps other reasons, only about 35 per cent of the subjects tested completed these sections. As a result, I grouped the data available in the following fashion. The "publication-group membership" data were organized into three areas: ecology, outdoor life, and science activities. For each of these areas a subject was assigned a 0 for no indication of involvement, a 1 for slight involvement (i.e., one magazine read), a 2 for moderate involvement (i.e., one magazine and one club or two magazines), and a 3 for heavy involvement (i.e., more than two magazines or two clubs, etc.). The natural hazards section was similarly coded. A subject was assigned a number from 0 to 3, based on his losses to natural hazards.

In addition to the scores that were immediately derivable from the biographical questionnaire, aggregate scores of related scales were computed. These included:

1. Active outdoor life score - hunting + motor-boating + camping with camper + skiing + snowmobiling + outdoor life clubs score.

2. Genteel outdoor life score - sailing + back-packing + camping with limited equipment + fishing.

3. Ecological summary score - environmental cleanup campaigns + recycling of glass, paper, etc. + lectures on ecology + ecology clubs, magazines score.

The vacation preferences were also aggregated into subscores on the basis of Klausner's (1971) typology. Thus, each subject received a score for his indicated preference for each of the following types of vacations: active-passive, sociopetal-sociofugal, and open-nomadic-closed space.

In order to check for criterion-attitude score relationships, the factor scores³ for each subject were

³The factor score is a score based on a subject's responses to all of the items in the attitude survey (Rummel, 1970). Essentially his response to each item is weighted according to the importance (loading) of the item to the factor and then added to all his other weighted responses to arrive at a factor score. The highest loading items on a factor make the largest contribution to the factor score.

correlated (Pearson r) with criterion variables of an "ordinal" nature (i.e., involvement in hunting—rated 1 to 6), and cross tabulated with variables of a "nominal" nature (i.e., major in college). From the results of these two procedures significant relationships were noted in two ways. Correlations had to exceed .15 (an r of .12 is significant at the .01 level for an N of 522). In the case of the cross tabulation the means of a given subgroup (i.e., engineers, those who felt deeply concerned for the environment, males, etc.) on a factor had to differ from the overall mean of that factor by 1.96 standard errors, i.e., to be significant at the .05 level. The more liberal confidence level was used in the analysis of the cross tabulation since in many cases the N of a subgroup was small, and hence the standard errors were often high. In the case of the correlations, 522 was always the N . The results of the analysis are given in Tables 37-44.

The tabular form employed here is intended to make clear the relationships which were found to be significant.⁴ As an example, those who scored high on Factor 1 (see Table 37) are "conservationist" minded and are more prone to be involved in the activities listed in Table 37 under that

⁴See Appendixes V and VI to clarify the meaning of the abbreviations employed.

label (on the left side), e.g., backpacking, environmental clean-up, etc. The activities of those who tended to be "exploitationist" on this dimension are listed on the right side of the page. The same holds true for their vacation preferences, opinions on the Gallup survey, and demographic data.

The conservationist attitude (see Table 37) is related to involvement in ecological activities. It is also related to a preference for remote outdoor vacations, as opposed to vacations at popular commercial resorts. Those who score high on the conservation attitude report that they are deeply concerned about the environment and that they are willing to pay \$100 or more in taxes to clean it up. However, they do realize that changes in lifestyle will also be required as they propose to live a simpler life and to use one-fifth less electricity. They tend to see wildlife preservation and pesticide use as the most pressing problems as opposed to air pollution which is the single most popular (54%), and probably media influenced, choice. This may be due to greater exposure to environmental information in the form of clubs and magazines. They are likely to major in life science or environmental science as opposed to engineering, business, or physical science (all are significantly negative, .05 level). They are more likely to be born in cities of moderate to large size

(250,000 to 1 million) than in small towns or suburbs (2,500 to 49,999).

Those who are exploitationist seem to be willing to pay more for consumer goods, e.g., one-fifth more for electricity, rather than to cut down on use; but they are not willing to pay taxes to clean up the mess. They see pollution as a problem that can be bought off (pay to clean up vs. live a simple life), but they aren't truly committed to doing it. They prefer nice, quiet vacations and lush commercial resorts. They attend religious services more often than the conservationists. All in all, a rather conservative group, not too interested in the environment or in outdoor life.

In the analysis of the relationships of Factor #2 (see Table 38) to the criteria, some interesting results are seen. The most consistent indication of a man-under-nature view is a preference for passive, sociopetal vacations, man-under nature types prefer big lush hotels to more "natural," or more active vacations. In contrast, those who most strongly reject a man-under-nature viewpoint are those who have most often "witnessed" or "been hurt" by a natural hazard. If it were hypothesized that witnessing and being hurt by natural hazards would make one hold strong man-under-nature attitudes, then the observed relationship would be the opposite of that expected. Upon

examining the actual meaning of the "witnessed" and "hurt by" natural hazards scores, however, the relationship is obvious. In general, those who reported witnessing or being hurt by natural hazards were those who had most frequently been in contact with nature, i.e., in sports, camping, vacationing, and so on. Thus, they are the least likely to hold man-under-nature attitudes. The fact that those who reported "witnessing" or being "hurt" by a natural hazard were more often involved in outdoor activities is based on inspection of their correlation with the outdoor activities scale (all positive, many significant at the .05 level). Most of these hazard occurrences were involved with camping trips, beach houses, sporting events, and so on. A second possible explanation would be that those who have been exposed to natural hazards develop "coping" strategies that tend to deny the potency of nature. This result was found by Kates (1962) in his study of the occupants of frequently flooded areas.

Man-under-nature types also appear to be oblivious to environmental concerns. On three environmental questions they answered "don't know." They seem to feel that preserving open green space is the most pressing environmental need. Evidently they must have interpreted this as meaning urban parks, since they don't believe that more land should be set aside for national parks. Man-under-

nature types appear to come mainly from business and engineering backgrounds and, hence, this does not appear to be a question of male "man-over-nature" stereotyping. Thus, the holding of man-under-nature viewpoints appears to be a type of general pessimism mixed with hostility for nature, felt by those who have had little contact with nature. Included is a belief in the inevitability of pollution and little interest in doing anything about it.

People who score high on attitude number three (see Table 39) appear to be those who avidly pursue outdoor activities of all sorts. There seems to be a clear male-female split here. Non-fear of the outdoors and nature appears to be associated with being male or with being in male stereotyped majors or careers such as engineering. Non-fear of outdoor life is also associated with rather strong environmental actions. Non-fear is associated with being from small (under 2,500) to moderately sized towns (249,999) as opposed to large cities (1,000,000 and over).

One interesting differentiation here is on the most pressing environmental problem named. The non-fear types listed water pollution and preservation of open space. This may have been because these two problems are directly related to recreational uses of the environment. The "fear" types listed air pollution, a typically urban problem.

The main difference between this factor and Factor 2 seems to be that whereas the man-under-nature types were either ignorant of or hostile to the environmental crisis, the fear of outdoor life types seem to be not quite as hostile to environmental concerns. Another difference is that sex and size of hometown are more clearly related to Factor #3 than to Factor #2.

Factor #4 (see Table 40) is related to environmental actions as one might expect. People who reject a technological society are more likely to be involved in ecological activities and to be willing to change their lifestyles to solve environmental problems. They tend not to be interested in vacations of the type listed in the vacation preference schedule at all (open space such as beaches, closed space such as forests and nomadic vacations are all rejected).

One result of interest here is that rejection of technology does not lead to the same pervasive types of environmental interests as those who are conservationist on Factor #1. Perhaps this factor represents a rejection of technology that is largely independent of ecological beliefs. A re-examination of the items that make up Factor #4 (see Table 31) indicate that only a minority are directly related to ecology.

In summary then, Factor #4 is a dimension involving the rejection of technological incursions into a wide variety of activities. This rejection is minimally related to an acceptance of a conservationist ethic.

A low score on Factor #5 (pro-gardens)(see Table 41) seems to be related to a generally positive attitude toward ecology, and a preference for natural style, quiet vacations. There is a very clear sex role link here, with females being more pro-gardening. This perhaps explains the correlation with the genteel outdoor activities score but not with active outdoor sports. Those who are anti-gardening appear to be largely ignorant of environmental issues. There is a small ($-.07$) but non-significant correlation of this factor with Factor 1 (conservationist-exploitationist) in the expected direction. The small correlation with social desirability could be a possible factor in the correlations with the criteria; however, the correlations of social desirability with the criteria involved average only about $.08$. In a typical case the correlation of "environmental cleanups" with the Factor 5 score ($-.20$) changes to a correlation of ($-.18$) when the social desirability effect is "partialled" out. This is still significant and involves a change of only $.02$. Since this case included one of the lowest test-criterion correlations and one of the highest criterion-social desirability

correlations it is clear that the social desirability correlation does not significantly diminish the test criterion relationships reported.

On Factor #6 (see Table 42) acceptance of a natural lifestyle (eating health foods, living more simple lifestyle) seems to be more strongly related to environment in outdoor life than to involvement in ecologically related activities. One interesting effect to note here is a very clear age relationship, with younger people being more prone to accept a natural lifestyle. It appears that young people who accept the notion of a natural lifestyle are mainly escapist. They enjoy getting out into nature, and, although they express concern for environmental issues, they take few actions on its behalf. The .14 correlation with social desirability should present no more of a problem than in the case of Factor #5 since the S.D.-criterion correlations average only about .05.

Factor #7 was defined by only five items loading over .20 and yet there were a large number of significant criteria correlations (see Table 43). The pattern of correlations is very similar to that found on Factor #1 (see Table 37) with anti-gasoline engine types showing greater interest in ecological activities and outdoor life. They also indicate greater sensitivity toward environmental problems on the Gallup survey. It is interesting that those

who indicated air pollution as the most pressing problems were significantly pro-gasoline engines. Although illogical, this result is understandable since air pollution was the most frequent choice and was probably the choice of those who really didn't consider the issues. (Two factors may have caused this; one is the large amount of publicity that air pollution has been given, and the second is that it was listed first on the test and, hence, its choice may have been biased by a response set.)

Factor #8 showed few significant or meaningful factor-criteria relationships and will not be discussed further here. Some discussion of the addition of items relevant to the "medical" aspects of man-nature values (perception of locus of control vis-a-vis health) appears in Chapter V.

This concludes my discussion of the results of the attitude factors-criteria relationships. Further discussion concerning the attitude survey will be given in Chapter V.

TABLE 37
ATTITUDE SURVEY-FACTOR 1
CRITERION RELATIONSHIPS*

+ Correlations	- Correlations
People who score HIGH are conservationist	People who score LOW are exploitationist
Backpacking (+.15)	Big resort in mountains (-.23)
Environmental cleanup campaigns (+.23)	Sailing at popular beach area (-.17)
Recycling glass, paper, etc. (+.16)	Popular beach hotel (-.21)
Nature hikes (+.16)	Lush private mountain lodge (-.18)
Lectures on ecology (+.19)	Passive vacations (-.19)
Ecology clubs, magazines (+.23)	Sociopetal vacations (-.19)
Camping on remote ocean beach (+.17)	Religious services (-.14)
Ecology summary score (+.25)	Religious services (-.14)

TABLE 37—Continued

+ Correlations	- Correlations
Mean on Factor 1 is more than 1.96 S.E. above zero for these groups.	Mean on Factor 1 is more than 1.96 S.E. below zero for these groups.
Deeply concerned about environment	Somewhat concerned about environment
Pay \$100 or more to clean up the environment	Not very concerned about environment
Necessary to limit population (almost sig.)	Pay \$10 or less to clean up the environment.
Wildlife preservation most pressing problem	Not necessary to limit population and "don't know"
Pesticides most pressing problem	Air pollution most pressing problem
Live simpler life to clean up environment	"Don't know" on set aside land for national parks
Reduce use of electricity 1/5	Pay to clean up environment
Life science majors	Pay 1/5 more for electricity
Environmental studies (almost sig.)	Political science majors

TABLE 37—Continued

+ Correlations	- Correlations
250,000-1 million population, hometown size (almost sig.)	Technical career
	2,500-49,999 population, hometown size

*This Table and Tables 38-43 also, may be read as follows: the significant positive correlations are listed on the left side of the Table; thus those individuals who were conservationist indicated involvement in such things as backpacking, and little interest in the vacations listed on the right side such as a "Big resort in the mountains." The opposite is true for those who scored "Exploitationist." The bottom part of the table indicates that those who indicated "Deep concern" for the environment were significantly above zero (i.e., on the extreme Conservationist end of the scale), whereas those who indicated the responses on the right side were significantly Exploitationist.

TABLE 38
ATTITUDE SURVEY-FACTOR #2
CRITERION RELATIONSHIPS

+ Correlations	- Correlations
People who score HIGH are non-man-under.	People who score LOW are man-under and animal hostile.
Witnessed natural hazard (+.11)*	Big resort hotel in mountains (-.15)
Hurt by natural hazard (+.10)*	Chartered tour (-.17)
	Beachfront hotel (-.17)
	Passive vacations (-.15)
	Sociopetal vacations (-.15)
Mean on Factor 2 is more than 1.96 S.E. above zero for these groups.	Mean on Factor 2 is more than 1.96 S.E. below zero for these groups.
Pay \$100 or more to clean up environment	Pay \$10 or less to clean up environment
Psychology/sociology majors	"Don't know" whether or not necessary to limit population
Journalism career	Preserve open green space—most pressing problem

TABLE 38—Continued

+ Correlations	- Correlations
Psychology career	Don't set aside land for national parks, and don't know
50,000-249,000 population	Are you a polluter?—Don't know.
	Economics/business major
	Marketing career
	Management career

*Significant .05

TABLE 39
ATTITUDE SURVEY-FACTOR #3
CRITERION RELATIONSHIPS

+ Correlations	- Correlations
People who score HIGH are unafraid of outdoor life.	People who score LOW are afraid of outdoor life.
Hunting (+.23)	Big resort in mountains (-.29)
Fishing (+.25)	Friendly relaxing cruise (-.16)
Sailing (+.20)	Chartered tour (-.25)
Backpacking (+.41)	Popular beach hotel (-.35)
Camping limited equipment (+.41)	Lush private lodge (-.20)
Skiing (+.16)	Passive vacations (-.32)
Environmental cleanup (+.18)	Sociopetal vacations (-.29)
Recycling (+.22)	
Nature hikes (+.37)	
Lectures on ecology (+.24)	
Witnessed natural hazards (+.20)	
Hiking through countryside (+.40)	

TABLE 39—Continued

+ Correlations	- Correlations
Camping on remote ocean beach (+.39)	
Active outdoor life score (+.22)	
Genteel outdoor life score (+.48)	
Ecology summary (+.27)	
Active vacations (+.36)	
Sociofugal vacations (+.16)	
Mean on Factor 3 is more than 1.96 S.E. above zero for these groups.	Mean on Factor 3 is more than 1.96 S.E. below zero for these groups.
Deeply concerned about environment	Somewhat concerned about environment
Pay \$100 in taxes to clean up	Pay \$10 in taxes to clean up
Preserve open green space most pressing problem	Air pollution most pressing problem
Water pollution most pressing problem (almost significant .05)	No, not a polluter
Yes, a polluter	Females

TABLE 39—Continued

+ Correlations	- Correlations
Live simpler life to solve environmental crisis	Economics/business majors
Males	1 million and up population
25-30 year olds	
Engineering majors	
Physical education majors	
Environmental studies majors	
Nature work career	
Technical career	
Under 2,500 population-249,000 population	

TABLE 40
ATTITUDE SURVEY-FACTOR #4
CRITERION RELATIONSHIPS

+ Correlations	- Correlations
People who score HIGH reject technological society.	People who score LOW accept a technological society.
Ecology activities (+.13)(clubs, magazines)	Going to a big resort in mountains (-.15) Going on a chartered tour (-.14) Going to a popular beach hotel (-.16) Going to a lush lodge in mountains (-.15) Open space (-.14) Nomadic (-.16) Closed space (-.14) Passive (-.20) Sociopetal (-.20)

TABLE 40—Continued

+ Correlations	- Correlations
Mean on Factor 4 is more than 1.96 S.E. above zero for these groups.	Mean on Factor 4 is more than 1.96 S.E. below zero for these groups.
Live a simpler life to clean up en- vironment	Not necessary to limit population
Females	Pay to clean up environment
Below 20 years old	Males
	25-30 years old

TABLE 41
ATTITUDE SURVEY-FACTOR #5
CRITERION RELATIONSHIPS

+ Correlations	- Correlations
People who score HIGH are anti-gardens.	People who score LOW are pro-gardens.
Popular beachfront hotel (+.23)	Environmental cleanup (-.19)
	Recycling (-.19)
	Nature hikes (-.33)
	Lectures on ecology (-.20)
	Relaxing in beach house in quiet uncrowded area (-.17)
	Hiking through countryside (-.22)
	Learning nature lore (-.21)
	Camping on remote ocean beach (-.16)
	Genteel outdoor activities (-.20)
	Ecology summary score (-.24)
	Active vacations (-.20)

TABLE 41—Continued

+ Correlations	- Correlations
	Sociofugal vacations (-.20)
	Social desirability (-.15)
Mean on Factor 5 is more than 1.96 S.E. above zero for these groups.	Mean on Factor 5 is more than 1.96 S.E. below zero for these groups.
Somewhat concerned about environment	Deeply concerned about environment
"Don't know" on population limits	Pay \$100 or more in taxes to clean up
"Don't know" on set aside land for national parks	Live simpler life
Pay to clean up the environment	Reduce use of electricity 1/5
"Don't know" on use of electricity question	Females
Males	Medical career
25-30 years old	
Physical education majors	
Physical education career	
50,000-249,000 population	

TABLE 42
ATTITUDE SURVEY-FACTOR #6
CRITERION RELATIONSHIPS

+ Correlations	- Correlations
People who score HIGH accept natural lifestyle.	People who score LOW reject a natural lifestyle.
Sailing (+.15)	No negative correlations
Backpacking (+.18)	
Camping with limited equipment (+.20)	
Snowmobiling (+.19)	
Nature hikes (+.15)	
Hiking through countryside (+.19)	
Living in lone cabin in woods (+.16)	
Camping on remote ocean beach (+.23)	
Machismo outdoor life (+.19)	
Genteel outdoor life (+.22)	
Active vacations (+.22)	

TABLE 42—Continued

+ Correlations	- Correlations
Social desirability (+.14)	
Mean on Factor 6 is more than 1.96 S.E. above zero for these groups.	Mean on Factor 6 is more than 1.96 S.E. below zero for these groups.
Live simpler life	Somewhat concerned about environment (almost sig.)
Reduce use of electricity 1/5 (almost sig.)	"Don't know," on set aside land for na- tional parks
Females	Pay to clean up environment
Below 20 years old	Pay 1/5 more for electricity
Education majors	Males
	25-30 years old
	30-35 years old
	35-40 years old (almost sig.)
	Economics/business majors
	West Coast

TABLE 43
ATTITUDE SURVEY-FACTOR #7
CRITERION RELATIONSHIPS

+ Correlations	- Correlations
People who score HIGH are pro-gasoline engines.	People who score LOW are anti-gasoline engines.
Big resort in mountains (+.16)	Sailing (-.16)
Popular beachfront hotel (+.19)	Recycling (-.15)
	Nature hikes (-.18)
	Lectures on ecology (-.23)
	Ecology activities (-.20)
	Witnessed natural hazards (-.16)
	Hiking through countryside (-.15)
	Camping on remote ocean beach (-.16)
	Genteel outdoor life (-.15)
	Ecology summary score (-.23)

TABLE 43—Continued

+ Correlations	- Correlations
Mean on Factor 7 is more than 1.96 S.E. above zero for these groups.	Mean on Factor 7 is more than 1.96 S.E. below zero for these groups.
Somewhat concerned about environment	Deeply concerned about environment
Not very concerned (almost sig.)	Pay \$100 or more in taxes to clean up
Pay \$10 or less in taxes to clean up environment (almost sig.)	Necessary to limit population
Not necessary to limit population, and "don't know"	Preserve open space most pressing problem
Air pollution (almost sig.) most pressing problem	Live simpler life to clean up environment
"Don't know" on set aside land for national parks	Reduce use of electricity 1/5
Pay to clean up environment and "don't know"	Life Science majors (almost sig.)
Pay 1/5 more for electricity	Environmental Studies majors
Economics/business majors	
Management career	
Born in Asia (includes Israel)	

CHAPTER V

SUMMARY AND CONCLUSIONS

In Chapter I, the lack of major empirical research on the topic of man-nature values was discussed. The sum total of psychological research on man-nature values consisted of a study by Kluckhohn and Strodbeck (1961) and another by Saarinen (1966). Both of these studies employed short assessment devices and rather specific samples. Thus, although valuable as research aids they did not constitute general studies of American man-nature values. Larger samples were employed in the Gallup (1969, 1971) surveys but the questions asked were limited to specific topics related to the environmental crisis (e.g., automobile uses or alternatives, use of electricity, etc.).

Five other avenues toward gaining knowledge of attitudes toward nature are discussed by White (1966). Many studies have been done using one or more of these approaches. Although informative and valuable, they fail to yield the kind of empirical data sought in this study. Briefly the other approaches include:

1. The study of the interpretations which artists and writers have made of their environments. An example

of this approach would be Glacken's (1967) history of attitudes toward nature in the Western world.

2. Content analysis has the same purpose but applies a more rigorous method. An example of this approach is Elsen's (1964) study of nineteenth century American elementary school textbooks. This investigation of over 1,000 textbooks led to the following conclusion concerning attitudes toward nature:

Thus the nineteenth-century child was taught that nature is animated with man's purposes. God designed nature for man's physical needs and spiritual training. Scientific understanding of nature will reveal the greater glory of God, and the practical application of such knowledge should be encouraged as part of the use God meant man to make of nature. Besides serving the material needs of man, nature is a source of man's health, strength, and virtue. He departs at his peril from a life close to nature. At a time when America was becoming increasingly industrial and urban, agrarian values which had been a natural growth in earlier America became articles of fervent faith in American nationalism. The American character had been formed in virtue because it developed in a rural environment, and it must remain the same despite vast environmental change. The existence of a bounteous and fruitful frontier in America, with its promise not only of future prosperity but of continued virtue, offers proof that God has singled out the United States above other nations for His fostering care. The superiority of nature to man-made things confers superiority on the American over older civilizations. That Uncle Sam sooner or later will have to become a city dweller is not envisaged by these textbook writers, although their almost fanatical advocacy of rural values would seem to suggest an unconscious fear that this might be so.

Studies of textbooks employed during the 1950s would undoubtedly yield different findings from those given above. Comparisons of 1950 findings with findings based on textbooks written "post Earth Day" (i.e., early 1970s) would also prove interesting.

3. The examination of actual consumer choices represents the third approach. The actual choices that consumers make and the prices they are willing to pay for such things as clean air (in the form of remote suburbs), outdoor life, or clean water are studied as indicators of attitudes toward nature. The problem with this approach is that few aspects of the environment are subject to free pricing.

4. The fourth approach investigates the decision-making processes in everyday life. Kates' (1962) study of flood hazard perception and Saarinen's (1966) study of drought perception are given as examples of this approach.

5. The final avenue of study is to put people in a "gaming situation" in which they are asked to voice opinions after being exposed to a variety of information, persuasion, and interaction with peers being given similar information. White feels that this approach "more nearly approximates an actual decision situation and makes it possible to observe the effects of changes in experience and in the opinions of their fellows" (p. 118). Swan's

(1970) study of air pollution coping strategies is typical of this approach.

The aim of this dissertation was to provide both the psychological tests and the theoretical models necessary to pursue further empirical research on man-nature values. Due to the lack of prior research, this study has remained essentially exploratory and developmental. The conclusions that can be drawn at this point relate more to over-all philosophical and methodological problems than to specific hypotheses. These findings will permit the execution of studies of a more limited, but more specific, nature.

A number of basic questions were addressed in this study. Included were the following:

1. Do variations in man-nature values occur among Americans or are Americans all "man-over-nature" types as Kluckhohn (1959) has suggested?
2. Are these variations defined by the "man-over-with-under nature" typology, or does a more complex situation exist? (This study has used the over-with-under typology as a heuristic device; however, other configurations might emerge given the type of analysis done here (see Chapter I).
3. Are variations in man-nature values consistent over all situations where nature and man come in contact (e.g., ecological values, outdoor life, everyday lifestyle,

physical health, etc.) or do the values operate independently in different areas? As an example, are people who are conservationist on abstract ecological issues generally conservationist in their lifestyle (e.g., bicycle rather than use a car, recycle glass and tin, etc.), or are the two unrelated? Kluckhohn (1959) suggests that consistency should exist. Other writers (Merton, 1970) suggest that the values (in this case specifically conservationist vs. exploitationist) operate independently and that contradictions often occur.

4. What types of behavioral criteria are related to man-nature values, and what is the relationship? The attempt is not made here to determine definitive value-criteria relationships, but only to indicate those areas (e.g., vacation preferences) where relationships might be fruitfully explored in future work.

In the following discussions, I will answer the above questions with reference to this study. In addition, some future areas for research will be outlined.

Variations in Man-Nature Values

The first question addressed in this dissertation concerned the degree of variations in American man-nature values. If no significant variations existed, then this

entire topic would be impossible to study. This study has shown that variations do occur in man-nature values even when a somewhat limited sample was involved (all college educated). Significant differences in values appeared among different age groups, occupational groupings, and group interests reflected in the selection of college majors. In addition, little reluctance to express socially unpopular views (e.g., exploitationist views might be considered unpopular in a college setting) was found. The need to make oneself "look good" by expressing socially popular views was slight.

Some writers have suggested that all Americans hold man "over" nature values (Kluckhohn, 1959). Many writers even suggest that this is the only alternative. This might be expected from many industrialists; however, even Erich Fromm (1947), a humanistic psychologist, echoes this view: "He cannot go back to the prehuman state of harmony with nature; he must proceed to develop his reason until he becomes the master of nature, and of himself" (p. 49). McEvoy (1972) believes that this view is deeply imbedded in the American character for three reasons. The first of these is the seemingly inexhaustible supply of natural resources. Reclamation of some resources (e.g., polluted lakes) and substitutions for others (e.g., coal for wood to heat homes) further reinforced this viewpoint. The

tendency to assess our relationship to nature in quantitative rather than qualitative terms further contributes to this belief. The second factor is our lack of concern for overpopulation in this country. We fail to perceive the increasing stress that an increased population will place on both our resources and our disposal systems. We tend to perceive overpopulation as primarily of concern to underdeveloped countries such as India. The third factor is our tendency to dichotomize rural and urban life. We tend to think of nature as an essentially rural phenomenon. "Somehow the city seems to transcend the environment; it separates man from the grim realities of the biological world of peasant or aboriginal culture when man traditionally struggled for survival against nature" (p. 206). This tendency leads to thinking which somehow divorces our actions in the city from their effects on nature. The interconnectedness of all life is thus downplayed and we live lives of convenience unaware of the implications that this holds for nature. Sprout and Sprout (1971) attribute our man-over-nature attitudes to what may be called "the pragmatic outlook, the instrumental approach, and the engineering perspective" (p. 6). "The pragmatic outlook is pre-eminently a manipulative way of viewing the world, including people" (p. 7).

Few authors include man-under nature views in their discussions of American man-nature values. The results of this study suggest that significant variations do occur when man-under-nature values are tapped. This discrepancy between my findings and the beliefs of historians concerning "under" nature values may reveal certain fallacies in our historical record. It is possible that man-under nature values were held by Americans throughout our history, but were ignored by most historians. Boorstin (1973) argues that writers have generally failed to note most of the history of our everyday lives and concentrated instead on larger economic, military, and political events. It is possible that man-under-nature values or simply fears of nature were primarily related to everyday experiences rather than to larger historical movements (as exploitationist and conservationist values were) and thus were ignored by historians. It is also possible that they don't fit our image of our rugged pioneer past and hence are conveniently forgotten.

One possible psychological root for these fears is discussed by Paul Shepard (1969). He feels that one source of our fear of nature is our fear of the "animal" in us. He states:

"It [a balanced view of nature] further implies exploration and openness across an inner boundary—

an ego boundary—and appreciative understanding of the animal in ourselves which our heritage of Platonism, Christian morbidity, duality, and mechanism have long held repellent and degrading.
(p. 3)

Nash (1967) echoes similar views. "They [American pioneers] shared the long western tradition of imagining wild country as a moral vacuum, a cursed and chaotic wasteland" (p. 24). "Wilderness was 'howling,' 'dismal,' 'terrible'" (p. 26). In addition, the wilderness provided men with the opportunity to behave "in a savage of bestial manner" (p. 29). Nash feels that the realities of pioneer life often gave substance to these fears. It is possible that some of the man-under-nature and the fear of nature attitudes found in this study are at least in part related to our frontier experience.

Another aspect of the man-nature values found in this study involved the belief that in natural areas man can achieve relief from anxiety and depression. In a sense this is the romantics' reaction to the fears of reversion to animal states expressed above. Thus, only in nature does man rise to high levels of spiritual awareness. This value is somewhat related to the man-under-nature value since the psychological change is said to be more or less automatically caused by exposure to natural surroundings. The relationship is far from perfect, however, since a

love of nature is often evident as well. Psychological relief was mentioned by respondents to an Outdoor Recreation Resources Review Commission study of wilderness user motivations (ORRRC, 1962). Such motives as "to get rid of tension" and "to restore my health" (p. 147) were representative of this attitude.

Structure of Man-Nature Values

Since variations in man-nature values did occur, the structure of those values was studied. The man-over-with-under nature typology was used as a first approximation of how man-nature values might be structured. More complex structures might emerge. A test of the degree to which the man over-with-under nature typology related to the results of this study is possible. Each item used on the attitude survey had been previously ranked by judges as being over, with, or under nature. (See Chapter II for the procedure employed.) Table 44 gives the breakdown of the items loading on each factor by their original "judged" type. (See Chapter IV for the items included here.)

TABLE 44
ITEM TYPES ON ATTITUDE SCALES

Attitude Factor	Negatively Loading Items			Positively Loading Items		
	# Over Items	# With Items	# Under Items	# Over Items	# With Items	# Under Items
1. Conservationist- Exploitationist		<u>13</u>	1	<u>3</u>		
2. Non-man-under/man-under				4	1	<u>14</u>
3. Non-fear of outdoors vs. fear of outdoors		9		3		<u>10</u>
4. Anti-technology vs. pro-technology		<u>1</u>		<u>15</u>		1
5. Anti-gardens vs. pro-gardens	2		<u>4</u>		<u>6</u>	
6. Accept natural lifestyle vs. reject natural lifestyle		<u>6</u>		<u>2</u>		
7. Pro-gasoline engines vs. anti-gasoline engines	<u>3</u>				<u>2</u>	
8. Man-under (medical) vs. man-over (medical)			<u>3</u>	<u>2</u>		

Note: Underlined numbers indicate the most frequent type of + or - loading items on each factor.

Table 44 clearly shows that the man-over-with-under nature typology does describe the major part of most of the factors generated. As an example, Factor 1 (conservationist-exploitationist) was defined by 14 positively loading items, 13 of which were originally judged "with" and 3 negatively loading items, all of which were originally judged "over." Since most of the items were "conservationist" oriented, this clearly represents a with-over factor on the topic of conservation. Factors 4, 6, and 7 are also with-over factors; however, the content area covered by the items is different in each case. Factor 4 includes items concerned mainly with the acceptance or rejection of technological incursions in everyday life (e.g., air conditioners, etc.), Factor 6 includes items mainly concerned with "hip" natural lifestyles (e.g., backpacking, health foods, etc.), and Factor 7 relates primarily to gasoline engines. Thus, although all four of these factors are with-over, the content area involved is different in each case.

The situation is similar in the case of those factors defined by groups of "under" nature items (Factor 2, 3, 5, and 8). In each case, the content area of the items is different. Briefly, the areas include: fatalism vis-a-vis natural forces (e.g., the weather), Factor 2; fear of outdoors; Factor 3; fatalism where growing things is concerned, Factor 5; fatalism in medical matters; Factor 8.

(See Chapter IV for a complete discussion of each factor.)

The above discussion indicated that the man-over-with-under nature model is only approximately descriptive of the results on the attitude survey. This is not entirely surprising since all of the items were generated using this model; however, differentiation along content lines did occur. This differentiation was the concern of my third basic question and will be discussed presently.

Consistency of Man-Nature Values

From the above discussion, the following conclusions can be drawn. The man-over-with-under nature model does operate; however, it operates independently on four different levels. These levels can be labeled (1) the ecological values level, (2) the outdoor life level, (3) the everyday lifestyle level, and (4) the medical level. (See Table 45.) Table 45 gives the meaning of the three values on each of the four levels as I have interpreted them based on the results of the attitude survey.¹

¹When reading down a column, the definitions of each of the three man-nature values on that level (e.g., outdoor life) are found as well as the attitude survey factors which relate to it. When reading across a row the meaning of a given value (e.g., man over nature) on all four levels is found.

TABLE 45
OPERATION OF MAN-NATURE VALUES ON FOUR LEVELS

Level	Ecological Values	Outdoor Life	Everyday Lifestyle	Medical
Man Over Nature				
Meaning	Exploitation— Lack of respect for ecology or nature	Non-fear + preference for machine oriented sports, e.g., snowmobiles	Desire ma- terial com- fort and convenience	Belief in power of modern science to cure all illness
Related Attitudes	Factor #1— Exploitation- ist Value	Factor #3— Non-fear Factor #6— Anti-natural lifestyles	Factor #4— Pro-technology Factor #7— Pro-gasoline engines	Factor #8— Man-over (Medical)
Man With Nature				
Meaning	Respect for Ecology and Conservation	Non-fear + preference for aesthetic sports, e.g., backpacking	Desire to live in a simple natural way and to respect ecology, e.g., to re- cycle	Achieve health through natural living

TABLE 45—Continued

Level	Ecological Values	Outdoor Life	Everyday Lifestyle	Medical
Related Attitudes	Factor #1— Conservation- ist Value	Factor #6— Pro-natural lifestyles	Factor #4— anti-technology #5—pro-gardens #6—pro-natural lifestyles #7—anti-engines	Factor #6— pro-natural lifestyles
Man Under Nature				
Meaning	Ecological problems are insoluble— nature has sole control	Fear of Outdoor Life prefer non- hazardous sports	Daily life will not harm nature—it has control	Medical Fatalism— fate is in God's or nature's hands
Related Attitudes	Factor #2— Man-Under- Nature only 3 items	Factor #3— Fear	Not tapped	Factor #8— Man-under Nature (Medical)

On the ecological values level the "over" and "with" nature values are tapped by the exploitationist-conservationist factor (#1, see Table 28). On this level "under" nature values are tapped by a few of the items on the man under nature factor (#2, see Table 29) such as: "Control of water pollution is practically impossible since we can't accurately predict rainfall and river heights."

On the outdoor life level, values were tapped primarily by factor 3 which dealt with the fear of outdoor activities and natural hazards (see Table 30). Some items in the natural lifestyles factor were also related to this level (see Table 32).

Values on the everyday lifestyle level were related to four attitude factors. These dealt with acceptance of modern conveniences (#4, see Table 30), tastes concerning gardening (#5, see Table 31), natural lifestyles (#6, see Table 32), and views concerning gasoline engines (#7, see Table 33). The above scales all involved "over" values and "with" values; "under" nature values were not tapped on this level.

This study was only tangentially concerned with the medical aspects of man-nature values, and hence very few relevant items were included in the survey. As a result, the attitude survey tapped values concerned primarily with ecological issues, outdoor life, and everyday lifestyles.

The development of a scale to measure man-nature values on this level would permit comparisons with the other values to be made in the future. Further discussion of theoretical considerations in this area is given at the end of this chapter.

The factors generated in this study were orthogonal; thus the correlations between the subject's factor scores are uniformly insignificant, never exceeding .08 in value. This indicates that a subject may hold conservationist values ("with" nature) on Factor 1, while holding pro-technology values ("over nature") on Factor 4. Thus, conservationist values on the abstract level are not consistently transferred to questions of lifestyle by these subjects. Thus, Merton's (1970) contention that Americans often praise nature while holding values that demand its destruction may indeed be true. In general, the results do indicate a general lack of consistency of man-nature values over the four levels described in Table 45. Sewell and Foster (1971) came to an identical conclusion in their discussion of American public opinion and environmental quality. They state:

In summary the concern generated by the environmental crisis has heightened our perception of various components of the milieu and their inter-relatedness, but has not substantially altered our actions. The fact that there is this discrepancy can only be considered alarming for it

implies an immense capacity for self-deception. There is clearly a discordance between what is wanted and what the individual, special interest groups, or governments are willing to sacrifice to achieve it. We are not yet able to achieve the major changes in habit and organization that the environmental crisis demands. (p. 131)

Factor-Criteria Relationships

The criteria used in this study can be grouped into seven broad categories: (1) Active Outdoor Activities, (2) Genteel Outdoor Activities, (3) Ecological Activities, (4) Exposure to Environmental Hazards, (5) Vacation Preferences, (6) Demographic information, (7) Responses to the Gallup Survey. It would not be of value to discuss all of the relationships that these criteria had with the factor scores since this has been done in the three previous chapters in great detail. Rather, their general characteristics as criteria will be examined here.

1. Active Outdoor Activities

The active outdoor activities included hunting, motorboating, camping with a camper, skiing, and snowmobiling. The sports included in this grouping involve some physical difficulty, an involvement with equipment (boats, ships, guns, etc.), an entertainment quality, and a rather unecological image. The active outdoor summary score (a

figure based on total indicated involvement in each of the sports listed above) was related to a number of other preferences and values. It is positively related to involvement in outdoor activities of a genteel nature² (backpacking, nature walks, etc.) with a preference for vacations involving some test of ego,³ with non-fear of outdoor life⁴ and with a preference for natural lifestyles.⁵ This constellation of behavior and attitudes is close to Hendee's (1969) concept of "Consumptive" wilderness use. He contrasts consumptive interests such as hunting in which nature is viewed as something to be used (e.g., for production of game) to "appreciative" interests in which nature is viewed as an object of appreciation (e.g., backpackers). Lucas (1964) in describing auto campers and motorboaters finds that consumptive values and preferences are common. These individuals have a loose definition of wilderness (human improvements do not remove wilderness status) and a relatively high tolerance for other people in wilderness areas. They are more desirous of improvements such as boat launching ramps than paddle canoeists are.

²The numbers in parentheses are all Pearson correlation coefficients based on an n of 522. ($r = .12$ is significant, $p = .01$.) Correlation with "Genteel" summary score = .47.

³Active vacation preference, $r = .20$.

⁴Attitude Factor 3, $r = .22$.

⁵Attitude Factor 6, $r = .19$.

2. Genteel Outdoor Activities

The genteel sports included backpacking, camping with limited equipment, sailing, and nature hikes. A summary score based on involvement in all of the above sports was related to involvement in outdoor clubs,⁶ "active" outdoor activities,⁷ and preference for solitary, non-social vacations.⁸ It was also related to attitudes indicating little fear of outdoor life,⁹ a love of gardening,¹⁰ and a preference for natural lifestyles.¹¹ This constellation of behaviors and attitudes is most similar to the dimension labeled "Exit-Civilization" in an ORRRC (1962) study of wilderness user motivations. This dimension is defined by reasons for wilderness trips such as: "To get away from the sights, sounds, and smells of civilization. To be far away from crowds of people" (p. 147). There is also some relationship to the dimension labeled "Aesthetic-Religious" which includes reasons for trips such as: "To

⁶Outdoor Clubs Score, $r = .27$.

⁷Active Outdoor Life Score, $r = .47$.

⁸Sociofugal vacation preference ($r = .19$), socio-petal vacations ($r = -.28$).

⁹Attitude #3, $r = .48$.

¹⁰Attitude #5, $r = -.20$.

¹¹Attitude #7, $r = .22$.

observe the beauty of nature, to find harmony with nature" (p. 147). This mode of wilderness use is labeled "Appreciative" by Hendee (1969).

Hendee points out that many people use wilderness areas in "consumptive" modes at one time, and in "appreciative" modes at others. The correlation (.474) between the "active" and "genteel" uses found in this study would verify this conclusion.

The desire for sociofugal vacations among those involved deeply in genteel outdoor activities is also found in the ORRRC (1962) study. In this study "sociability" as a motive for wilderness trips was inversely related to the number, difficulty, and distance of the trips taken. In the Lucas (1964) study a distaste among canoeists for social encounters was also found. Thus one of the main differences between the "active" and "genteel" users seems to be the more social nature of the "active" outdoor sports.

3. Ecological Activities

The ecological activities covered on the test included environmental cleanup campaigns, recycling of glass, etc., lectures on ecology, and an ecology clubs-magazines score. These are combined in an ecological summary score.

The ecological summary score is related to involvement in a number of outdoor activities including sailing,¹² backpacking,¹³ camping with limited equipment,¹⁴ and nature hikes.¹⁵ Those high in ecological activities prefer vacations involving physical difficulty or ego testing,¹⁶ hold conservationist views,¹⁷ are unafraid of nature,¹⁸ enjoy gardening,¹⁹ and dislike gasoline engines.²⁰ Thus ecological activities are related to both conservationist values and to non-consumptive wilderness uses. One interesting aspect of these results is the failure of the ecological summary score to correlate significantly with the natural lifestyles value or the anti-technology factor. One possible explanation for this result would be that anti-technology and natural lifestyle values reflect a variety of concerns such as alienation, rebellion, and non-conformity. Conservationist concerns may be only tan-

¹³Sailing, $r = .24$.

¹⁴Backpacking, $r = .54$.

¹⁵Camping with limited equipment, $r = .26$.

¹⁶Nature hikes, $r = .48$.

¹⁷Factor 1, $r = .25$.

¹⁸Factor 3, $r = .27$.

¹⁹Factor 5, $r = -.24$.

²⁰Factor 7, $r = -.27$.

gentially related to them as indicated here. Thus, the general distaste for modern lifestyles shown by many of today's youth may not indicate any necessary concern for ecology.

4. Natural Hazards

Exposure to natural hazards was assessed as one possible environmental experience that would relate to a person's environmental values. The naïve hypothesis would be that a high degree of loss to natural hazards would lead to man-under-nature values. In this study, the results were either null or in the direction opposite to the above hypothesis (see Table 46). This result could be artifactual since many of the "witnessing of" and "losses to" natural hazards reported were related to active outdoor activities rather than to phenomena such as hurricanes or floods.²¹ As Table 46 indicates, the "witnessed" and lost property or health to hazards scores correlate with both of the outdoor life summary scores. Thus, the non-fear expressed on attitude Factor 3 is probably based on greater exposure to outdoor life. If the above results held up under closer

²¹A rating of 0-3 was assigned for "witnessed" and "lost property to" natural hazards based on over-all frequency. Thus, losses to natural disasters could not be analyzed apart from losses involving outdoor activities.

scrutiny (i.e., only losses to actual natural phenomena such as floods vs. man-under-nature values, yielding negative relationships), then Kates' (1962) findings concerning reactions to flooding would be confirmed. One of the mechanisms operating among Kates' respondents was to adopt rationalizations concerning future flooding which were often untrue or unrealistically optimistic. Thus, losses to floods rather than consistently leading to man-under-nature views lead instead to beliefs that technical improvements being built (often downstream from them!) would alleviate future flooding or that the floods would not recur.

TABLE 46
RELATIONSHIPS BETWEEN NATURAL HAZARDS
CRITERIA AND OTHER CRITERIA

Item	Witnessed Natural Hazards Score	Lost Health or Property Score
Active outdoor life score	.15	.28
Genteel outdoor life score	.25	.23
Non-fear outdoor life—Attitude #3	.26	.05
Non-man-under vs. man-under—Attitude #2	.02	.00

Note: Pearson r , $n = 57$ (thematic sample), $r = .26$ Sig., .05 level. The smaller sample is used because the majority of subjects completed the "hazards" section. In the over-all group of 522, the results were similar to the above, only weaker because many subjects skipped this section. The nature of the thematic sample is given in Appendix VIII.

It may seem surprising that losses incurred due to natural hazards would not lead to man-under-nature values. However, the mechanism of cognitive dissonance reduction may underly some of the results found in this area. Briefly, this theory (Festinger, 1964) states that when two incongruent facts exist in a person's mind the person will alter one of them until congruence occurs. In this case a resident of a flood plain has suffered losses to a natural

hazard. If he adopted the belief that the floods will recur in the future with little that man can do about it (a man-under-nature view) then this belief would be incongruent with the fact that he is continuing to live on the flood plain. (In this case, the underlying assumption, something which often occurs in Festinger's theory, is that people don't do things that they think may hurt them.) Thus, since movement from the flood plain may be difficult or impossible, the only method remaining to reduce dissonance is to downplay the possibility of future floods in one way or another. The inclusion of measures of man-nature values in studies of individuals who have actually suffered major flood losses would aid future work in this area.

5. Vacation Preferences

The vacation typology discussed in Chapter V was the fifth type of criterion. Preference for various types of vacations was expected to be related to man-nature values for a number of reasons. Vacation choice is relatively free and hence might be expected to reflect values in general more than a restricted choice such as housing location (highly restricted by job location, income, availability of transportation, etc.). The vacation choice is restricted

by income and resource location to an extent; however, on a given budget and in a given area, a wide range of options are often available. In addition, vacation choice often expresses a definite environmental preference. (E.g., urban vs. rural, rugged nature vs. benign nature, mountains vs. seashore, etc.)

Basically twelve specific vacations were rated for preference. From these twelve scores, seven "type" scores based on Klausner's (1971) typology were derived. A longer list of vacations, which would itself be factor analyzed, would be preferable to this a prior procedure. However, the need to keep the entire testing time to less than forty minutes dictated this abbreviated procedure.

Klausner's active-passive vacation preference dimension showed clear relationship to other criteria. A preference for active vacations (i.e., mountain climbing, camping out and sailing as opposed to the passive vacations which were "resort" oriented) was related to involvement in a wide range of outdoor activities including backpacking,²¹ camping with limited equipment,²² and nature hikes.²³ It

²¹Backpacking, $r = .29$.

²²Camping with little equipment, $r = .30$.

²³Nature hikes, $r = .38$.

by income and resource location to an extent; however, on a given budget and in a given area, a wide range of options are often available. In addition, vacation choice often expresses a definite environmental preference. (E.g., urban vs. rural, rugged nature vs. benign nature, mountains vs. seashore, etc.)

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²¹Backpacking, $r = .29$.

²²Camping with little equipment, $r = .30$.

²³Nature hikes, $r = .38$.

was also positively related to both summary indicators of outdoor activities²⁴ although more strongly to the "genteel" score which reflects "non-consumptive" wilderness uses.

The active vacation preference is also related to involvement in ecological activities²⁵ and to preferences for non-social vacations.²⁶ The passive vacation preference (resort hotels, cruises, plush lodges, etc.) shows relationships almost precisely the opposite of those given above.

The relationship between these vacation preferences and the attitude survey proves interesting as well. The "active" preference is held by individuals who are unafraid of nature,²⁷ enjoy gardening²⁸ and natural lifestyles.²⁹ Those who prefer "passive" vacations are afraid of nature³⁰ and enjoy modern conveniences.³¹

²⁴Genteel Outdoor Summary Score, $r = .38$; Active Outdoor Summary, $r = .20$.

²⁵Ecological Activities, $r = .25$.

²⁶Sociofugal vacations, $r = .63$.

²⁷Attitude 3 ($r = .36$).

²⁸Attitude 5 ($r = -.20$).

²⁹Attitude 6 ($r = .22$).

³⁰Attitude 3 ($r = -.32$).

³¹Attitude 4 ($r = -.20$).

Although comparisons with the ORRRC (1962) study must be made with caution since different samples were employed, some limited comparisons may be of value. Those preferring "active" vacations would probably be motivated by the "Exit-Civilization" motive. It is doubtful that they would be motivated by the "Sociability" motive since they have clearly indicated a preference for sociofugal vacations.

Sociopetal-sociofugal vacation types represent Klausner's third dimension. This dimension is correlated with the active-passive dimension as mentioned above. This is not due to overlapping items since both the sociopetal and sociofugal scores include equal numbers of items that were scored both active and passive. The pattern of correlations found for this dimension is virtually identical to that found for the active-passive dimension with those preferring sociofugal vacations showing the same pattern of activities and attitudes as those who prefer active vacations. Those preferring sociopetal vacations are similar to those who prefer passive vacations.

Klausner's (1971) final dimension was one of open space (beaches) vs. closed space (forests) locational preferences. Klausner feels that the open space choice reflects extroversion and the closed space choice introversion. In this study very few significant correlations

were found with this dimension. Since many significant relationships with Klausner's other two dimensions were found (as mentioned above) a simple problem of measurement is probably not at fault here. A more likely explanation is simply that the extroversion-introversion factor is simply not reflected in open-closed space preferences. It would appear from these results that the open-closed space dimension has little psychological meaning. In essence, one major dimension seems to underly most of the variations in the vacation data, that being sociopetal-passive vs. sociofugal-active.

6. Demographic Criteria

The demographic criteria are too numerous to be discussed individually here. And, as it was pointed out in Chapter IV, the sample was not constructed to permit generalizations about specific groups (e.g., all engineers). The main results here were that sex, major in college, occupational plans, and hometown size were all related to a number of factors (see Chapter IV). Further investigations along these lines, employing carefully controlled samples should prove fruitful.

Studies such as Sewell's (1972) study of the differences in environmental perception and attitude between

engineers and public health officials in western Canada, the Constantine and Hanf (1972) study of environmental attitudes among politically important residents of the Tahoe basin and Kaplan's (1973) study of the environmental preferences of various types of gardeners are typical of this approach.

7. Gallup Survey

The last criterion used was the Gallup survey. This instrument allowed me to get subject's responses to fairly straightforward questions about the environment. The results have been discussed in Chapter IV and will not all be reviewed here; however, one question on the survey gave particularly interesting results. That question concerned whether or not the subject preferred to "live a simpler life" or "pay to clean up" in order to solve the environmental crisis. Reference to Tables 37-43 will show that the tendency to see the solution as a monetary one is related to being exploitationist, afraid of outdoor life, pro-technology and gasoline engines, anti-gardens and anti-natural lifestyle. Almost exactly the opposite results are seen among those who see the solution as involving a change in lifestyle. Clearly, this question gets at one of the key issues underlying this work, the inference being

that those who would prefer to "pay" to clean up the environment rather than alter their lifestyles have clearly negative values concerning nature. This is not entirely unlike other issues such as racism, where an emphasis on "government" action is often indicative of a lack of willingness to meaningfully sacrifice to solve a problem.

The "pay to clean up" view is similar to that held by many wealthy suburbanites. In this case conservationist views are often held as a means of preserving the status quo and of excluding minorities from the town (Santmire, 1970). One danger of this belief is that the citizen convinces himself that he has "done enough" by sanctioning government spending. Usually, however, this sanction only applies to government programs which pose no threat to their lifestyles. Thus, while serving as a balm for the conscience, the sanction of government spending clearly reflects little true commitment.

Relevance of Related Research Studies

The psychological study of attitudes, opinions, and beliefs concerning nature is a fairly recent phenomenon. Trop and Roos (1971) place the first public opinion survey related to environmental issues in the early 1960s. Evidently interest in environmental issues was minimal at that

time. They report (Trop and Roos, 1971, p. 54) that a 1960 clean air campaign by the Izaak Walton League and another by a New Jersey citizens' group received little popular support. Interest in environmentally relevant opinions picked up in the late sixties as indicated by increased numbers of opinion surveys and articles in the press. With the exception of the Kluckhohn (1959) work in this area, social scientists generally failed to do relevant research until the early 1970s. This section will give a brief comparison of my findings with those of McKechnie (1970).

McKechnie (1970) developed a measure of environmental preference known as the "Environmental Response Inventory." The ERI was developed as a global measure of environmental attitudes, sentiments, beliefs, and values, and hence attempts to assess a somewhat wider range of topics than the attitude survey developed in this study. The McKechnie survey is also oriented toward environmental preferences more heavily than this attitude survey. McKechnie began with a pool of items written to tap the following: pastoralism, conservation, science and technology, urban life, rural life, stimulus preferences, cultural life, leisure activities, the outdoors, geographic and architectural preferences, and environmental memories and knowledge. Some similarities with the topics covered in

the initial item pool in this study (see Table 1) are seen, however, the overlap is not perfect. Despite the different initial theoretical basis employed in generating statements (McKechnie did not lean heavily on the man over-with-under nature typology) and the different samples employed (the major differences being geographic, McKechnies' sample included more California residents, rather than socioeconomic since McKechnies' sample also consisted primarily of college students) some similarities between the two studies were found.

McKechnies' Pastoralism factor (factor 1 in both the male and female samples) includes items which "reveal a deeply personal orientation toward the natural environment, including those which affirm basic environmental experiences" (p. 322). This factor is conceptually related to the non-fear of nature attitude (see Table 30) and to the pro-natural lifestyle attitude (see Table 33).

McKechnie finds two similar, but not identical, factors in his male and female samples which are also related to the results of this study. The male factor #3 is labeled "Environmental Adaptation" and expresses

a "Man-over-Nature" value orientation which suggests that the environment be adapted to accommodate personal comforts and desires. The female factor (#5) is labeled "Modernism" and contains items which express a preference for the new and man-made rather than the old and natural (p. 323).

Both of these attitudes are clearly related to the pro-technology attitude found in this study (see Table 31).

Among his female subjects McKechnie also finds an "abstract conservationism" scale (factor #4) which is clearly similar to the conservationist attitude found in this study (see Table 28). A scale labeled "Environmental Security" (#2) is also limited to the female sample. This scale includes items which "call for environmental restrictiveness and which express a fear of potentially dangerous environments" (p. 323). The emphasis is more clearly on fear of all threatening environments, natural and built; however, some relationships to the fear of nature attitude (see Table 30) found in this study are evident.

The conclusion which can be drawn from the above comparison is that despite different item pools, samples, and conceptual frameworks, major similarities between the two studies were found. Thus, the factors found in this study seem to have a good chance of being representative of those that might emerge in any future studies.

Future Development Potential: Methodological and Validational

The preceding sections have demonstrated the potential value of the attitude survey. In this section some of the future refinements and uses of these tests will

be outlined.

The attitude survey could be further improved in a number of ways. One change would involve the deletion of items not contributing to the eight factors found in this study and the addition of items relevant to areas tapped exclusively by the thematic test.² These would include such areas as "nature escapism," "nature idealism-naïvete," and "anti-urbanism." Another change would be the addition of items designed to fill out some of the factors which, although criterion related, included very few items. An example of this would be the pro-anti-natural lifestyle factor which involved only eight items with loadings above .20. Another eight items could be written in such a way as to balance the number positively and negatively loading on the Factor. After the changes described above, the test would be revalidated on a large, varied sample to determine the final factor structure and loadings.

Once the test is refined further, its relationship to traditional measures of personality could be determined. It is quite possible that these values are reflections of deeper personality traits, in which case their true meaning might be better understood through a validation procedure.

²See Appendix VIII.

Another possibility is that it will show little or no relationship to traditional measures of personality. If this is so, it may indicate that values concerning the physical environment are somewhat independent of those related to either the inter or intra-personal sphere. In this instance these values will still be of great interest for their own sake. The solution of the ecological crisis will necessarily involve education of the public on ecological issues. Education can not be successful unless a clear understanding of the public's current conceptions is available. This study has shown, for instance, that the tendency to separate abstract concepts from actual daily living is very strong. Thus, an ecologically oriented educational program might do better to focus on specific behavioral changes than on scientific or philosophical issues.

One clear need would then be to validate this test against existing personality measures in order to determine what relationships, if any, exist. Selection of a specific test would be dependent on the specific hypothesis involved. A number of research possibilities of that type are given below. A second approach is to use a battery of tests in an initial exploratory effort. McKechnie (1970) has employed this approach in his validation of the Environmental Response Inventory. His battery consisted of

the California Psychological Inventory (Gough, 1964), the Meyer-Briggs Type Indicator (Myers, 1962), and the Study of Values (Allport, Vernon, and Lindzey, 1960). Such efforts might suggest specific personality correlates which would merit further exploration; however, in general, studies based on more specific hypotheses should prove more fruitful.

Specific tests would be employed in research dealing with particular hypotheses. Very few tests have been developed where the environment has been the referent; however, some existing tests may still be fruitfully employed. One example might be to study the relationship between arousal seeking tendencies (Mehrabian and Russell, 1973) and man-nature values. One possibility would be that subjects with lower stimulus needs are more attracted to remote natural environments than those with higher stimulus needs. These individuals might also find that exposure to urban environments leads quickly to a "sensory overload" condition. The relationship of arousal seeking to views concerning the need for plush facilities in parks would also prove interesting. The hypothesis might be that park improvements are generally preferred by those who are low on arousal seeking.

Other interesting comparisons might be made with a test of locus of control (Rotter, 1966). These tests

measure a person's perception of his control over circumstances. Control may be perceived as being internal, external, or reciprocal. Man-under-nature views should be related to perception of an external locus of control; however, the Rotter test refers primarily to "Social" situations and hence comparisons may be difficult.

A related type of study involves the study of the relationship between demographic characteristics and values. Such comparisons have been made by Swan (1970) in his study of the attitudes toward air pollution and the coping strategies of black and white youths in Detroit. Constantine and Hanf (1972) considered such factors as education, income, and social class in their study of environmental concern among influential citizens in the Lake Tahoe area. Sewell (1971) considered occupational role (Public Health vs. Engineer) in his study of perceptions of the water pollution problem. Finally Gallup (1969, 1971) investigated demographic variables in his survey of environmental opinions.

Another method of defining criterion groups is on the basis of differential environmental experience or preference. As one example Lucas (1964) compared canoeists to motorboaters on their concepts of "wilderness." Kates (1962) compared residents of areas having differential flood frequencies and coastal storms (Kates, 1967). Kaplan

(1973) studied individuals holding different preferences concerning gardening. Shafer and Meitz (1969) compared wilderness campers in the White Mountains and the Adirondacks. The general goal of studies of this type would be to find any underlying communality of values across a number of different criterion groups.

One major area for research is the area of attitude-behavior correlations. Constantine and Hanf (1972) did find a relationship between their "environmental concern score" and an "environmental action scale" in their study of influential residents of Lake Tahoe; however, they comment that despite this positive finding, "Preliminary analysis does suggest there are sufficient numbers of persons who score high on the concern scale but low on the action scale, or low on concern and high on action to warrant further investigation" (p. 224).

One must be cautious in generalizing this result since the sample included only "influential" citizens who had the power to act and was taken from an area where environmental quality and economic well being are clearly interdependent. Among "average" citizens who have neither the power to influence nor the interest in environmental quality of influential Tahoe residents similar results might not be found. Indeed most studies of this relationship reach the opposite conclusion, namely that environmental

concern is seldom translated into environmental actions.

Sewell and Foster (1971) referring to this problem state:

Nor is the individual generally blameless. The campaigner against air pollution still drives to protest movements in his car. Housewives continue to buy phosphate-rich detergents and plastic nondegradable containers. (p. 131).

Swan (1970) found that level of concern about air pollution had little effect on the coping strategies of Detroit youths when they were placed in a gaming situation involving pollution control. Trop and Roos (1971) point out that although expressed environmental concern among congressmen, business leaders, and the general public is high, meaningful action seems to be slight.

Future Development Potential-Theoretical

Many theoretical and philosophical issues related to man-nature values have not been dealt with in this study. They await future research, some of which may be based, in part at least, on the instruments developed here.

The most challenging of these issues relates to the basic underlying causes of man-over-nature values. Santmire (1970) feels that the "cult of compulsive manipulation" has "shaped the very centers of our personalities" (p. 46). "The individual is constantly prone to manipulate

his environment, while the conscious center of his personality, his ego, is constantly prone to manipulate his personality" (p. 6). Santmire refers to Keniston (1960) who writes that "In these terms, the virtues of our technological society require a dictatorship of the ego rather than good government." Santmire continues that "It can be no surprise then, that we who habitually manipulate our world and our innermost selves without much reflection, continue to deplete and deface the resources and the beauty of our natural environment much as our nineteenth century forebears did. It is the old Manifest Destiny attitude toward nature clothed in cool technological garb" (p. 47). Roszak (1972) in Where the Wasteland Ends clearly condemns this tyranny of the ego. It is the result of a total adoption of the western scientific world view to the exclusion of emotional and metaphysical experience. He writes that "We can now recognize that the fate of the soul is the fate of the social order; that if the spirit within us withers, so too will all the world we build about us. Literally so. What, after all, is the ecological crisis that now captures so much belated attention but the inevitable extraversion of a blighted psyche?" (p. xxiii). A more specific treatise along these lines has been written by Leiss (1972). He writes that: "The intensification of conflict through the technological mastery of nature thus precipitates a

search for new techniques for the exercise of political domination among men" (p. 159). "Political mastery over human nature in all its diverse cultural forms is sought in response to the intensified social conflict which in turn depends on a growing mastery over external nature" (p. 159). Leiss also echoes the view that mastery over external nature is inevitably paired with mastery of internal nature: "Greater pressures produce correspondingly more violent explosions; the magnified level of domination in modern society, achieved in respect to both external and internal nature is also a measure of the heightened potential of the revolt of nature" (p. 162). In summary, Leiss asks, "Why is there apparently a connection between the conquest of nature and the 'conquest of man?'" (p. 18). Thus, according to this line of reasoning man-over-nature values should often be paired with an authoritarian personality.

The above discussion leads to the conclusion that the ecological crisis is only one manifestation of a larger crisis. This larger crisis involves the repression of nature by man, the repression of internal needs by man, and the repression of man by man. Surely, then, increased understanding of man's attitudes toward nature will be of fundamental importance in furthering our understanding of man and his place in the world.

APPENDICES

Appendix I

267 Items in the Pre-judging

DIRECTIONS FOR JUDGING THE MAN-NATURE VALUE
ORIENTATIONS ATTITUDE STATEMENTS

Thank you for agreeing to act as a judge in this first stage of my dissertation research. The job that I have asked you to do will probably be tiring, but I hope that at the same time it will prove to be rewarding; in any case, I thank you again for your time.

I have written a large number of attitude statements which I feel are indicative of the predominant man-nature value orientations as expressed in the literature. I will now give the definitions of these three attitudes as I have interpreted them.

1. Man Over Nature.—The man over nature orientation is held by individuals who have almost complete confidence in the ability of mankind, and of themselves, to overcome any of nature's hazards, to overcome any natural weaknesses in themselves, and to exploit any of nature's resources. They view nature as something that exists primarily for man's benefit and hence as something to be exploited. They feel that man's control over nature is total.

2. Man With Nature.—The man with nature orientation is held by individuals who feel that man must cooperate with the forces of nature in a harmonious fashion. He may base this belief on ecological grounds fearing that we will destroy nature if we don't take it into account; or on more philosophical or religious grounds feeling that a life in harmony with nature is more spiritually satisfying than any other. He views his natural limitations as facts that can be lived with. They feel that control is reciprocal between man and nature.

3. Man Under Nature.—The man under nature orientation is held by individuals who feel that man is dominated by the forces of nature. He fears natural hazards and obstacles. He feels that nature often fatalistically causes men to fail in their endeavors. He views his own natural limitation as insurmountable. He feels that nature's resources are often inadequate to meet even our minimal needs. He has little faith in mankind's or his own ability to control nature. He feels that the forces of nature control man.

I will define Nature as follows: Nature is everything in the world which is not in a form primarily created by man. This definition includes all plants and animals, all geological elements such as rocks, rivers, and the skies, and certainly our own bodies.

On the following pages you will find 267 attitudes statements which I am asking you to judge in a number of ways. This prejudging will determine which of the items are utilized in the first version of the test. Since I don't want every item ranked by every judge in the same order will you please begin at item (#90).

I would like you to rank each item in two ways. First as being indicative of one of the three orientations, man over, with, or under. Then rank the item for extremity; that is, is it extreme, moderate, or weak, given that you have put it in one of the three categories.

Please take your time on this task; I would prefer that you take longer to complete the judging rather than doing a rushed job.

The answer sheet will show you how to record your judgments.

1. You can keep your house clear of pests by using sprays and traps whenever necessary.	3. The ocean is valuable primarily as a source of food and recreation for man.
2. Scientists should try to understand the weather, but not how to control it.	4. Medicine will never be able to control epidemics of many diseases.

5. No limit should be placed on automobile horsepower.
6. Many types of insects are really frightening.
7. Good tires and brakes are helpful, but under some weather conditions, nothing will prevent an accident.
8. Whenever your loved ones get sick, you should pray to God to make them get better.
9. Spraying your garden is the only way to keep out the insects.
10. Outdoor hobbies are the most pleasant ones.
11. I hate flying because of the thought of having to depend on a machine to survive.
12. The ocean and the lakes are better places to swim than swimming pools are.
13. Sensible eating and a lot of healthy activity will usually result in a healthy weight loss for most people.
14. Drugs such as marijuana are harmful because they keep us from seeing the world as it really is.
15. Snowmobiles are a great way of touring the wilderness.
16. It is just lovely being in a garden near the flowers.
17. Dieting and other weight loss techniques are ineffective because many people are just naturally heavy.
18. If you've got weak hair roots you'll get bald and there's little that can be done about it.

19. The drilling of under-seas oil should be banned, even if it eventually means a power shortage.
20. It is the most fun to camp when you use all the most modern equipment.
21. The best way to keep animal species from disappearing would be to preserve the wilderness in its natural state.
22. Some people are just born fat, and there is little that they can do about it.
23. On hot days it is best to stay cool by dressing lightly and staying outdoors in shady places.
24. The water is very frightening to me.
25. You're just fated to be a certain weight.
26. Dieting often fails due to our powerful drives to eat until full.
27. Animals should be avoided because they injure many people.
28. Our IQs are determined when we are born.
29. Fancy equipment doesn't help much when fishing; if they're going to bite, they'll bite; if not, forget it!
30. It is best to have a picnic in a well developed park instead of having it in a real meadow or field.
31. A nice safe indoors job is preferable to a more exciting outdoors job.

32. Screens on windows are a good, effective way of keeping insects out of your house.
33. A strict upper limit should be put on automobile horsepower.
34. Worthless animals that provide no furs or meat to men should be hunted whenever desired.
35. The thought of having an artificial organ put into my body repulses me.
36. We should develop modern snow removal equipment that will clear the highways promptly after any size storm.
37. Modern man can protect himself from the hazards of any type of weather.
38. It would be wonderful if scientists could control the weather.
39. Nervous disorders are often inherited from your parents and thus can't be prevented.
40. The water is enjoyable mainly because of the activities such as water skiing and boating that it makes possible.
41. The common cold is with us to stay.
42. Medicines, even the most modern, work only when they harmonize with the natural antibodies in the body.
43. Clothes make the man.
44. Insects don't really bother me, because of the fact that they all have their place in nature.
45. Planes crashes could be best prevented by building stronger and more powerful planes.

46. Modern forms of therapy such as shock treatments, drug treatments, and behavior therapy hold great promise for mankind.
47. Insects are mainly just a pain in the neck.
48. Using scientific methods, anyone can grow a well planned garden.
49. We should catch as much fish as possible from the oceans because the hungry people need them so badly.
50. It is so interesting to learn about nature.
51. If tobacco didn't exist, you can be sure that nature would have provided some other substance that we could hurt ourselves with.
52. Using the proper coolants, a car can take almost any heat.
53. It's always so uncomfortable outdoors.
54. Mental illness is often caused by an inherited deficiency; thus, there is frequently little that can be done about it.
55. Successful farmers depend on their wits, not on God.
56. The ocean floor should be explored for valuable minerals.
57. Motorboating is more enjoyable than sailing.
58. We should try to develop new drugs that can help us to more fully appreciate life.

59. The best solution to the automobile exhaust problem would be to have people live within walking distance of work, shopping, and recreational facilities.
60. Mental problems, a by-product of our modern world, are best treated by getting the most modern therapy.
61. Dams should be built to foster recreation on the artificial lake that is created, even when the power yield of the dam is low.
62. If a food product loses some of its natural vitamins during processing, they should be replaced with artificial vitamins.
63. Animals don't frighten me; most won't harm man unless provoked by him.
64. The best hope for increasing your life-span is to learn to live in a natural, less artificial, way.
65. Gardens are a pain in the neck; they never grow well.
66. When there are a lot of bugs in the air it's better to stay indoors than to risk getting bitten.
67. Cockroaches and other household pests are really frightening.
68. Snow tires and chains on a car will help under some circumstances. But if the storm is big, you'll get stuck in it.

69. The psychiatrist should be the twentieth century's God.
70. Summer heat is often too much for even a well running car to take.
71. Eventually people will die from air pollution because we can't evolve bigger lungs fast enough.
72. The ability to hunt animals should be taught to young men.
73. The birds tend to keep the insect population under control, so one should never use insect sprays.
74. It is rewarding to camp with a minimum of equipment so that you can feel close to nature.
75. There's no point in eating health foods; if you're healthy, you're healthy, and if you're not, you're not.
76. It is a good idea to use a lifejacket or other safety device when you go for a swim.
77. Good teeth are a question of good genes and good dental hygiene.
78. If pilots didn't fly through bad weather to make more profits, there'd be fewer air crashes.
79. The bowels will regulate themselves if the proper foods are eaten.
80. The ocean floor probably contains many valuable minerals, but it is too treacherous to mine profitably.

81. Nowadays, with modern radar and instrument control, planes seldom get grounded by bad weather.
82. The only safe way to enter the forest is with a trained guide.
83. Control of water pollution is almost impossible because we can't accurately predict rainfall and river heights.
84. Dams may provide some electricity, but there just aren't enough rivers to provide us with much more.
85. It is a good idea to see the doctor quite frequently so that he can immediately treat anything that goes wrong with you.
86. Money spent on developing artificial organs is a waste because the natural forces in the body that reject them are too powerful to suppress.
87. If we only ate what we really needed, our weight would be no problem.
88. With excellent education and training almost anyone can be successful.
89. Fishermen, farmers, and trappers often have very low incomes when nature goes against them.
90. If you keep in good shape, then you'll look good even when you're dressed in a mediocre outfit.
91. We're all going to live just so long; there's little that we can do to increase our lifespan.

92. Sports that involve many other people, such as bowling, golf, and tennis, are especially enjoyable.
93. Hunting is one of the best ways of regulating animal populations.
94. People can now regulate their weight through the use of modern scientific principles.
95. Baldness is a natural tendency in some men which is really nothing to be ashamed of.
96. It is not wise to be dependent on a seasonal tourist business for your income because bad weather can ruin you in the end.
97. Baldness can be prevented by anyone who tries hard enough.
98. A nice breezy screened porch is a more valuable asset than an insect ridden garden.
99. Even if you're frequently constipated, good eating habits and plenty of exercise should make you regular again.
100. Instead of wasting your property on a patio, you should plant something green almost everywhere.
101. On cold days it can be very dangerous to spend much time outdoors.
102. God is basically a vengeful and wrathful God who will punish you whenever you do anything against his will.
103. Someday scientists will invent a pill that prevents constipation entirely.

104. Drugs such as marijuana and mescaline enrich our lives because they allow us to see things in a new way.
105. Forests should be planned with enough ranger stations and trails so that no one gets lost in them.
106. The quality of your sex life depends mainly on your inborn sexual ability.
107. The oceans should be protected from economic exploitation.
108. It is really sad when a cat kills a bird.
109. New species of animals should be domesticated so that they can serve man better.
110. It's useless to use insect sprays; if they want to they bite you anyway.
111. Every animal plays its part in preserving the balance of nature and thus should not be hunted by man.
112. Modern science will soon perfect a harmless cigarette.
113. Some people just seem to develop their natural talents better than others.
114. Oil found beneath the oceans should be tapped for man's use.
115. The possibility of bad weather causing an accident is often enough to make you stay home.
116. Clothes don't make the man; some men just have it and some don't.

117. The ocean must not be fished too heavily or it will soon be depleted of edible fish.
118. It's better not to eat too much artificial processed food; stick to the basics.
119. Ants on a picnic aren't so bad; they don't eat much.
120. A healthy strong body helps, but with enough therapy anyone can have a good sex life.
121. When you go outdoors in the summer, it is wise to use an insect repellent to keep the bugs away.
122. If you hurt yourself you should attribute it to your carelessness, not to God.
123. It is worth traveling further to reach a beach where there are practically no people around.
124. When the weather gets hot, you should try to avoid long trips by car so that you won't get stuck with an overheated engine.
125. Many insects are so beautiful that they dispel any fear that you might have of them.
126. It is preferable to swim in a pool rather than in a lake or at the ocean because it's so much safer.
127. It is advisable to go camping only when you have every type of modern equipment along to insure your safety.

128. Using modern fishing equipment and techniques, you'll almost always make a good catch.
129. Whenever you get out of a tight spot you should thank God that he rescued you.
130. Tolls should be lowered so that more people can enjoy the highways.
131. Our IQ depends mainly on the upbringing and education that we get.
132. Wines and liquors should only be used to enhance the natural joys in life, not to mask them.
133. Our success in life is really in God's hands.
134. The thought of exploring old homes is really frightening because you could find mice there.
135. You can easily rid your house of roaches by using enough poison.
136. Bad weather often makes even the best maintained highways impassable.
137. Riding a bicycle is a great means of transportation and recreation.
138. Lack of exercise is a prime cause of being overweight.
139. Outdoor activities are most enjoyable when held far from any shelter but variations in the weather must be taken into account.

140. Scientists will soon find a drug that will cure the common cold.
141. Iceskating in a city rink is more fun than it is on a lake because of all the other people.
142. National parks are most enjoyable when toured on foot rather than in a car.
143. Camping in the forest is frightening.
144. It would be enjoyable being an engineer or industrialist.
145. It would be enjoyable raising flowers as a profession.
146. Many winter sports are so dangerous that you should avoid them entirely.
147. Eating special "health" foods is silly; name brand food that you can get at the supermarket is just as good.
148. Instead of building more hydroelectric dams we should conserve existing supplies of electricity.
149. The forces that determine the weather are beyond man's power to comprehend.
150. A successful farmer takes God's ways into account whenever he makes his plans.
151. At football games it's always so cold and uncomfortable.
152. I love to fly; the sense of power thrills me.

153. Forests should be developed with roads and camping areas so that as many people as possible can enjoy them.
154. A good way of keeping air pollution from cars low would be to charge higher tolls especially to cars with only one passenger.
155. A garden is useless unless it provides something valuable like vegetables and fruit.
156. Artificial flowers are nice and would be enjoyable to make.
157. Cigarettes, alcohol, and other stimulants add an interesting dimension to one's life.
158. Air pollution is mainly dependent on changes in the weather; thus, if the weather is right, it'll go down.
159. Sailing is more enjoyable than motor boating.
160. Smoking is mainly harmful because it interferes with our natural respiration function.
161. It is enjoyable to go for a walk in the forest just to view the wonders of nature without actually accomplishing or learning anything.
162. People living near the ocean are in great danger.
163. Plane crashes due to bad weather are inevitable.

164. Jobs that keep you outdoors near nature are great.
165. I prefer to see animals only in zoos because many of them are very dangerous.
166. Outdoor walks are a pleasure even when there are lots of bugs around.
167. It is enjoyable just being close to nature when hiking in the woods.
168. It would be enjoyable being a nature teacher or naturalist.
169. If you live a natural and honest life, you'll never go against God's will.
170. You just can't replace the natural goodness in food with artificial coloring, flavoring, and vitamins.
171. Very few animals really frighten me very much; I can handle myself in most situations.
172. It is very enjoyable to go to an ocean or lake simply to enjoy its beauty without actually fishing or boating.
173. Your teeth are either good or bad; if they're bad there's very little that you can do about it.
174. Major surgery is really a waste of time. When your time has come, it's come.
175. Scientists should build planes that hardly ever get delayed by bad weather.

176. I get more upset when my flight is delayed by overcrowding on the runway than when it gets delayed by bad weather.
177. Violent weather, such as wind and thunder storms, is so beautiful to watch.
178. Underseas oil will never be a major source of power because storms, hurricanes, and strong currents usually make it almost impossible to drill.
179. The oceans will never be a major food source because we can't really control the ocean life itself.
180. Airplanes will never be a really reliable form of transportation; the weather is just too powerful for them to take.
181. Men should learn to enjoy life without using artificial stimulants such as tobacco and alcohol.
182. Screens on windows help, but somehow, bugs always get in the house anyway.
183. During the winter, I enjoy getting out of doors, so I simply dress warmly and keep active so that the cold doesn't bother me.
184. Snow tires and chains can get you through almost any storm.
185. Diet pills are one of the best ways to lose weight.

186. With modern advances in dental science, almost anyone can have good teeth.
187. Nature provides almost all of us with an adequate sexual potential but it is up to us to learn how to enjoy it properly.
188. It is frightening to go on almost any kind of small boat.
189. With the right dress, any woman can have an attractive figure.
190. Farmers and fishermen enjoy their work because they have a sense of control and power over nature.
191. Smoking cigarettes seems to be a natural weakness in many people; once they're hooked, they're hooked.
192. Women should only wear fake fur coats.
193. The best gardens are formless and unpredictable.
194. Dams should be built wherever they will yield significant amounts of power or water.
195. It is gratifying being a veterinarian.
196. Cockroaches are not a problem if you keep a good clean house.
197. Automobiles are a necessity, but steps should be taken to limit their exhaust gasses.
198. Steam baths and massages are one of the best ways to lose weight.
199. God helps those who help themselves.

200. Constipation seems to be an inborn problem in many people.
201. People who keep unnecessary stress at a minimum in their lives usually don't have severe mental problems.
202. It really doesn't make much difference what you eat. Inevitably you'll get sick anyway.
203. The best clothes are nice old comfortable ones; style is not as important as comfort.
204. God is a good friend of man.
205. Being a construction manager would be challenging because you have to battle with natural hazards to be successful.
206. Whenever you plan any outdoor activities, it always seems to rain.
207. Industrial pollution of rivers should be banned, even if it means a loss of revenues and jobs.
208. Automobiles are the single most destructive machine devised by man, and thus, they should be banned.
209. The best way to prevent the common cold is by maintaining good health habits.
210. When the weather gets cold, I prefer to stay indoors in a nice warm place.

211. Arts and crafts are more enjoyable than outdoor hobbies such as hiking.
212. There is little that we can do to control any of the rivers that flood their banks and damage housing nearby.
213. If you dress in the most recent styles, you'll always look fine physically.
214. Doctors should develop artificial organs that could replace any defective body organ.
215. It would not be enjoyable swimming at a beach where there were no people because it's too dangerous.
216. Thunder storms are so frightening.
217. Alcohol and other natural escape drugs are used by nature to subdue man.
218. Highways should be built with all-weather safety as the only consideration.
219. People should be limited to fishing in lakes that have been especially stocked and set aside for such purposes.
220. The thought of flying on an airplane really frightens me.
221. On nice days, it is more restful to sit in your backyard or on your terrace than to go on long walks.

222. Snow tires work well only under certain weather conditions; thus, we should take note of the weather and adjust our plans to it.
223. If you don't have a good physique, the clothing you wear won't make you look good.
224. We should try to develop modern drugs that will increase a person's sexual potency.
225. Forests should be left in their natural state for men to appreciate.
226. Constipation is not really a problem; you can always use a strong laxative.
227. Diet foods are a great way to keep your weight down.
228. The water gained by building a dam could have been gained more sensibly by conserving existing supplies.
229. God wants only what is best for people.
230. On nice days it is hard to stay indoors for even a moment.
231. Hot weather frequently makes you feel like you're going to die.
232. Planning a garden is virtually impossible; the flowers never grow like you expect them to.
233. Marriage counseling and sex clinics are worthless; if your sex life is bad you just haven't got what it takes.

234. Nervousness can be overcome easily, if the proper drugs are used.
235. The best way to prevent floods from causing any damage would be to avoid building houses near the banks of powerful rivers.
236. If you've gotten overweight, dressing well won't hide it.
237. Sports such as skiing and skin-diving are fun mainly because they pit you against natural obstacles.
238. It is more enjoyable to tour a natural area in an automobile than on foot.
239. Most animals are killed by natural disasters; thus, there is little that men can do to regulate their population.
240. Dams provide a false sense of security to the people living downstream from them.
241. Adequate dikes and levees can and should be built wherever flood waters might cause damage to nearby housing.
242. It's not worthwhile to go for a medical checkup because your health is either good or bad and there's very little that you can do about it.
243. You should wear whatever style of clothing best compliments your natural figure.

244. Screens usually keep out insects, but use sprays as well to be sure.
245. God is a figment of man's imagination.
246. The millions of dollars that are spent on snowplows and snow removal are wasted; people could just stay put when it is going to storm.
247. The best way to have a good sex life is to just relax and enjoy what nature has provided.
248. The water is enjoyable mainly because it feels so good just to have it rushing all around you.
249. It is not a good idea to be in the construction business because bad weather usually causes you to earn less money.
250. There will never be a lasting cure for constipation.
251. Whenever you take a plane you seem to get delayed by bad weather, fog, or headwinds.
252. Swimming at a pool is great fun because you can drink and socialize more easily than you can at the ocean.
253. Some people just seem to be naturally superior to others.
254. Our IQ depends on both our natural capabilities and on how well we develop them.

255. Spraying won't keep bugs out of your garden; they'll destroy your plants anyway.
256. A patio is more enjoyable than a garden.
257. The best way to avoid mental illness is to live a simple, natural life.
258. On hot days the best way to keep cool is to spend as much time as possible by the air conditioner.
259. Pollution of rivers is the necessary side-effect of economic progress and hence should not be severely limited by legislation.
260. The average lifespan will increase primarily because of advancements in modern medicine.
261. Modern medicine will soon have a cure for almost every illness.
262. If airlines took seasonal weather changes into account when scheduling flights, there wouldn't be so many delays.
263. Most household pests are more frightened of you than you are of them.
264. Gardening and raising plants are great fun.
265. The doctor should be visited mainly to check on the effectiveness of your exercise and your diet at keeping you healthy.

266. Automobiles are a threat to the environment, and thus, a complete changeover to mass transit is essential.

267. Cross country skiing is preferable to downhill skiing because there are fewer people around.

Appendix II

182 Item Pilot Test Form of Attitude Survey

Appendix II

182 Item Pilot Test Form of Attitude Survey

Current Issues Questionnaire Directions

On the next few pages you will find a large number of statements covering a wide range of current issues. This questionnaire is designed to measure how you feel about those issues. The results will be kept totally anonymous, so please try to be as honest as possible. There are no "right or wrong" or "good and bad" answers; simply answer as you actually feel.

On the answer sheet you will find a space where you can indicate the extent to which you agree or disagree with each of the statements. Each numbered space on the answer sheet has six stars in it. You should circle the star which best indicates how much you agree with the statement. The stars are numbered from +3 to -3. The +3 star would be circled if you strongly agree with the statement, the star under the -3 would be circled if you strongly disagree with the statement. The other stars represent intermediate views.

The system of stars is more clearly illustrated below;
please read this carefully.

Strongly	Moderately	Mildly	Mildly	Moderately	Strongly
Agree	Agree	Agree	Disagree	Disagree	Disagree
+3	+2	+1	-1	-2	-3
*	*	*	*	*	*

EXAMPLE: ex: We should spend less money on the moon and
more here on earth.

answer sheet: +3 +2 +1 -1 -2 -3
 * * * * * *

I moderately agree with the statement so I cir-
cled the star under +2.

For technical reasons each person taking this ques-
tionnaire must begin at a different point. Would you please
begin with statement #____. Be sure to begin marking your
answers at the space marked with the same Number. When you
reach the last statement, return to number 1 and continue
until you have completed all of the statements. Be sure
to circle only one star for each statement, and be sure you
respond to every statement.

For purposes of determining the nature of the indi-
viduals taking this questionnaire it is necessary for me
to ask you a few questions about yourself. The information

from this section is strictly confidential.

Sex_____ Age_____ Occupation_____

Annual Income_____ Highest Grade in school completed__

Major in school_____ Size of current hometown_____

Nature of current Hometown: Rural Suburban Urban (Circle one)

Type of residence: House, Garden Apt., Small apt. house,
High rise apt., Dormitory.

CURRENT ISSUES QUESTIONNAIRE

1. You can keep your house clear of pests by using sprays and traps whenever necessary.
2. Scientists should try to understand the weather, but not how to control it.
3. The ocean is valuable primarily as a source of food and recreation for man.
4. No limit should be placed on automobile horsepower.
5. Spraying your garden is the only way to keep out insects.
6. The oceans and lakes are better places to swim than swimming pools.
7. Sensible eating and a lot of healthy activity will usually result in a healthy weight loss for most people.
8. Snowmobiles are a great way of touring the wilderness.
9. It is just lovely being in a garden near the flowers.
10. Dieting and other weight loss techniques are ineffective because many people are just naturally heavy.
11. If you've got weak hair roots you'll get bald and there's little that can be done to prevent it.

12. The drilling of under-seas oil should be banned even if it eventually means a power shortage.
13. It is the most fun to camp when you use all the most modern equipment.
14. The best way to keep animal species from disappearing would be to preserve the wilderness in its natural state.
15. Some people are just born fat and there is little that they can do about it.
16. On hot days it is best to stay cool by dressing lightly and staying outdoors in shady places.
17. The water is very frightening to me.
18. You're just fated to be a certain weight.
19. Dieting often fails due to our powerful drives to eat until full.
20. Animals should be avoided because they injure many people.
21. Our IQ's are determined when we are born.
22. Fancy equipment doesn't help much when fishing; if they're going to bite, they'll bite; if not, forget it.
23. Screens on windows are a good, effective, and harmless way of keeping insects out of your home.
24. A strict upper limit should be placed on automobile horsepower.

25. Worthless animals that provide no furs or meat to men should be hunted whenever desired.
26. We should develop modern snow removal equipment that will clear the highways promptly after any size storm.
27. Modern man can protect himself from the hazards of any type of weather.
28. It would be wonderful if scientists could control the weather.
29. Nervous disorders are often inherited from your parents and thus can't be prevented.
30. The water is enjoyable mainly because of the activities such as waterskiing and boating that it makes possible.
31. The common cold is with us to stay.
32. Medicines, even the most modern, work well only when they harmonize with the natural antibodies in the human body.
33. Clothes make the man.
34. Insects don't really bother me because they all have their place in nature.
35. Plane crashes could be prevented by building stronger and more powerful planes.
36. Modern forms of therapy such as shock treatments, drug treatments, and behavior therapy hold great promise for mankind.
37. Using scientific methods, anyone can grow a well-planned garden.

38. We should catch as much fish as possible from the ocean because the hungry people need them so badly.
39. If tobacco didn't exist, you can be sure that nature would have provided us with some other substance to hurt ourselves with.
40. Using the proper coolants a car can take almost any heat.
41. It's always so uncomfortable outdoors.
42. Mental illness is often caused by an inherited deficiency; thus there is little that can be done to prevent it.
43. The ocean floor should be explored for valuable minerals.
44. Motorboating is more enjoyable than sailing.
45. The best solution to the automobile exhaust problem would be to have people live within walking distance of work, shopping, and recreational facilities.
46. Dams should be built to foster recreation on the artificial lake that is created, even when the power yield is low.
47. If a food product loses some of its natural vitamins during processing, they should be replaced with artificial vitamins.
48. Animals don't frighten me; most won't harm man unless provoked by him.

49. The best hope for increasing your lifespan is to learn to live in a natural, less artificial way.
50. Gardens are a pain in the neck; they never grow well.
51. When there are a lot of bugs in the air it's better to stay indoors than to risk getting bitten.
52. Cockroaches and other household pests are really frightening.
53. The birds tend to keep the insect population under control, so one should never use sprays.
54. It is rewarding to camp with a minimum of equipment so that you can feel close to nature.
55. There's no point in eating health foods; if you're healthy, you're healthy, and if not, you're not.
56. The bowels will regulate themselves if the proper foods are eaten.
57. The ocean floor contains many valuable minerals, but it would be too treacherous to mine them.
58. Nowadays, with modern radar, and instrument controls, planes seldom get grounded by bad weather.
59. The only safe way to enter the forest is with a trained guide.
60. Control of water pollution is practically impossible because we can't accurately predict rainfall and river heights.

61. If we only ate what we really needed our weight would be no problem.
62. With excellent education and training almost anyone can be successful.
63. Fishermen and farmers often have very low incomes when the weather goes against them.
64. If you keep in good shape then you'll look good even when you're dressed in a mediocre outfit.
65. We're all going to live just so long; there's little that we can do to increase our lifespan.
66. Hunting is one of the best ways to regulate the animal population.
67. People can now regulate their weight through the use of modern scientific principles.
68. It is not wise to be dependent on a seasonal business for your income because bad weather can ruin you in the end.
69. Even if you're frequently constipated, good eating habits and plenty of exercise should make you regular again.
70. Instead of wasting your property on a patio you should plant something green almost everywhere.
71. On cold days it can be very dangerous to spend too much time outdoors.
72. Someday scientists will invent a pill that will prevent constipation entirely.

73. The oceans should be protected from economic exploitation.
74. It is really sad when a cat kills a bird.
75. New species of animals should be domesticated so that they can serve man better.
76. It's useless to use insect sprays; if they want to they'll bite you anyway.
77. Every animal plays its part in preserving the balance of nature and thus should not be hunted by man.
78. Modern science will soon perfect a harmless cigarette.
79. Oil found beneath the ocean should be tapped for man's use.
80. The possibility of bad weather causing an accident is enough to make you stay home.
81. Clothes don't make the man; some men just have it and some don't.
82. The ocean must not be fished too heavily or it will soon be depleted of edible fish.
83. It's better not to eat too much artificial processed food; stick to the basics.
84. Ants on a picnic aren't so bad; they don't eat much.
85. It is worth traveling further to reach a beach where there are practically no people around.

86. Many insects are so beautiful that they dispel any fear that you might have of them.
87. Using modern fishing equipment and techniques, you'll almost always make a good catch.
88. Tolls should be lowered so that more people can enjoy the highway.
89. Wines and liquors should be used to enhance the natural joys in life, not to mask them.
90. The thought of exploring old homes is really frightening because you could find mice there.
91. You can easily rid your house of roaches by using enough poison.
92. Outdoor activities are most enjoyable when held far from any shelter, but variations in the weather must be taken into account.
93. Scientists will soon find a drug that will cure the common cold.
94. National parks are most enjoyable when toured on foot rather than in a car.
95. Camping in the forest is frightening.
96. It would be enjoyable being an engineer or industrialist.
97. It would be enjoyable raising flowers as a profession.
98. Eating special "health" foods is silly; name brand food that you get at the supermarket is just as good.

99. Instead of building more hydroelectric dams, we should conserve existing supplies of electricity.
100. The forces that determine the weather are beyond man's power to comprehend.
101. I love to fly; the sense of power thrills me.
102. Forests should be developed with roads and camping areas so that as many people as possible can enjoy them.
103. A garden is useless unless it provides something useful like vegetables and fruit.
104. Artificial flowers are nice and would be enjoyable to make.
105. Cigarettes, alcohol, and other stimulants add an interesting dimension to one's life.
106. Air pollution is mainly dependent on changes in the weather; thus, if the weather is right, it'll go down.
107. Sailing is more enjoyable than motor-boating.
108. Smoking is mainly harmful because it interferes with our natural respiration functions.
109. It is enjoyable to go for a walk in the forest just to view the wonders of nature without actually accomplishing or doing anything.

110. People living near the ocean are in great danger.
111. Plane crashes due to bad weather are inevitable.
112. Jobs that keep you outdoors near nature are great.
113. I prefer to see animals only in zoos because many of them are so dangerous.
114. Outdoor walks are a pleasure even when there are lots of bugs around.
115. It would be enjoyable being a nature teacher or naturalist.
116. You just can't replace the natural goodness in food with artificial coloring, flavoring, and vitamins.
117. It is very enjoyable to go to an ocean or lake simply to enjoy its beauty without actually fishing or boating.
118. Your teeth are either good or bad; if they're bad there's very little you can do about it.
119. Scientists should build planes that hardly ever get delayed by bad weather.
120. Violent weather, such as wind and thunderstorms, is so beautiful to watch.
121. The oceans will never be a major food source because we can't really control the ocean life itself.

122. Airplanes will never be a really reliable form of transportation; the weather is just too powerful for them to take.
123. Men should learn to enjoy life without using artificial stimulants such as tobacco and alcohol.
124. Screens on windows help, but somehow, bugs always get in the house anyway.
125. During the winter I enjoy getting outdoors, so I simply dress warmly and keep active so that the cold doesn't bother me.
126. Snow tires and chains can get you through almost any storm.
127. Diet pills are one of the best ways to lose weight.
128. With modern advances in dental science, almost anyone can have good teeth.
129. It is frightening to go on almost any kind of boat.
130. With the right dress almost any woman can have a good figure.
131. Farmers and fishermen enjoy their work because they have a sense of power and control over nature.
132. Smoking cigarettes seems to be a natural weakness in many people; once they're hooked, they're hooked.
133. Women should wear only fake furs.

134. The best gardens are formless and unpredictable.
135. Dams should be built wherever they will yield significant amounts of power or water.
136. Cockroaches are not a problem if you keep a good clean house.
137. Steam baths and massages are one of the best ways to lose weight.
138. Constipation seems to be an inborn problem in many people.
139. It really doesn't matter what you eat; inevitably you'll get sick anyway.
140. The best clothes are nice old comfortable ones; style is not as important as comfort.
141. Being a construction manager would be challenging because you have to battle with natural hazards to be successful.
142. Whenever you plan any outdoor activities, it always seems to rain.
143. Industrial pollution of rivers should be banned, even if it means a loss of revenues and jobs.
144. When the weather gets cold, I prefer to stay indoors in a nice warm place.
145. There is little that we can do to control many of the rivers that flood their banks and damage nearby housing.

146. If you dress in the most recent styles, you'll always look good physically.
147. Doctors should develop artificial organs that could replace any defective body organs.
148. Thunder storms are so frightening.
149. Alcohol and other natural escape drugs are used by nature to subdue men.
150. People should be limited to fishing in lakes that have been especially stocked and set aside for such purposes.
151. The thought of flying on an airplane really frightens me.
152. Snow tires work well only under certain weather conditions; thus we should take not of the weather and adjust our plans to it.
153. If you don't have a good physique, the clothes you wear won't make you look good.
154. Forests should be left in their natural state for men to appreciate.
155. Diet foods are a great way to keep your weight down.
156. The water gained by building a dam could have been gained more sensibly by conserving existing supplies.
157. On nice days it is hard to stay indoors even for a moment.

158. Hot weather frequently makes you feel like you're going to die.
159. Planning a garden is virtually impossible; the flowers never grow like you expect them to.
160. Nervousness can be overcome easily if the proper drugs are used.
161. The best way to prevent floods from causing any damage would be to avoid building houses near the banks of powerful rivers.
162. It is more enjoyable to tour a natural area in an automobile than on foot.
163. Dams provide a false sense of security to the people who live downstream from them.
164. Adequate dikes and levees can and should be built wherever flood waters might cause damage to nearby housing.
165. It is not worthwhile to go for a medical checkup because your health is either good or bad and there's very little that you can do about it.
166. You should wear whatever style of clothing best compliments your natural figure.
167. Screens usually keep out insects, but use sprays as well to be sure.
168. The millions of dollars spent on snowplows and snow removal are wasted; people could just stay put when it snows.

169. The water is enjoyable mainly because it feels so good just to have it rushing all around you.
170. It is not a good idea to be in the construction business because bad weather usually causes you to earn less money.
171. Whenever you take a plane, you seem to get delayed by bad weather, fog, or headwinds.
172. Swimming at a pool is great fun because you can drink and socialize more easily than you can at the ocean.
173. Some people just seem to be naturally superior to others.
174. Our IQ depends on both our natural capabilities and on how well we develop them.
175. Spraying won't keep bugs out of your garden; they'll destroy your plants anyway.
176. A patio is more enjoyable than a garden.
177. The best way to avoid mental illness is to live a simple natural life.
178. On hot days the best way to keep cool is to spend as much time as possible by the air conditioner.
179. Pollution of rivers is the necessary side-effect of economic progress and hence should not be severely limited by legislation.

180. The average lifespan
will increase pri-
marily because of
advancements in modern
medicine.

181. Gardening and raising
plants is great fun.

182. Automobiles are a
threat to the environ-
ment, and thus, a
complete changeover
to mass transit is
essential.

NOW RETURN TO PAGE 1
AND COMPLETE THE
QUESTIONNAIRE.

Appendix III

Rotated Factor Matrix—Pilot Test

ROTATED FACTOR MATRIX

VARIABLE	1	2	3	4	5	6	7	8
1	0.1547	-0.0070	-0.1548	-0.1132	0.3379	0.2531	0.0952	0.0824
2	0.2547	0.1017	-0.1394	0.0933	-0.2613	-0.3036	0.0417	0.0373
3	0.1345	-0.0740	0.2035	0.0904	0.2210	-0.2826	-0.0152	0.1197
4	0.0744	-0.0546	0.0647	0.1106	0.1103	0.1431	-0.0150	-0.1010
5	0.2637	-0.1604	0.1170	-0.1343	-0.0036	0.0443	-0.0848	0.1442
6	0.2264	0.2264	0.2264	0.3322	0.2746	0.0376	0.0365	0.0361
7	-0.1641	0.1351	-0.0123	0.1749	0.2746	0.0376	0.0365	0.0361
8	0.0917	-0.1939	0.1749	0.2746	0.2746	0.0376	0.0365	0.0361
9	-0.1377	0.0674	0.0143	0.0415	0.2746	-0.0136	0.1249	-0.1268
10	-0.1917	-0.1917	0.1616	0.0391	0.1742	-0.1546	0.1674	-0.0145
11	0.2846	0.1176	-0.1717	0.1174	0.1965	-0.0563	0.0248	0.1316
12	0.1751	-0.1751	0.1322	0.1322	0.2034	-0.1851	0.0400	0.0746
13	0.1547	-0.0673	0.2446	-0.0406	0.1642	0.1106	-0.0473	0.0604
14	-0.1547	0.1717	0.1269	0.2340	0.1673	-0.1174	0.1816	0.1240
15	0.2637	-0.2637	0.2637	0.0470	0.1577	0.3547	0.1234	-0.3437
16	0.2637	0.1451	0.1310	0.2046	0.2423	-0.1271	0.0853	0.0563
17	0.0847	-0.0847	0.1310	-0.3232	-0.1301	0.0243	0.0273	0.1433
18	0.0847	0.2046	-0.0742	0.2140	0.1124	-0.0633	-0.0221	-0.0221
19	0.1176	0.0371	0.0647	-0.2134	0.1765	-0.1722	0.2278	-0.0826
20	0.2637	-0.2637	-0.1652	-0.3156	0.0403	0.1770	-0.1843	-0.3549
21	0.0847	0.0847	0.0173	0.0376	0.0761	0.0926	0.0971	-0.1212
22	0.1176	-0.1176	0.0173	0.0192	0.2412	-0.1476	0.0906	0.0520
23	-0.1176	0.0847	-0.0847	0.2247	0.3437	0.1437	0.1249	0.2462
24	-0.1176	0.0847	-0.0847	-0.0847	0.3173	-0.0634	0.2164	0.1292
25	0.0847	-0.0847	-0.2644	-0.2644	0.1149	0.2770	-0.1842	-0.1064
26	0.0847	0.0847	0.0847	0.2731	0.0432	0.1714	0.1340	0.0443
27	0.1176	-0.1176	0.2644	0.2731	-0.2130	0.2734	-0.1500	-0.0360
28	0.1176	0.1176	0.2644	0.2731	0.0432	0.2734	0.3172	0.0423
29	0.0847	-0.0847	-0.2644	-0.2644	0.0432	0.4045	0.0143	-0.1364
30	0.1176	-0.1176	0.2644	0.2731	0.1149	0.1471	0.0143	0.0143
31	0.1176	-0.1176	0.2644	0.2731	0.1149	0.0316	-0.0184	0.0161
32	0.1176	0.1176	0.2644	0.2731	0.1149	-0.0307	-0.0492	0.0419
33	0.1176	0.1176	0.2644	0.2731	0.1149	-0.1565	0.1573	0.0475
34	0.1176	0.1176	0.2644	0.2731	0.1149	0.0432	-0.0432	0.1840
35	0.1176	0.1176	0.2644	0.2731	0.1149	-0.1273	-0.0143	0.1049
36	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
37	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
38	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
39	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
40	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
41	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
42	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
43	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
44	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
45	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
46	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
47	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
48	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
49	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
50	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
51	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
52	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
53	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
54	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740
55	0.1176	0.1176	0.2644	0.2731	0.1149	0.1149	-0.0316	0.1740

178	0.14795	-0.27337	0.14362	-0.27311	0.16434	0.09264	0.15263	0.21785
179	0.44713	-0.14597	0.01654	-0.11751	0.04634	0.09801	-0.04620	-0.06427
180	-0.12755	0.07847	0.25770	0.01549	0.07764	0.20915	0.11353	0.12540
181	-0.06417	0.62750	-0.01439	0.16213	0.04151	0.10501	0.01751	-0.00549
182	0.06645	0.06970	-0.28891	0.14591	0.14776	0.14084	0.17359	0.19133
183	-0.01914	-0.45943	-0.00775	0.29975	-0.03601	0.17919	0.02570	-0.06157

Appendix IV

**126 Item Final Version of the
Attitude Survey**

CURRENT ISSUES QUESTIONNAIRE

DIRECTIONS

On the next few pages you will find a large number of statements concerned with a wide range of current issues. This questionnaire is designed to measure how you feel about those issues. The results will be kept totally anonymous, so please try to be as honest as possible. There are no "right or wrong" or "good and bad" answers; simply answer as you actually feel.

On the answer sheet you will find a space where you can indicate the extent to which you agree or disagree with each of the statements. Each numbered space on the answer sheet has six stars in it. You should circle the star which best indicates how much you agree with the statement. The stars are numbered from +3 to -3. The +3 star would be circled if you strongly agree with the statement; the -3 star would be circled if you strongly disagree with the statement. The other stars represent intermediate viewpoints. The system of stars is more clearly illustrated below; please read this carefully.

KEY:	Strongly Agree	Moderately Agree	Mildly Agree	Mildly Disagree	Moderately Disagree	Strongly Disagree
	+3	+2	+1	-1	-2	-3
	*	*	*	*	*	*

EXAMPLE: ex: We should spend less money on the moon and more here on earth.

answer sheet: +3 +2 +1 -1 -2 -3
 * * * * * *

1 moderately agreed with the statement so I circled the star under +2.

The system of stars is also explained on the answer sheet itself. Be sure that you understand it before proceeding with the questionnaire. When you have begun be sure to circle a star for every statement. Be sure not to circle more than one star for each statement. Try not to lose your place. If you make a mistake, please clearly erase or cross out the alternative that you don't want to record.

CURRENT ISSUES QUESTIONNAIRE

1. Adequate dikes and levees can and should be built wherever flood waters might cause damage to nearby housing.
2. Scientists should try to understand the weather, but not how to control it.
3. Thunderstorms are so frightening.
4. Whenever you plan any outdoor activities it always seems to rain.
5. Automobiles are a threat to the environment, and thus, a complete change-over to mass transit is essential.
6. There have been occasions when I felt like smashing something.
7. Control of water pollution is practically impossible because we can't accurately predict rainfall and river heights.
8. Ants on a picnic aren't so bad; they don't eat much.
9. Violent weather, such as wind and thunderstorms, is so beautiful to watch.
10. It would be wonderful if scientists could control the weather.
11. On a few occasions, I have given up doing something because I thought too little of my ability.

12. The oceans will never be a major food source because we can't really control the ocean life itself.
13. When I don't know something I don't at all mind admitting it.
14. There is little that we can do to control many of the rivers that flood their banks and damage nearby housing.
15. We should develop modern snow removal equipment that will clear the highways promptly after any size storm.
16. There have been times when I felt like rebelling against people in authority even though I knew they were right.
17. The thought of flying on an airplane really frightens me.
18. I don't find it particularly difficult to get along with loud-mouthed obnoxious people.
19. A strict upper limit should be placed on automobile horsepower.
20. On hot days the best way to stay cool is to spend as much time as possible by the air conditioner.
21. On occasion I have doubts about my ability to succeed in life.
22. I'm always willing to admit it when I make a mistake.
23. If you dress in the most recent styles, you'll always look good physically.

24. I am always courteous,
even to people who
are disagreeable.
25. The thought of explor-
ing old homes is really
frightening because
you could find mice
there.
26. People can now regu-
late their weight
through the use of
modern scientific
principles.
27. The water is enjoyable
mainly because of the
activities such as
waterskiing and boating
that it makes possible.
28. There have been occa-
sions when I took ad-
vantage of someone.
29. Women should wear only
fake furs.
30. I sometimes think that
when people have a mis-
fortune they only got
what they deserved.
31. Some people just seem
to be naturally superior
to others.
32. Camping in the forest
is frightening.
33. It is rewarding to camp
with a minimum of equip-
ment so that you can
feel close to nature.
34. The best hope for in-
creasing your lifespan
is to learn to live in
a natural, less arti-
ficial way.
35. Dams should be built
wherever they will
yield significant
amounts of power or
water.
36. Using modern fishing
equipment and tech-
niques, you'll almost
always make a good
catch.
37. The only safe way to
enter the forest is
with a trained guide.

38. Insects don't bother me because they all have their place in nature.
39. I always try to practice what I preach.
40. National parks are most enjoyable when toured on foot rather than in a car.
41. We're all going to live just so long; there's little that we can do to increase our life-span.
42. No matter who I'm talking to, I'm always a good listener.
43. Sailing is more enjoyable than motorboating.
44. Animals should be avoided because they injure many people.
45. I never resent being asked a favor.
46. The oceans should be protected from economic exploitation.
47. It's better not to eat too much artificial processed food; stick to the basics.
48. No limit should be placed on automobile horsepower.
49. Oil found beneath the oceans should be tapped for man's use.
50. At times I really insist on having things my own way.
51. Every animal plays its part in preserving the balance of nature, and thus should not be hunted by man.
52. I would never think of letting someone else be punished for my wrongdoings.

53. I like to gossip at times.
54. Many insects are so beautiful that they dispel any fear that you might have of them.
55. Instead of building more hydroelectric dams we should conserve existing supplies of electricity.
56. Scientists will soon find a drug that will cure the common cold.
57. I am always careful about my manner of dress.
58. Motorboating is more enjoyable than sailing.
59. It is sometimes hard for me to go on with my work if I am not encouraged.
60. The forces that determine the weather are beyond man's power to comprehend.
61. Doctors should develop artificial organs that could replace any defective body organs.
62. Screens usually keep out insects, but use sprays as well to be sure.
63. You're just fated to be a certain weight.
64. I have never felt that I was punished without cause.
65. It is very enjoyable to go to an ocean or lake simply to enjoy its beauty without actually fishing or boating.
66. I sometimes feel resentful when I don't get my way.

67. Some people are just born fat and there is little that they can do about it.
68. Scientists should build planes that hardly ever get delayed by bad weather.
69. Pollution of rivers is the necessary side-effect of economic progress and hence should not be severely limited by legislation.
70. There have been times when I was quite jealous of the good fortune of others.
71. Before voting I thoroughly investigate the qualifications of all the candidates.
72. It is just lovely being in a garden near the flowers.
73. People living near the ocean are in great danger.
74. The ocean floor should be explored for valuable minerals.
75. I have almost never felt the urge to tell someone off.
76. The best solution to the automobile exhaust problem would be to have people live within walking distance of work, shopping, and recreational facilities.
77. A garden is useless unless it provides something useful like vegetables and fruit.
78. The common cold is with us to stay.
79. The oceans and lakes are better places to swim than swimming pools.

80. Modern forms of therapy such as shock therapy, drug therapy, and behavior therapy hold great promise for mankind.
81. I am sometimes irritated by people who ask favors of me.
82. Animals don't frighten me; most won't harm man unless provoked by him.
83. It is frightening to go on almost any kind of boat.
84. When there are a lot of bugs in the air it's better to stay indoors than to risk getting bitten.
85. It's useless to use insect sprays; if they want to they'll bite you anyway.
86. When the weather gets cold I prefer to stay indoors in a nice warm place.
87. Outdoor walks are a pleasure even when there are a lot of bugs around.
88. The ocean must not be fished too heavily or it will soon be depleted of fish.
89. I have never been irked when people express ideas very different from my own.
90. I can remember playing sick to get out of something.
91. I prefer to see animals only in zoos because many of them are so dangerous.
92. I never make a long trip without checking the safety of my car.

93. Whenever you take a plane you seem to get delayed by bad weather, fog, and headwinds.
94. Gardening and raising plants is great fun.
95. Using the proper coolants a car can take almost any heat.
96. Air pollution is mainly dependent on changes in the weather; thus, if the weather is right, it'll go down.
97. Diet pills are one of the best ways to lose weight.
98. You just can't replace the natural goodness in food with artificial coloring, flavoring, and vitamins.
99. Cockroaches and other household pests are really frightening.
100. The birds tend to keep the insect population under control, so one should never use sprays.
101. I sometimes try to get even rather than forgive and forget.
102. Swimming at a pool is great fun because you can drink and socialize more easily than at the ocean.
103. It is more enjoyable to tour a natural area in an automobile than on foot.
104. Planning a garden is virtually impossible; the flowers never grow like you expect them to.
105. The drilling of underseas oil should be banned even if it eventually means a power shortage.

106. I never hesitate to go out of my way to help someone in trouble.
107. The water is very frightening to me.
108. If I could get into a movie without paying and be sure I was not seen I probably would do it.
109. Hunting is one of the best ways to regulate the animal population.
110. Nervousness can be overcome easily if the proper drugs are used.
111. The millions of dollars spent on snowplows and snow removal are wasted; people could just stay put when it snows.
112. Airplanes will never be a really reliable form of transportation; the weather is just too powerful for them to take.
113. New species of animals should be domesticated so that they can serve man better.
114. A patio is more enjoyable than a garden.
115. It would be enjoyable raising flowers as a profession.
116. It would be enjoyable being a nature teacher or naturalist.
117. I have never intensely disliked anyone.
118. Alcohol and other natural escape drugs are used by nature to subdue man.
119. Worthless animals that provide no furs or meat for man should be hunted whenever desired.

120. Using scientific methods, anyone can grow a well planned garden.
121. My table manner at home are not as good as when I eat out in a restaurant.
122. It is most fun to camp out when you use all the most modern equipment.
123. The best clothes are nice old comfortable ones; style is not as important as confort.
124. Forests should be developed with roads and camping areas so that as many people as possible can enjoy them.
125. I have never deliberately said something that hurt someone's feelings.
126. Gardens are a pain in the neck; they never grow well.

*** END ***

CHECK OVER YOUR ANSWER SHEET AND BE SURE THAT ALL YOUR ANSWERS ARE CLEARLY MARKED AND THAT YOU HAVE CIRCLED ONLY ONE STAR FOR EVERY ANSWER. THANK YOU.

Appendix V

**Gallup Survey as Employed
in This Study**

OPINION SURVEY

1. You may have heard or read claims that our natural surroundings are being spoiled by air pollution, water pollution, soil erosion, destruction of wildlife, and so forth. How concerned are you about this problem?

Circle one.

deeply concerned somewhat concerned not very concerned

2. How much would you be willing to pay each year in additional taxes earmarked to improve our natural surroundings? Circle one.

a <u>small</u> amount	a <u>moderate</u> amount	a <u>large</u> amount
such as \$10 or less	such as \$50	such as \$100 or more

3. It has been said that it will, at some time, be necessary to limit the human population (number of people) if our present living standards are to be maintained. Do you think this will be necessary or not? Circle one.

necessary not necessary don't know

4. Which of these kinds of places would you find most pleasant as a place to live? Circle one.

mountains seashore rural area small city suburbs
large city other

5. In this country, which one of these do you think is the most pressing problem connected with our natural surroundings? Circle one.

Air pollution Wildlife preservation (birds and
Water pollution animals)
Soil erosion Preservation of open green spaces
Pesticides (chemicals used to kill insects)

6. In your opinion what can be done to correct this problem? (problem you chose above)

7. Are you in favor of setting aside more public land for conservation purposes such as national parks, wildlife

refuges, bird sanctuaries, and so forth? Circle one.

yes no don't know

8. Do you consider yourself a polluter of the environment or not? Circle one.

yes no don't know

9. About how much do you think air and water pollution now cost the average American family each year—taking into account such things as medical bills, paint and corrosive damage to your home and car, and loss of recreation areas? Just your best guess. _____

10. How would you prefer to handle the problem of pollution —by paying the cost to clean it up or by living more simply, that is using less electricity, driving less powerful cars, and so forth? Circle one.

paying to clean up living simpler life don't know

11. Power plants which produce electricity cause environmental pollution. To reduce this pollution would you

rather pay one-fifth more for electricity each month,
or be required to reduce your use of electricity by
one-fifth each month? Circle one.

pay one-fifth more reduce use one-fifth don't know

12. Autos are a major cause of air pollution. To reduce
this pollution which one of the three possibilities
listed below would you favor? Choose one.

 Pay \$100 more for a pollution free car

 Buy a less powerful car that causes less pollution

 Buy the same type of car as now and continue with
pollution

13. You probably have heard that cleaning up pollution in
America would be very expensive. The experts tell us,
however, that if people are willing to pay the cost of
cleaning up pollution now, then by 1980 they would save
considerable money. If this is true then would you
be willing to have your family pay about \$170 a year
now to save more than that later? Circle one.

Yes

No

Don't know

Appendix VI

Biographical Survey Measure

All of the information on this inventory is STRICTLY CONFIDENTIAL.

BIOGRAPHICAL INVENTORY

ID# _____ SEX _____ AGE _____ OCCUPATION _____

CURRENT ANNUAL FAMILY INCOME _____

HIGHEST LEVEL REACHED IN SCHOOL _____ MAJOR FIELD _____

WHAT ARE YOUR FUTURE OCCUPATIONAL PLANS? _____

CURRENT TYPE OF RESIDENCE: House, Duplex, Garden Apt.,
Highrise, Dormitory, Trailer (Circle one.)

CURRENT ADDRESS _____
city state population

BIRTHPLACE _____
city state population

HOW OFTEN DO YOU PARTICIPATE IN THE FOLLOWING ACTIVITIES?

Circle the appropriate number next to each activity listed below.

6 - very often . . . more than once a month

5 - often . . . about once every other month

4 - occasionally . . . about twice a year

3 - annually . . . about once a year

2 - sporadically . . . once every few years

1 - never

	very often	often	occasionally	annually	sporadically	never
1. Hunting	6	5	4	3	2	1
2. Fishing	6	5	4	3	2	1
3. Motorboating	6	5	4	3	2	1
4. Sailing	6	5	4	3	2	1
5. Backpacking	6	5	4	3	2	1
6. Camping with a camper	6	5	4	3	2	1
7. Camping with limited equipment	6	5	4	3	2	1
8. Skiing	6	5	4	3	2	1
9. Snowmobiling	6	5	4	3	2	1
10. Environmental Cleanup campaigns	6	5	4	3	2	1
11. Recycling of glass, paper, etc.	6	5	4	3	2	1
12. Nature hikes	6	5	4	3	2	1
13. Religious services	6	5	4	3	2	1
14. Lectures on ecology	6	5	4	3	2	1
	very often	often	occasionally	annually	sporadically	never

DO YOU BELONG TO, RECEIVE A PUBLICATION FROM, OR GO TO MEETINGS OF ANY ORGANIZATIONS CONCERNED WITH THE FOLLOWING TOPICS?

ECOLOGY

TRAVEL

HUNTING

POLLUTION CONTROL

BOATING

POLITICS

TRAILERS OR CAMPERS

SOCIAL PROBLEMS

GARDENING

SCIENCE + ENGINEERING

CAMPING

HEALTH FOOD

URBAN PROBLEMS

VACATIONING

TOPIC	PUBLICATIONS READ REGULARLY	GROUPS IN WHICH MEMBERSHIP IS HELD	MEETING ATTENDED HOW OFTEN?

HAVE YOU EVER WITNESSED, LOST PROPERTY, OR LOST HEALTH DUE TO ANY OF THE TYPES OF NATURAL OCCURRENCES LISTED BELOW?

HURRICANES

RAPIDS ON RIVER

FLOODS

UNDERTOW AT BEACH

TORNADOES

LIGHTNING

DROUGHT

EARTHQUAKES

FOREST FIRE

AVALANCHE

OCEAN STORM

LANDSLIDE

TYPE OF OCCURRENCE?	WITNESSED ONE # OF TIMES?	LOST PROPERTY DUE TO ONE? HOW MUCH IN \$?	LOST HEALTH DUE TO ONE? TYPE OF ILLNESS?

PLEASE INDICATE THE EXTENT TO WHICH EACH OF THE FOLLOWING WAYS OF SPENDING A VACATION APPEALS TO YOU. Circle the appropriate number.

6 - very appealing

5 - appealing

4 - slightly appealing

3 - slightly unappealing

2 - unappealing

1 - very unappealing

	very appealing					very unappealing
1. Relaxing in a beach house in a quiet uncrowded area	6	5	4	3	2	1
2. Hiking through the countryside	6	5	4	3	2	1
3. Going to a big resort hotel in the mountains	6	5	4	3	2	1
4. Sailing and swimming at a popular beach area	6	5	4	3	2	1
5. A friendly relaxing cruise	6	5	4	3	2	1
6. Living in a lone cabin in the woods	6	5	4	3	2	1
7. Learning about nature lore at a mountain resort	6	5	4	3	2	1
8. Camping on a remote ocean beach	6	5	4	3	2	1
9. Going on a chartered tour	6	5	4	3	2	1
10. Going to a popular beachfront hotel	6	5	4	3	2	1
11. Going to a lush private lodge in the mountains						
12. Going sightseeing with your family	6	5	4	3	2	1

What type of vacation not listed above do you find especially attractive? _____

Appendix VII

4. Thematic Test—Pilot Test

Appendix VII

Thematic Test Development—Pilot Testing of Stimulus Pictures

A thematic test of man-nature values was developed as a parallel project to the attitude survey. At the time of the completion of the attitude survey the thematic test was still at an earlier stage of development due to the complex nature of the development procedures involved. The work completed to date on the thematic test is presented primarily for the interest of the reader. It does not represent a completed research study; yet, the tentative conclusions and findings that are discussed may prove to be of some limited value to those wishing to undertake a similar project or to extend this work further.

The purpose of the thematic test was to provide data concerning subjects' man-nature value orientations which would be less constrained by preconceived categories and potentially less susceptible to social desirability response set than the data from the attitude survey. The response format of the thematic test was a written or spoken story. The stimulus picture constrains the subject somewhat;

however, wide variations in response are possible. Thus, orientations to nature such as "nature as virtue," "nature as history book," and so on, could conceivably appear in the themes. Social desirability response set should not be a major problem with the thematic test because it is not transparent; that is, the "correct" response and the purpose of the test are not obvious to the subject. It was hoped that this feature would help solve the main problem that the major public opinion survey of environmental attitudes (Gallup, 1969) had, that is, far more people indicated concern for the environment than acted on its behalf (McEvoy, 1972).

A TAT type of format was chosen for this study. (This format involves making up a story in response to a stimulus picture.) Other forms of thematic tests might have been employed; however, a number of factors led to this particular choice. One important factor was that Saarinen (1966) had some success with this form in his studies of man-nature values. Other thematic test forms such as the Sentence Completion types were rejected because they put too much of a constraint on the subjects' responses. Barker and Burton (1969) had only limited success with their use of a cartoon format in which the subject writes in the response of a person in the picture to a second person's remarks. The unconstrained nature of the Thematic

Apperception format was also expected to yield data that would be of significant heuristic value; that is, it might suggest aspects of man-nature values which, although not clearly tapped here, might be the subject of future research.

The pictures were developed from a list of over thirty potential scenarios which could give rise to thematic treatment. Ideas for pictures came from students and faculty in the Environmental Psychology program at C.U.N.Y., students concerned with Environmental values at Ramapo College in Mahwah, New Jersey, from topics involved in the attitude survey and from a general reading of the man-nature literature as outlined in Chapter I. The criterion for the inclusion of a picture in the initial test was that this author was able to conceive of at least one man-over, man-with, and man-under nature theme based on it. A list of the initial set of twenty drawings used in the pretest appears below. (See Table 47.) Next to each is a brief description of the types of issues that each picture was designed to tap. (See Appendix IX for the actual pictures.)

TABLE 47
INITIAL SET OF TWENTY THEMATIC
STIMULUS PICTURES

Picture	Issue
1. Fat man viewing himself in a mirror	Control of Physiological processes (weight)
2. Two men walking in the woods with some equipment	Pollution, camping, ecology
3. People on an airplane	Control of weather and space with technology, storms, noise pollution
4. Moving van near country house	Urbanism vs. naturalism
5. Dam scene	Control of floods, electric production, water conservation
6. Men by a river with some equipment	Water pollution, ecology, camping, nature study
7. Bedside hospital scene	Control of bodily processes by doctors
8. Some deer leaving the woods	Hunting, endangered species, preservation of open space
9. Man clinging to overturned boat	Sports vs. the environment, hazards of storms, boating
10. Girl walking by beauty parlor	Control of appearance with technology
11. Graveyard mourning scene	Control of length of life
12. People viewing destroyed homes	Natural disasters

TABLE 47—Continued

Picture	Issue
13. Man and moose in woods	Hunting, ecology, endangered species
14. Men working on the side of a mountain	Ecology, industrial uses, highway building, avalanches, mining
15. Family looking over some travel folders	Vacation preferences
16. Car in a snowstorm	Natural hazards, weather
17. Mountain climbers	Nature and ego involved sports, avalanches, natural hazards
18. Farmer watching his crops coming in	Farming techniques, organic vs. artificial methods, country vs. city life, weather vs. profit, control of yield
19. People walking in a snowstorm	Weather, natural hazards, joy in nature, snowmobiling vs. hiking
20. Boy in rainstorm	Weather hazards

The set of pictures includes at this point may seem to include pictures of no obvious relevance to the man-nature issue. The rationale for this choice was simply that being an essentially exploratory study, a wide range of thematic stimuli was preferable to one limited to a narrow preconceived set. Each picture that was included could conceivably generate man-nature imagery relevant to

either "external" nature or to "internal" nature. Although some pictures related to "internal" nature (i.e., 7, 10, 11) are not obviously man-nature oriented, they were included because they could potentially generate imagery in areas which were included in the attitude survey and which were possibly related to more conventional man-nature values. (See Chapter I for a further discussion of this widened definition of man-nature values.)

The directions that McClelland (1961) developed for his test of the achievement motive were employed with my test. These directions describe the test as one of "creative imagination" and instruct the subject to make his stories "Vivid and Dramatic" (see Appendix IX). The subjects are instructed to try to answer the following questions in each theme:

1. What is happening? Who are the people?
2. What has led up to this situation?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

These questions attempt to stimulate a story which encompasses a wide time span and includes the thoughts and emotions of the people involved.

The writing time allowed for each picture was five minutes, as recommended by Murstein (1965). Since ten

pictures would be included in each test, this resulted in a fifty minute testing period. Although somewhat lengthy and tedious, it was hoped that randomizing the picture order would distribute fatigue effects evenly over the various pictures. To accomplish this, the pictures were placed into eight packets of ten pictures each in a random manner. Since there were twenty pictures in all, each picture appeared in four different packets.

The tests were administered to one section of a psychology class at Ramapo College, one evening section at Ramapo College, one evening section at Bergen County Community College, and staff members at Ramapo College. In all, 44 of the tests were given. Since only one half of the pictures appeared in each test, 44 tests yielded 22 themes for each picture. It was felt that this number of stories would be sufficient to determine which pictures had the best potential for future use. The sample composition is given in Tables 48-55.

TABLE 48
SEX OF SUBJECTS—THEMATIC PILOT TEST

Male	Female
20 Males (45.5%)	24 Females (54.5%)

TABLE 49
AGE OF SUBJECTS—THEMATIC PILOT TEST

Age	Number	Per cent
18-20 years	22	50.0
21-25 years	8	18.2
26-30 years	7	15.9
31-35 years	3	6.8
36-40 years	2	4.5
51-55 years	1	2.3
No response	1	2.3
	—	—
	44	100.0*

*Rounded

TABLE 50
INCOME OF SUBJECTS—THEMATIC PILOT TEST

Income	Number	Per cent
Less than \$5,000/yr.	19	43.2
\$5,001-\$10,000/yr.	8	18.1
\$10,001-\$15,000/yr.	5	11.3
\$15,001-\$20,000/yr.	3	6.8
No answer	9	20.5
	—	—
	44	100.0*

*Rounded

TABLE 51
HIGHEST GRADE COMPLETED—THEMATIC PILOT TEST

Highest Grade Completed	Number	Per cent
High School	9	20.4
Freshman	19	43.2
Sophomore	6	13.7
Junior	4	9.1
Senior	3	6.8
Graduate Work	2	4.5
No answer	1	2.3
	—	—
	44	100.0*

*Rounded

TABLE 52
HOMETOWN SIZE—THEMATIC PILOT TEST

Size of Hometown	Number	Per cent
0-10,000	4	9.1
10,001-20,000	12	27.2
20,001-30,000	2	4.5
30,001-50,000	6	13.7
50,001-100,000	4	9.1
100,001-500,000	3	6.8
? or incorrect information	13	29.5
	—	—
	44	100.0*

*Rounded

TABLE 53
NATURE OF HOMETOWN—THEMATIC PILOT TEST

Nature of Current Hometown	Number	Per cent
Rural	2	4.5
Suburban	38	86.4
Urban	3	6.8
No Answer	1	2.3
	—	—
	44	100.0*

*Rounded

TABLE 54
TYPE OF RESIDENCE—THEMATIC PILOT TEST

Type of Residence	Number	Per cent
House	39	88.6
Garden apartment	1	2.3
Small apartment house	2	4.5
High rise	1	2.3
Dormitory	1	2.3
	—	—
	44	100.0*

*Rounded

TABLE 55
MAJOR IN COLLEGE—THEMATIC PILOT TEST

Majors in College	Number	Per cent
Psychology	9	20.4
Sociology	4	9.1
Psychology and Sociology	4	9.1
Biology	6	13.7
Nursing	3	6.8
Other	18	40.1
	—	—
	44	100.0*

*Rounded

This sample is not "representative" of the entire country to any extent; however, it does contain a certain amount of variety. The two sexes are approximately equal with 24 females and 20 males. The ages of the subjects vary from 18 to 56. One half of the subjects—22—are below 20 years old. Fifteen subjects are in their twenties, five in their thirties, and one above that. The income data must be carefully interpreted. At first glance it appears that the group includes many poor people; however, it must be remembered that many of the subjects were students who listed incomes based on part-time jobs. A better estimate of the "family" incomes of the students comes from those people who gave their full-time incomes. In this case, 8 had incomes from \$5,000 to \$10,000, 5 had incomes from \$10,000 to \$15,000, and 3 had incomes from \$15,000 to \$20,000. This distribution confirms what is generally known about the students in New Jersey state colleges; that is, that they are the children of blue and white collar, middle and lower-middle class families.

The data on education are clear. The majority of the subjects were in the early years of college; however, 9 had only a high school degree, and 5 were graduated seniors or at graduate school level. Their majors are most often in the social sciences with nursing, business, and biology also represented.

The demographic data show that the majority of the subjects currently live in towns of under 100,000 population. None of the subjects resided in New York City; however, a few came from places like Paterson, New Jersey, or Newark, New Jersey, which are quite urban in character. The data on nature of hometown and residence show quite clearly that most of the subjects live in a suburban house.

The data on occupation are not given because in most cases the jobs listed were only part-time. The full time jobs listed included such titles as: nurse's aide, expediter, controller, laboratory technician, manager, construction, library assistant, college teacher, and college administrator. Thus, a wide range of professions was included. This sample had its limitations, as indicated above, but it was not felt that these limitations were crucial, because the demands to be placed on these data were limited. Essentially, the data generated at this stage would be used only to decide which of the twenty pictures would be retained in the final version of the thematic test. Pictures which generated little or no man-nature imagery, and pictures which generated man-nature imagery of a limited variety would be eliminated. No demographic or validation relationships would be explored using this set of data.

Once the tests were administered, the themes were scored for man-nature imagery. In the five minute writing time allowed for each picture, most subjects wrote only one long or two short paragraphs. After reading over a number of themes, it was decided that a simple gross categorization would be the only method of scoring feasible at this stage. Development and validations of more sophisticated scoring methods were delayed until the final study when more complete data would be obtained. Multi-judge scoring and reliability checks were also delayed. Two factors dictated this decision; the first is that with the small sample size required for the screening of pictures and the short theme length, no sophisticated scoring scheme could be developed or employed successfully. And once again, the simple use that these data were being put to did not require a complex scoring method. The scoring method employed was simply to note the quality of the man-nature imagery in each theme according to the definitions given in Chapter I. Examples of themes scored in each category are given below:

"Man-Over-Nature": Picture #5, Dam Scene

"The people looking at the dam are from the village or town below. They are observing the water level, making

sure it isn't too high since a lot of rain fell this season. I don't feel they are in too much danger or excited since the dam has been there awhile and they have learned to live with it. But it is still an uncomfortable feeling after a lot of rain to be living so close to the dam. The people will see it is safe and go about their business in the town."

This theme was scored "over" because of the faith that the writer shows in the ability of the dam to hold back the excess water. Also, the notion of "learning to live" with inadequate technology is interesting.

Typical man-with-nature themes written in response to this picture include condemnations of altering the river and statements indicating that the villagers would have been happier without the dam. Man-under-nature themes indicated that the dam had been broken by the river in the past, and that the town had been destroyed.

"Man-With-Nature": Picture #13, Man and Moose

"Old John Rosen is making his weekly trip to the forest to lay some food and other provisions for the wild-life who live in the forest on his property. For years, the deer and other animals have experienced harder and harder winters. The highways and general habitation of

humans have forced the wildlife to be crowded into smaller and smaller pieces of land and the natural food supply has been seriously depleted."

This theme is clearly a man-with nature type. Although the writer concedes that "power" is in men's hands vis-a-vis animals, the value judgment is clearly that one should not exploit it. Protective orientation toward nature pervades the story.

Man-over-nature themes described the man as a joyous hunter about to get his "big kill." Man-under-nature themes describe the man as a person who fears the moose's strength and questions his ability to get past it safely.

"Man-Under-Nature": Picture #18, Farmer

"This is an old Southern town that is suffering the consequences of a flood. The farmer is looking at his crops and the few puddles that are left. The storm that happened one week ago rained out the front section of his crops. He's wondering if such another terrible occurrence will happen, but the food in the back of his pickup truck was just picked up at the market. He's going to go to the truck and put the vegetables out for sale on a stand in front of the road."

The greater power of nature over man is clear in this theme. No mention is made of anything that the person could have done to prevent the destruction. The selling of store-bought vegetables at a roadside stand makes the farmer even more pathetic.

Typical man-over-nature themes written in response to this picture describe the farmer as successful, happy, or wealthy. Man-with-nature themes often indicated that the farmer was upset because of the need to use machines to remain in business; he wishes to return to the simple days of family farming.

As a result of this scoring, each picture received a score for each type of imagery: over, with, and under. The "expected" frequency for each of the above values was calculated based on the proportions of each type of imagery in the total test. In this case, of the over-all imagery generated, 22.9 per cent was "over," 23.1 per cent "with," 25.8 per cent "under," and 28.2 per cent, no imagery. The expected value of the frequency of a particular value type imagery for a given picture would equal the total frequency for that picture multiplied by the proportion for that value in the total. As an example, picture number 1 generated 24 total themes (some themes are scored twice if they included clear imagery of two types), $24 \times .229 = 5$ (rounded). Thus 5 is the expected "over" frequency for picture 1.

After this procedure, the "fit" of each picture to the total proportions was calculated using the statistic $(\text{observed}-\text{expected})^2/\text{expected}$ which is a simple "goodness of fit" measure (Ferguson, 1971). The lower this figure the better the goodness of fit. At this point each picture was given two ranks, those that generated the most man-nature imagery (over, under, or with) were ranked lowest and those that showed the best "fit" were ranked lowest. These two ranks were then added. This final sum thus represents two criteria, amount of imagery and balance of type of imagery. Thus, the lowest ranked pictures generated a high proportion of man-nature imagery in a ratio close to the over-all ration of 23 per cent over, 23 per cent with, 26 per cent under.

The pictures to be retained according to this criteria are listed in Table 56.

TABLE 56
PICTURES RETAINED IN THEMATIC TEST

Rank	Picture	Typical Theme Topics
1	People in snow	Weather, Lost in Wilderness, Playing, Hiking, Camping
2.5	Dam	Flooding, Technology, electric power use, recreation on lake, tourism
2.5	Medical scene	Control of health, length of life
4.5	Fat man	Control of weight, control of appearance
4.5	Car in snow	Machine vs. Weather, vacations, tourism
7	Boy in rain	Weather, hiking, playing
7	Overtaken boat	Boating, weather, ocean storms
7	Boys by river	Technology, picnics, pollution, nature study, fishing and hunting
9	Mountain climbers	Sport vs. nature, avalanches, human endurance
10.5	Farmer	Farming, technology, weather hazards, pesticides, fertilizers

NOTE: The picture of the man and the moose, and the picture of the men on the cliff were also retained on an intuitive basis. The man-nature imagery they generated, although somewhat unbalanced, was particularly rich. They were retained on a tentative basis pending verification of their usefulness in later stages of the study.

Appendix VIII

Thematic Test—Final Study

Appendix VIII

Thematic Test—Final Study

Administration

On the basis of the pilot procedure described in Appendix VII, a thematic test consisting of twelve pictures was developed. The pictures were put into an unmarked ringbinder in the order that they were chosen in the pilot stage; that is, the lowest ranked was placed first and so on. This procedure was employed because low ranked pictures satisfied two criteria: (1) They generated large amounts of man-nature imagery; and (2) they were not overly biased toward any one type of imagery. Thus it was felt that these pictures would serve to set the tone of the test toward man-nature imagery, without exerting a biasing effect on the direction of the imagery.

The test was administered on an individual basis to fifty-seven subjects. The thematic test was given first before any of the other instruments were administered. The test was introduced as a test of creative imagination using the same set of directions as in the pilot study. The subject read the introductions to himself as the

Experimenter read them aloud. The author was the administrator in all cases. The subjects' stories were tape recorded for future coding. A spoken rather than a written response format was employed for two reasons: (1) A spoken format would permit longer stories to be elicited in a shorter period of time; and (2) a spoken format allowed the Experimenter to question the subject. In order to minimize biasing of the subjects' responses by the administrator, only the four questions already printed under each picture were asked. (See Appendix IX.) In this way I acted mainly as a reinforcer of the directions already given to the subject rather than as a cue provider as to what might be important. Questioning generally took place after a subject had completed his story, the purpose generally being to induce the subject to complete a phase of the story that had been left incomplete.

Sample Composition

The sample was gathered at three colleges: Ramapo College, Stevens Institute of Technology, and Rutgers University College of Agriculture and Environmental Studies. These particular schools were chosen because they might potentially include students with a range of presumed value orientations. Ramapo is a general Liberal Arts state college

and thus might be expected to include a middle range of values. Stevens Institute of Technology is a college of engineering and science, and thus students there might be expected to hold somewhat more technologically oriented values. The branch of Rutgers where testing took place was the College of Agriculture and Environmental Studies; hence, environmentally sensitive values might be expected here. Volunteers were obtained through sign-up lists posted on bulletin boards at the colleges involved. The notices announced the need for subjects in a psychology experiment who would be paid \$3.00 for their time. No mention was made of the purpose or the nature of the experiment. Due to the complex problems of scheduling testing rooms, recruiting subjects and scheduling subjects, testing at Stevens and Rutgers was possible on only one day each. It was possible to obtain a better sampling of subjects at Ramapo College. Consequently, the final sample consisted of 34 Ramapo College students, 10 Stevens Tech students, and 13 students from the Rutgers College of Agriculture and Environmental Studies. Tables 57-62 give the demographic breakdown of the sample.

TABLE 57
SEX OF SUBJECTS FOR THEMATIC TEST—
FINAL STUDY

Sex	Number	Per Cent
Males	40	70.2
Females	17	29.8
	—	—
	57	100.0*

*Rounded

TABLE 58
AGE OF SUBJECTS FOR THEMATIC TEST—
FINAL STUDY

Age	Number	Per Cent
Less than 20	25	43.8
20-25	30	52.6
25-30	2	3.5
	—	—
	57	100.0*

*Rounded

TABLE 59
COLLEGE MAJOR OF SUBJECTS FOR THEMATIC TEST—
FINAL STUDY

Major in College	Number	Per Cent
Undecided	6	10.5
Literature	6	10.5
Psychology/sociology	12	21.1
Life science	8	14.0
Physical science	2	3.5
Economics/business	1	1.8
Political science	3	5.3
History	1	1.8
Environmental studies	2	3.5
Engineering	10	17.5
Pre-professional	1	1.8
Art	1	1.8
Agriculture	3	5.3
Meteorology	1	1.8
	57	100.0*

*Rounded

TABLE 60
FUTURE PLANS OF SUBJECTS FOR THEMATIC TEST—
FINAL STUDY

Future Plans	Number	Per Cent
Unknown	9	15.8
Counseling	11	19.3
Teacher	4	7.0
Journalism	1	1.8
Armed services	1	1.8
Law	4	7.0
Medicine	4	7.0
Nature work	1	1.8
Research	7	12.3
Technical	9	15.8
Advertising	1	1.8
Pilot	1	1.8
Agriculture	4	7.0
	—	—
	57	100.0*

*Rounded

TABLE 61
HOMETOWN LOCATION OF SUBJECTS FOR
THEMATIC TEST—FINAL STUDY

Location of Hometown	Number	Per Cent
Eastern U.S.	52	91.2
Southern U.S.	1	1.8
Western U.S.	1	1.8
Midwestern U.S.	1	1.8
Africa (current residents of N.J.)	2	3.5
	—	—
	57	100.0*

*Rounded

TABLE 62
SIZE OF HOMETOWN OF SUBJECTS FOR
THEMATIC TEST—FINAL STUDY

Size of Hometown	Number	Per Cent
Over 1 million	16	28.1
250,000-1 million	10	17.5
50,000-249,999	11	19.5
2,500-49,999	20	35.1
Under 2,500	0	0.0
	—	—
	57	100.0*

*Rounded

The sample does have a range of majors and occupational plans covered.¹ The sample is biased toward males because almost 100 per cent of the students at Stevens and at Rutgers Agricultural are men. The sample is biased toward youth because these were the only subjects available in the daytime campus settings used. Under ideal circumstances, a more comprehensive approach would have been to test subjects from a number of preselected criterion groups such as farmers, environmental club members, power company executives, and so on. Lacking this, the procedure used yielded subjects from a variety of backgrounds and with a variety of future plans.

Scoring the Thematic Test

A system of scoring categories was developed on an empirical basis. Development began by listening to the stories of five of the subjects and noting all instances of man-nature imagery of any kind. An attempt was made to fit all of these instances into categories. Those that did not belong in any category were grouped together into new categories. The final result of this procedure was

¹Although the attempt was made to include some subjects with environmental career objectives, only two students were clearly in this area. Others were marginally involved as indicated by their majors in life science and agriculture.

a set of twenty-four scoring categories.

The twenty-four categories so developed were not broken down into a simple man-over-with-under nature system, since this had proved to be too simplistic a typology on the attitude survey. Instead, they could be grouped, mainly for conceptual ease in coding, into three other categories. The first set of categories involved situations where nature appeared as an obstacle to a goal. The second set of categories are activities with nature as the setting. The third set of categories involve nature and technology; that is, situations in which nature is purposefully modified by man. The categories are given in Table 63.

TABLE 63
FINAL SCORING CATEGORIES—THEMATIC TEST

GROUP 1 NATURE APPEARS AS AN OBSTACLE

Category 1—Obstacle: Nature appears as an obstacle due to some inherent quality, i.e., its strength, power, unpredictableness, etc.

Category 2—Obstacle careless: Nature appears as an obstacle due to the carelessness of the actor, i.e., fails to note weather report, bring life preservers, maps, etc.

Category 3—Success obstacle: The actor successfully overcomes a natural hazard.

Category 4—Failure obstacle: The actor fails to overcome a natural hazard.

Category 5—Better social: People in the story experience better social relations after confronting a natural obstacle together.

Category 6—Worse social: People in the story experience worse social relations after confronting a natural obstacle together.

Category 7—Fear: The actor is afraid of the natural obstacle.

Category 8—Non-fear: The actor is not afraid of the natural hazard (must be actually mentioned, not simply the absence of 7).

TABLE 63—Continued

Category 9—Reverence: The actor is more reverent or respecting of nature after the confrontation.

Category 10—Irreverence: The actor is irreverent after the confrontation.

GROUP 2 ACTIVITIES OR MOTIVATIONS

Category 11—Escape: A person in the story comes to nature for escape (e.g., camping, fishing, boating, hiking, etc.).

Category 12—Ego: A person in the story comes to nature to test his ego (e.g., hunt, mountain climb, etc.).

Category 13—Stimulation: A person in the story comes to nature to view it as scenery (specific visual "sightseeing" mentioned).

Category 14—Life style: A person in the story comes to nature responding to the demands of a philosophy of life (e.g., to live in a commune, grow organic food, "get into nature," etc.).

Category 15—Study: A person in the story comes to nature primarily to do some type of research (e.g., archaeologist, surveyor, naturalist).

Category 16—Literal escape: A person in the story is literally escaping or running away from family, friends, or the law.

TABLE 63—Continued

Category 17—Exile: A person in the story is exiled in nature (e.g., chain gang).

GROUP 3 NATURE AND TECHNOLOGY

Category 18—Urban alien: A person in the story feels that something about urban life is alienating (e.g., noise, dirt, etc., or problems with modern society—alienation).

Category 19—Nature alien: A person in the story feels that life in nature is difficult, harsh, boring, or impossible.

Category 20—Success modify: A person in the story is successful at modifying nature. (The modification is the actual goal, nature doesn't appear as an obstacle to another goal. Usually profit is involved.)

Category 21—Failure modify: A person in the story fails to modify nature. (Modification itself is the goal; monetary loss may be involved.)

Category 22—Loss simplicity: A person in the story laments the loss of the simple lifestyle of earlier times.

Category 23—Loss nature: A person in the story laments the loss of a natural area due to human activities.

Category 24—Loss rationalized: A person in the story rationalizes the loss of nature.

The actual scoring was done directly from the tapes. Each time a subject's story involved imagery that fit into one of the above categories, a point was given for that category on the picture concerned. Thus, each subject received 24 separate category scores on each of the 12 pictures. This yielded a 24 X 12 matrix of scores for each subject. In addition to these scores the totals for each category were computed across the 12 pictures.

A score was assigned every time a subject elicited relevant imagery, even if he was repeating himself. Thus, a statement like "They were really afraid of the weather" followed by "They sure were frightened of the storm" would score two points in the fear category. This led to some difficulties when a statement was almost immediately repeated, such as "They were really afraid . . . really afraid." These incomplete reiterations were scored as only one point.

Reliabilities were difficult to ascertain for a number of reasons. The scoring by this author was done directly from the tapes after having spent from eight to ten hours developing the categories themselves. This skill level could not easily be reached by a second judge. Finally, obtaining judges who would be available for a long extended training session was simply not possible. Despite the above limitations, an attempt to measure inter-judge

reliabilities was made. Three judges were trained in the use of the scoring categories. Each judge scored the stories of one sample subject in my presence (in the case of the Environmental Psychology students also in each other's presence). Discrepancies between their scoring of the stories and my own scoring methods were discussed as they occurred. After discussing the over-all meaning of each scoring category, the judges were left to score the tapes of nine subjects (three from each college). The judges scored these tapes on their own time over a period of up to two weeks from the training session. Despite the disadvantages of a short training session, of the passage of time between training and scoring, and of the difficulty of scoring from tapes, inter-judge correlations were in the range of .54 to .69 (see Table 64).

TABLE 64
INTERJUDGE SCORING CORRELATIONS

Judge	Judge 1	Judge 2	Judge 3	Judge 4
Judge 1	1.00	.67	.58	.69
Judge 2	.67	1.00	.54	.54
Judge 3	.54	.58	1.00	.60
Judge 4	.69	.54	.60	1.00

Figures are Pearson correlations based on the summary scores for 8 subjects. (8 subjects X 24 summary scores = 192 variables. Hence, all r's shown are significant .01 level.)

Judge 1	Joel Kameron
Judge 2	Linda De Benke, Ramapo College
Judge 3	Natalie Krawetz, CUNY
Judge 4	Kim Kingdon, CUNY

Analysis of the Thematic Test Results

A number of procedures were employed in analyzing the results of the thematic test section. One procedure employed was a factor analysis of the individual picture-category data (each category, e.g., fear, for each picture, e.g., the Dam, constituted a variable in the factor

analysis). The number of variables potentially available was 288 (12 pictures X 24 categories); however, due to zero sum variables, only 116 were actually factor analyzed. The results of this factor analysis were complex and did not yield clearly interpretable factors. A much larger sample and a system of scoring categories more amenable to this type of analysis would be required for a successful factor analysis at this level of detail. A factor analysis of the summary scores for each subject (24 category scores summed over all 12 pictures) was also performed; however, once again, clearly interpretable results did not occur.

Perhaps the most meaningful procedure that could be employed at this stage of test development is a clinical analysis of individual stories. Although this procedure does not yield easily quantifiable empirical data, it does indicate many things about the thematic test which will aid in its further improvement. This level of analysis also yields data concerning aspects of man-nature values tapped by the thematic test which might be included in the attitude survey in the future.

Individual Analysis

Four subjects were selected for individual analysis on the basis of their criterion scores. These subjects

were chosen solely on this basis without reference to their actual stories. The attempt was made to choose subjects who represented extremes of environmental values. Briefly, the four chosen for study include:

1. A female (#268) holding strong ecological opinions and indicating a high level of involvement in ecological and genteel outdoor activities
2. A male (#285) holding ambivalent to hostile environmental values, a future accountant indicating little involvement in ecological activities
3. A male (#290) life science major holding similar ecological views as the female mentioned above, but, in addition being actively involved in a wider range of ecological activities
4. A male engineering student (#307) holding ambivalent to hostile environmental values and showing little involvement in ecological activities.

The first two subjects chosen were Ramapo College students, the third is from Rutgers, and the fourth from Stevens Tech. The detailed analysis of each subject's criterion scores and background is given below in Table 65. In the analysis that follows Subject #268 is referred to as "the female ecologist," #285 as "the businessman," #290 as "the male ecologist," and #307 as "the engineer." These labels are not intended to be complete descriptions of each subject

but simply to act as a memory aid.

In the discussion that follows, each of the four stories told for a given picture will be replicated and then all four will be discussed. The analysis will simply point out the over-all trends in each story.

TABLE 65
CRITERION SCORES OF SUBJECTS CHOSEN FOR
INDIVIDUAL ANALYSIS

Gallup Questions	Subject No.			
	268	285	290	307
#1 Concern with Ecology	Deeply	Somewhat	Deeply	Somewhat
#2 Willingness to pay taxes	\$100 or more	\$10 or less	\$100 or more	\$50
#3 Necessary to limit population	Yes	Not necessary	Yes	Yes
#4 Most pleasant place to live	Rural area	Seashore	Mountains	Suburbs
#5 Most pressing problem	Pesticides	Water pollution	Water pollution	Preserve open green space
#6 Solution for problem mentioned in #5	Stop using	Stop industrial pollution	Stop industrial pollution	Set aside land

TABLE 65—Continued

Gallup Questions	Subject No.			
	268	285	290	307
#7 Set aside land	Yes	Yes	Yes	Yes
#8 Are you a polluter?	Yes	Yes	Yes	Yes
#9 Estimate of costs	Over \$1,000	Less than \$100	\$100-\$250	Over \$1,000
#10 Pay us to live simpler life	Live simpler	Live simpler	Live simpler	Pay to clean up
#11 Pay or reduce use of electricity	Reduce use	Pay 1/5 more	Reduce use	Pay 1/5 more
#12 Autos and pollution	Pay \$100 more	Less powerful	Less powerful	Pay \$100 more
#13 Pay \$170 in taxes	Yes	Yes	Yes	Yes

TABLE 65—Continued

Survey Questions	Subject No.			
	268	285	290	307
Demographic Information				
Sex	Female	Male	Male	Male
Age	20	17	20	19
Occupation	Student	Student	Student	Student
Annual Family Income	N.A.	N.A.	\$12,000	N.A.
Level in School	Sophomore	Freshman	Junior	Sophomore
Major in school	Psychology	Economics-Business	Life-Science	Engineer
Future plans	Counseling	Accountant	Research	Technical

TABLE 65—Continued

Survey Questions	Subject No.			
	268	285	290	307
Activities: 1 = Never, 6 = Very often				
Hunting	1	1	1	1
Fishing	1	2	4	2
Motorboating	1	4	6	1
Sailing	2	3	1	1
Backpacking	5	1	4	2
Camping with a camper	1	1	4	1
Camping with limited equipment	5	1	3	2
Skiing	1	1	3	1
Snowmobiling	1	1	1	1
Environmental cleanup campaigns	6	1	4	1
Recycling	6	1	5	1

TABLE 65—Continued

Survey Questions	Subject No.			
	268	285	290	307
Nature hikes	6	2	5	6
Religious services	1	6	5	4
Lectures on ecology	6	4	6	2
Ecology clubs (0-3)	2	0	0	0
Outdoor life clubs	0	0	0	0
Science clubs (0-3)	0	0	1	0
Witnessed natural hazards (0-3)	1	0	3	2
Hurt by natural hazards (0-3)	0	0	3	0

TABLE 65—Continued

Survey Questions	Subject No.			
	268	285	290	307
Derived Scores*				
Active outdoor life	5	8	15	5
Genteel outdoor life	14	8	13	11
Ecology activities	20	6	15	4
Open vacations	12	18	18	19
Nomadic vacations	14	12	17	13
Closed vacations	12	13	15	16
Active vacations	23	11	24	24
Passive vacations	15	32	26	24
Sociopetal vacations	13	24	19	21
Sociofugal vacations	19	18	25	22

TABLE 65—Continued

Attitude Survey Factor	Subject No.			
	268	285	290	307
Attitude Survey Factor Scores (Standard Scores)				
Factor 1 Conservation- Exploitation	2.42	-1.62	- .24	-1.03
Factor 2 Non-man-under vs. man-under	- .36	-1.44	- .53	.44
Factor 3 Non-fear vs. fear	1.44	.37	1.14	1.74
Factor 4 Anti-technology vs. pro-technology	1.05	- .26	- .94	- .04
Factor 5 Anti-gardening vs. pro-gardening	-1.13	.86	- .60	.27
Factor 6 Pro-natural lifestyle vs. anti-natural lifestyle	- .73	.02	-1.62	-1.34

TABLE 65—Continued

Attitude Survey Factor	Subject No.			
	268	285	290	307
Factor 7 Pro-auto engine vs. anti-auto engine	- .59	.11	-1.03	1.20

*See Chapter IV for a description of the content of the derived scores.
See Appendix V and Appendix VI for the description of the criteria listed above.

Analysis of the stories told in response to picture #1 (see Table 66) shows some interesting differences between subjects. The female ecologist (#268) tells a story clearly condemning the men who are seal hunters. The businessman (#285) emphasizes the modification and use of nature as a recreational area. The male ecologist (#290) emphasizes outdoor camping of a fairly rough type. The hazard of the storm is minimized. The engineer (#307) sees nature as a depressing place where it is difficult to gather food using primitive methods. Clearly, different orientations to nature are represented in these themes, and some relationship to the subjects' background and values is seen.

TABLE 66
THEMATIC RESPONSES TO PICTURE #1
"People in a Snow Storm"

#268

Three people in a snow storm in Alaska looking for seals to kill. They're just sitting around waiting for the storm to end so they can see more clearly. They're thinking about the money they're going to receive from the pelt; they're not really thinking about the animals, just the money they're going to get. They'll just kill the seals, bring back the pelts and get money; probably get a TV set or something.

#285

Two kids ice skating; just starting to snow; they probably came there right after school. The third person coming from the distance there is probably a friend but not too close a friend. They're probably trying to decide whether to go home and get some shovels to clean off the snow so they can skate better. They'll probably go home, clean it right off, and skate some more. The friend will probably skate with them.

#290

It's a heavy snowstorm. People are traveling in the snow, probably going hiking or camping in the mountains. They've gotten caught in an unexpected storm, looks like they're quite well prepared. Looks like they're trying to find a place to camp and wait for the storm to end. They'll get snowed in for a while, probably will survive. It looks like they might have expected the storm from the way they're dressed, heavy clothing.

#307

The father is returning from the hunt empty-handed, and as it was time of famine, everyone looked at him with despair. The tribe had been on the move for many moons, but none could remember when they had started. They were escaping from the snow but the snow continued to follow them. The father, who had no name, looked at his family and said,

TABLE 66—Continued

"Perhaps tomorrow the hunting will be better." In all, the father tried to keep his family's spirits up; however, the bleak landscape and the constant snow and the eternal silence quickly drove one to despair.

The responses to Picture #2 (see Table 67) also show relevant variations. The male and female ecologists (#268, #290) both emphasize the dangers inherent in the dam. Both also emphasize a sense of alienation based on the dam's huge size and on their lack of control over it. The businessman (#285) and the engineer (#307) both point out the economic benefits the dam will bring. The engineer reverses himself at the end of the story by pointing out the esthetic losses caused by the dam.

TABLE 67
THEMATIC RESPONSES TO PICTURE #2
"People Looking at a Dam"

#268

It's a picture of a dam. There's a little town below the dam and a bunch of people are looking at the dam because the dam is breaking in a certain spot. They're worried about the town being flooded but they don't know what to do, because the dam is so big and they're so small and insignificant compared to the hugeness of the dam. They'll get flooded out and get aid from the government, but they'll still support the government and the dam. They'll say it was just one of those things.

#285

This looks like a newly constructed dam that was just built and the people on the side are looking it over because it's probably the biggest thing that's ever happened in the town's history. It'll be good for the town because it'll bring in more business and everything and over-all economically, it'll be a good thing for the town. The people are happy about it because it'll bring more money in, and it's a big exciting thing that's happened.

#290

A bunch of people looking at a dam, probably tourists from another part of the country. They traveled here because they had heard how dynamic the view was, so they can go back and tell their relatives they saw the dam. What's that, a village? I wouldn't want to be living in that village because of the danger of the dam cracking and the water flooding them out. The people are thinking that those in the village are crazy for living there because disaster could strike them from a storm or something. But the dam is forceful and stationary so probably nothing will happen. That's the impression you get from a dam anyway, forcefulness.

#307

At last the dam was completed. The builders looked at it with great pride. Its enormous strength was evident

TABLE 67—Continued

to everyone. It would be a source of great good to all who came in contact with it, both the builders and those who would live after the builders had died. The dam's construction took three years but the good the dam would do would last for many thousands of years. The dam was sponsored by the United States government in an attempt to change desert land into lush fertile land. The idea was conceived in the mind of those in Washington but it was not merely a political gesture, it was an attempt to do a great good. What happened, however, was while it did great good, a lot was lost. For, unknown to everyone, underneath that desert were a great many treasures; treasures which could not be reclaimed since the waters came. Waters, which as everyone knows, were very deep. The treasures, aside from some paltry things like gold, were the natural beauties of the landscape which had been there before. What remained was one great stagnant lake.

The responses to Picture #3 (see Table 68) are somewhat more tangentially related to man-nature values than those of the first two pictures. Interesting differences are found in any case. Both the male and female ecologists (#268, #290) emphasize the alienation of the hospital setting, whereas this is not emphasized in the case of the businessman (#285). The story of the engineer (#307) is complex; the setting for the accident (the countryside) is rather strange.

TABLE 68

THEMATIC RESPONSES TO PICTURE #3

"Hospital Bedside Scene"

#268

It's a doctor and nurse going over a chart with a patient who's in the hospital. Because it's his chart, he can't see what it is. He's dying of cancer and they're going to keep him alive with drugs, because that's the way it is in this society; so, he's just going to slowly die. He's fed more and more drugs and slowly dies. He wants to know what's on the chart but they're not going to tell him because it just would be too depressing. They'll keep doing tests and things to sort of fake him out.

#285

The boy in the bed is sick. He doesn't have anything really wrong with him; like, it's probably a case of "mono" or something like that. The doctor and the nurse are looking over his reports and the doctor will probably tell him he'll be OK pretty soon. The boy is pretty glad he's out of school but he wishes he was out playing ball or something like that. He'll probably be alright in a couple of days. He'll go home, then they'll send him to school in a few weeks.

#290

There's a guy lying in bed. He's wondering what's wrong with him. The doctor's talking it over with the nurse, trying to figure out what should be done. He's probably trying to find out when he can leave the hospital. He has a lot of things on his mind. People don't like being cooped up in hospitals for a long time. The doctor is interesting in prescribing the quickest cure. The patient is really bored lying there, nothing much to do in the hospital. He'll get better and leave. He'll just lie around until he gets better because of the treatment.

#307

The doctor and the nurse were conversing. The young man lying in the bed heard them, but through his pain he could not really comprehend what was happening to him. As a

TABLE 68—Continued

result of the accident, his leg would have to be amputated and his promising career as an athlete would be over. What sort of tragedy was this to the young man? He couldn't really say. In his pain, he was only aware of a great loss, yet he did not know why. He had been walking in the countryside when a truck roared over a hill and struck him, knocking him into a tree. That collision tore off his leg. The future was obscure to him; all he knew was that something terrible had happened and the consequences would overshadow him.

This picture was intended to elicit imagery concerning perception of locus of control of health problems. The first three themes all show this. The first is very man-under-nature in orientation, whereas the second and third are mildly man-over-nature. The last story is somewhat "under" in the sense that the difficulty of adaptation to a new bodily limitation is stressed. An "over" theme might have emphasized treatment and rehabilitation.

The responses to Picture #4 (see Table 69) were expected to be related to perception of locus of control vis-a-vis weight. In the case of the businessman (#285), the male ecologist (#290), and the engineer (#307), moderately man-under-nature viewpoints are expressed in this regard. All of these subjects expect little if any weight loss to occur. The female ecologist (#268) once again stresses general alienation and fails to mention the weight

issue. The results on this picture tend to suggest that even those subjects who hold strong man-over-nature views (i.e., subjects 285 and 307 on attitude factor 1 score "exploitationist") on external matters may be man-under-nature when it comes to internal matters.

TABLE 69

THEMATIC RESPONSES TO PICTURE #4

"Fat Man in Front of Mirror"

#268

This guy is just looking in the mirror, looking at his body. He's about 40 and he's wondering what he's been doing all his life. He's a blue collar worker with his beer belly. He's just thinking about memories of things that happened before. Where it's all gone. He's at the point where he has a family to support. He's sort of in a rut. He will work until he retires and then go to Florida. Until then, he'll probably just stand in front of the mirror and wonder where his youth and freedom went.

#285

This is a guy looking at himself. He probably thinks of himself as a muscleman or something like that; he probably just looked in a magazine or something. He's thinking about taking up weightlifting so he can start to look half-way decent, lose his pot there. He probably started looking at himself now because somebody probably said, "Hey, you're looking a little chunky there," and he'll probably lift for a couple of days or do some "cal" but then he'll stop that and start eating again and stay the same way he is now.

#290

Guy just woke up and went up to the mirror and says, "Boy, I'm really out of shape, better do some running. When you look in a mirror that's about the only time you really think about yourself as far as your physical appearance. You're trying to think of ways of improving your appearance." He looks like he probably sits around and doesn't do anything; lazy probably; probably office work; sits around, watches Sunday night football. He'll probably keep getting fat because a guy who goes that far probably isn't going to change.

#307

Upon wakening, Mr. James went into the bathroom to wash. As he saw his reflection, it seemed to him that he had

TABLE 69—Continued

put on weight. Mr. James had just come back from vacation, and he stared at his stomach with dismay. Mr. James was surprised, since he had been, in his youth, a fine athlete. This thickening of his waist to him portended the oncoming of old age. Mr. James made a resolution to himself not to let himself get out of hand in the future, though it seemed it would be difficult, because his many commitments took up much of his time.

The responses to Picture #5 (see Table 70) show no really interesting pattern. The first three subjects all tell stories in which mild fear of the storm is matched by confidence that the people will get through it. The engineer (#307) is clearly one of the most imaginative storytellers in this group. His story includes rich imagery of an interpersonal type, which, although not clearly related to the issues under investigation here, is of great interest in other ways. Although a few scoring categories did cover changes in mood (e.g., fear, non-fear) or interpersonal relations (e.g., better social, worse social), the full possibilities of scoring these themes for imagery unrelated to man and nature were not realized.

TABLE 70
THEMATIC RESPONSES TO PICTURE #5
"People in a Car on a Snowy Road"

#268

These people are driving along to a relative's house for Thanksgiving. They've run into a terrible storm and they're not sure they can make it, but then they all cheer up because they think of all the people they're going to see. So they just keep driving along until they get there to eat turkey.

#285

This is a family coming home from a relative's house on a relatively deserted road. It probably started snowing on the way back. The mother and father are really worried, because the kids are in the car and all that. The wife is probably nagging the husband. They'll probably get home alright and nothing will really come of it. You know, go home, watch TV, go to bed.

#290

These people definitely got caught in a snowstorm. Looks like they're driving through the mountains probably. Probably going to visit relatives in a holiday. It looks like it was probably snowing when they started out, but they probably thought they would make it anyway. It's still coming down and it looks like they'll keep on going. People are probably wondering if there's anything wrong if they'll make it through the storm alright. Chances are they will make it through. The car is kind of dependable and they have a schedule to meet, so they can't stop. They pretty much have to keep on going.

#307

Along the dim snowy road the car roared, flying ever upwards toward the distant mountains. In it, the young man drove with reckless abandon, thinking, as if through his great speed, to escape his past. The powerful motor roared. Up and down the hills, around the curves he went, changing gears recklessly. The car shook as if under terrible strain, yet the young man did not attempt to lower his

TABLE 70—Continued

speed. Into the curves he roared with the tires skidding. Again the man did not attempt to slow down. Even near the edge he skidded, but still did not attempt to slow down, roaring upward toward the distant mountains. What was in the mountains no one knew, and yet he still was driven by some compulsion to reach the mountains. His flight had started that morning when, in a fit of anger, he started out of the house, leaving his parents and his brother and sister behind. He jumped into the car and started it. You cannot start a car and drive off at once. You must let it warm up. His parents thought he was waiting perhaps to come back to them. When the parents did not come back to him, he took off. Shifting carefully through the gears so as not to exert the engine too much, but as time and distance went, and the young man's anger burned more and more bright, until now, we come to the stage where each curve brings him nearer and nearer to death. But did he care? Not really.

The responses to Picture #6 show interesting variations. (See Table 71.) The female ecologist (#268) tells a story in which enjoyment of nature ends when the sun goes in. The statement is essentially moralistic, namely, to many people nature is a "fair weather friend." The businessman (#285) tells a story involving a great deal of fear. Of the four subjects studied here, he is the closest to "fear of nature" on attitude factor 3 and is man-under-nature on attitude factor 2. These attitudes are clearly projected here. The male ecologist (#290) doesn't really ever get started on his story. The engineer (#307) emphasizes the destructiveness of fire, a natural force (some

type of range fire is inferred, rather than a simple house fire). A true man-over-nature response on this picture would include reference to a scheme to control the weather. Since this possibility was probably not apparent to most of these subjects, it would not be likely that it would be included here. Thus, the man-over-nature imagery generated here may have been more related to perceived potential control than to actual belief in locus of control per se. Thus at least some people who might have indicated a desire for weather control if it were widely available may not have generated that imagery here.

TABLE 71
THEMATIC RESPONSES TO PICTURE #6
"Boy Running in the Rain"

#268

This boy was just sitting in the sunshine enjoying nature. All of a sudden, a cloudburst came out, so he's running to keep comparatively dry until he gets home. He's thinking about drier clothes and home, and that maybe nature isn't so great when the sun doesn't shine.

#285

This is a kid running in a field. He was probably exploring in a marshland or something by himself when it started to rain. I guess he got a kind of eerie feeling or something, because he doesn't know where he is, so he decided he'd better get home quick or wherever he is going, because there's probably snakes around there and stuff like that; and, he figures that if it starts raining harder he might not find his way back. But he will find his way back; it'll stop raining and he'll go back again.

#290

Guy's running. He's probably being chased by something or someone, because he's not an athlete, he doesn't have running equipment on. He's either running for help or he's being chased. Chances are he's running to get someone for help. It's raining. Maybe he's running to get out of the rain, running for shelter, unexpected rain storm. He probably won't find a place to go, because it doesn't look like there is anyplace. He'll probably have to run for a while. He's probably thinking, "I'll never find a place to hide in the rain."

#307

Toward the hill, he ran with all his might. Smoke was rising over the hill. Was it his home? He did not know; all he knew was that it might be something terrible. Smoke in this dry, desolate area meant fire, and fire was the worst thing he feared. Fire, which would destroy his homestead, which he had built up with his sweat and tears. His family he did not really worry about; they could take care

TABLE 71—Continued

of themselves. The young man, however, felt that part of his life would go if that house burned, so onward and onward he ran toward that hill, the hill that hid his house below.

The responses to Picture #7 (see Table 72) do not present a clear pattern for analysis. The first three subjects all blame the accident on carelessness, while the engineer (#307) blames it on a torpedo. A positive outcome is fairly easily achieved in the case of the female ecologist. The businessman's (#285) main concern seems to be fear of parental punishment. The last two stories are complex and show little clear relationship to man-nature values.

TABLE 72
RESPONSES TO THEMATIC PICTURE #7
"Man Clinging to Overturned Boat"

#268

This guy was just kind of floating alone in his canoe when it turned over because he decided to be funny and stand up. Now he'd like to get it over again. It'll take a little while and maybe once he gets it over, it won't happen again because he won't stand up.

#285

This is a guy down at the shore on a bay or something. He was riding his motorboat and he probably hit one of those cement buoys. He knocked the boat over, nothing serious, but he fell out of the boat, and he's worried now. It's probably his father's boat. Somebody will come along and pick him up, but his chief worry now is to stay on top of the boat so he doesn't drown or something; and his second most worry is that his father will punish him. He probably won't be allowed out for a couple of weeks.

#290

A few people were out on a lake on a nice, Sunday afternoon, doing some fishing, just rowing around a little, and probably something happened. People goofing around and the boat overturned and the man is definitely struggling to hold on to the boat. It looks like a beer can, so the guys were probably drunk. He's struggling to grab onto the boat. He's wondering if he'll be able to hold on long enough for someone to come pick him up, or whether he'll drown. That's foremost in his mind, whether he'll drown. There's no land in sight, so it doesn't look like anyone will be there too quickly. He probably knows he'll be out there for a long time and he'll just have to do his best to hang on. Chances are he'll probably drown—ha, ha, unless he can hang on; doesn't look like he'll be able to because if he has to struggle for a long time, the energy will go out of him. He's probably not in the ocean, because he has oars, probably on a lake, but there are waves. No, probably in a lake. If he screams, someone will probably hear him. If he were in the ocean he wouldn't have oars, but the oars just might be there in case something

TABLE 72—Continued

happened. In case the motor conked out, because it looks like there's a motor on the back. The oars are just for safety. So he's probably in the ocean, and he is definitely in trouble.

#307

Clinging to the overturned boat, the young man surveyed his future. In all, his chances seemed good. He had survived the explosion on the ship. "The torpedo," he thought, but he couldn't be sure. He had awakened from a sound sleep and clambered up onto the deck. As the boat overturned, he leapt into the sea below. When the dawn came, he found the overturned boat and now his prospects seemed good, as they were on a well traveled sea lane. His next thoughts would be how to overturn the boat so that he could clamber inside it to reach the provisions. This, he thought, would take very little time. All that would be necessary would be for him to climb on top of the boat and start rocking, and thus overturn it without losing the provisions.

Picture #8 confused many of the subjects. (See Table 73 for responses.) The responses of these four subjects were typical. The female ecologist (#268) emphasizes the potential recyclability of the objects. The businessman (#268) once again stresses recreation and playfulness. The male ecologist (#290) has a good deal of trouble organizing his story but finally tells one concerning the use of nature in advertising. His tone is facetious in this story. The engineer (#307) tells a story of exploration and eventual construction.

TABLE 73
RESPONSES TO THEMATIC PICTURE #8

"People by a River"

#268

There's some water and some objects. The water in the river overflowed. For some reason they're seeing whether the objects have been ruined or not. They're wondering if they can use the objects again. But probably they've been water damaged and impossible to use again.

#285

Two guys just got a ride down on a boat with a pal of theirs. This looks like some old antique stuff that they got from their attic. They'll probably just keep playing with it until they get tired of it and then do something else.

#290

A couple of people just wandering around in a desert or something. Near a swamp. It looks like they're . . . , a suitcase and a refrigerator, no buildings or anything. I can't tell anything about what they're doing. OK. These guys are putting out household articles, out in the middle of the desert and they're going to reconstruct a Budweiser beer advertisement showing how you can drink Budweiser beer anywhere. They're setting up the household articles.

#307

The two young men on the foreign coast looked about with wonder, as they were the first men to reach this shoreline. Who knew what they might find? All they had with them were a few strange devices, devices which were manufactured for a secret purpose, that purpose which none may reveal. The young men had a mission. What it was I cannot say because it was a secret. However, to them it was very desperate. To their eyes, the landscape was magnificent. However, they did not hesitate, swiftly going to those devices which I mentioned, and they began to construct something. I don't know what they're building, so I can't say anymore.

In general this picture was quite difficult for most subjects. It was intended to represent some men by a river with some scientific equipment. Variations would involve the uses to which that equipment would be put. The problem was that most subjects saw the objects as pieces of lumber or parts for a house to construct. Although this may represent something in and of itself, the imagery that was generated was of little value. I would change this picture by making the nature (but not the purpose) of the equipment clearer, if the picture were to be used again.

The responses to Picture #9 (see Table 74) show no strong pattern of variation with the exception of the engineer (#307). He tells a story of astronauts on the moon. In the other three stories, the desire for personal fulfillment through the "conquering" of nature is evident. Thus, the thrill of testing oneself vis-a-vis nature seems to be generally desired, even among the ecologically oriented. It may be that the desire for escape to nature is one of the primary motivating forces for many ecologists.

TABLE 74
RESPONSES TO THEMATIC PICTURE #9
"Men Climbing a Mountain"

#268

These guys always wanted to climb a mountain even since high school, to be the first ones in some virgin land. So, all through high school they worked to get money to travel to some unsettled part of the world. Finally, they got the money and hitch hiked across Europe to Siberia in Russia, and they found a mountain no one else had climbed. So now they're just getting to the top. It's just one of their life long wishes, and at the age of 20 they finally got it. They'll climb down and tell other people about it. The other people won't care much but it doesn't matter because they know they did it, and the other people just sit down at the bottom talking about doing it but they never do. And these guys really did it.

#285

This looks like a professional mountain climber, and his one goal is to get to the top of the mountain as quickly as possible. It looks like down at the bottom of the mountain there's quite a snowstorm. But as he gets up higher there's no snow. He'll get up to the top, plant a flag, then head down to tell all his friends about it.

#290

These two guys set out a couple of days ago. They decided they were going to climb this mountain, probably a really big mountain, because they're above the clouds. So they set out, backpacks and all, and they're climbing this mountain and it's getting harder and harder. The air is getting thinner and they're struggling to reach the top. The higher they get the harder it is to climb. They're trying to decide. Well, it doesn't look like they're going to go back. It looks like they're pretty determined to get to the top. They're above the clouds, so the chances are if they got that far they're not going to turn back. They're pretty determined to make it up, and that's the goal they have in their mind. Big accomplishment, climb a mountain, a personal "plateau." They'll make it, plant a flag, sit around and have a cup of coffee, go back down and go to a

TABLE 74—Continued

bar at night and tell everybody what it was like climbing the mountain, of the dangers they encountered and the sights that they saw and the other adventures they had. So it'll be a big thing for them.

#507

The first exploration of the moon was a wondrous thing. The men were climbing the hills in their space suits in the airless atmosphere. They only had a few hours, so to conduct all their experiments some haste was needed. The lunar moonscape was very forbidding, yet it was very beautiful. Eerie was not the word for it; strange, wondrous perhaps. Oh, Oh, I cannot even say. The young men, well trained in their professions, did not pause to wonder at how the moon had come into being. Nor did the sight of the earth over the horizon cause them any wonder. They had seen it many times before in pictures. Yet, still, being the first men on the moon, there was some slight hesitation. As they went about their tasks, every now and then they would look over their shoulders as if to reassure them that what was happening was real.

The responses to Picture #10 (see Table 75) are interesting and meaningful. The female ecologist (#268) emphasizes the dilemma of the migrant farmworkers. Her story clearly points out that farming is a capitalist business, with few sentimental overtones. The businessman (#285) sees life on the farm as being dull. Only the townspeople brighten up the day. The male ecologist (#290) emphasizes the difficult life of the small farmer, whereas the engineer (#307) stresses development of unused nature and business expansion.

TABLE 75
THEMATIC RESPONSES TO PICTURE #10
"A Farmer and a Farming Scene"

#268

This is a large farm in New Jersey. The farm owner hires migrant farmworkers at very low wages, and the migrant farmworker is just standing with a hoe in his hand, and he's just looking at the truck coming into the yard with all this food, and he's starving and he's picking all this food for the rich capitalist, the rich farmer. And he doesn't get any of it. He's wondering how he can beat the system, but there really is no way he can. He just keeps picking this stuff, starving, sending a little money back to his family.

#285

This looks like a farmer and some guy is coming in from town to buy something or deliver supplies. The farmer is really excited because he doesn't get to see people from town very often. So they'll probably talk awhile, shoot the bull, and then his friend will go back to the store and the farmers will go back to work.

#290

A farm scene where the farmer is watching his son drive a load of crops to the market. There's a field nearby, probably harvesting time and they just loaded the crops on the truck. Looks like a small farmer because there's a small silo and a small farmhouse. He sells all his products in the city, so he has his son taking them in. He's wondering how much he'll get for the product and if he'll sell it all. He's worried about his bills and how he's going to use this money to pay his bills, because a farmer has no other income, he has to depend on his crops. He has no other source of income. He has a lot of things on his mind, but farmers can usually really relax, and he's just taking things in and wondering if they'll really work out. Chances are he'll take the crops to market, get a good price. He'll have to deal with the price he gets and struggle on for another year, because farmers don't usually make that much and he just keeps struggling on and on. His son will do the same thing the next day, and

TABLE 75—Continued

they'll just go on and on hoping they'll get a good price for their goods. They have to, that's the only way they can survive.

#307

The farmer stood in the barnyard watching the truck roar in. On it were the supplies he needed to build a new house. This house he would use for additional men. The farmer had great plans as his land was largely undeveloped. He thought with a few additional men he could turn a large profit, and for the joy of seeing the land developed. The farmer looked at the truck as it stopped. His son clambered out and started unloading the supplies. The truck held boards, nails, and tools for building the house. The son knew what his father intended, to make this land a great estate, and the son went along with this plan wholeheartedly knowing that in the future he would inherit it.

The responses to Picture #11 (see Table 76) are very revealing. The female ecologist (#268) tells a story which clearly condemns the act of hunting for sport. The "ego trip" aspects of hunting are clearly rejected. The businessman (#285) has the man as a trapper. He's successful and is proud of his big catch. The male ecologist (#290) tells a story in which the man desires to kill the moose but fails. This may represent wish fulfillment on the part of the subject. The engineer's story (#307) essentially involves education (scouting) and a belief in the ability to cope with nature.

TABLE 76
RESPONSES TO THEMATIC PICTURE #11
"Man and Moose"

#268

This is like the typical encounter between man and nature. There's this big buck standing there, and, like he's sort of living his life in the woods, and a man comes along with a bag which would contain a gun and knives to skin it with. The man isn't hunting for food but for the fun of it; for the head maybe, and for the skin to make a pair of shoes, but he wouldn't make them. He'd probably give it to someone else to make. Sort of a wasted effort because he probably wouldn't ever eat the meat. He'll leave the carcass then for the vultures to eat. He's thinking about putting the head over the mantle piece, and he's thinking about how nice it will look and about how all his friends would comment "What a big brave man" because he could kill a buck from 100 feet away with a gun.

#285

This is a hunter out for the first day of the season. He's probably waited all year for this day. He doesn't look like he's hunting with a rifle or anything. He probably has traps. I don't think he's after the deer there. He's probably after muskrat or some animal you can trap. I think he's probably taking in the beauty of the deer just standing there. I don't think the deer realized he's there. And as soon as the deer goes off, he'll probably continue setting his traps and then go home with his big kill for the day and think about it the rest of the year.

#290

This guy's a hunter, and he's going to the woods to set up his camp to go hunting. Before he came, he probably had a big thing in his mind about killing a moose or deer. Because not many hunters actually get a chance to shoot deer. So, he probably had this set up a long time ago. So he goes trucking into the woods looking for a place to hunt, and he runs into a moose, something he's been thinking about for weeks, and something he probably won't get a chance at again because he sees the moose and the moose sees him, and his gun's still packed in its carrying case,

TABLE 76—Continued

and he's not going to have a chance to get it out before the moose scampers away. And, he'll probably be really "pissed" because this will be his last chance to get a moose. Probably the only one he'll see and he blew his big chance, so now he won't be able to go back and mount a moosehead on his living room wall, and won't have any big tales to tell. There's sort of a tension between him and the moose as they look at each other. He realizes that in another second, it'll be gone and all his dreams and hopes as a great hunter will go with him, and chances are that he won't get another chance.

#307

The young boy in the woods came to an abrupt halt, because there in front of him was an enormous elk. The boy was here with a Boy Scout troop, but he had wandered off. He was not lost, but he did not know precisely where he was. There is a slight difference. The young boy had enough provisions to last him until he found the troop again. They had been on an overnight hike, so he was not really worried as he had done this before. The young boy saw the moose and looked at it. It had no particular fear of him, evidencing the fact that it had never seen a man before. This was not very surprising to the boy, as they were very deep in the forest where not many people went, since it was a private preserve.

Very interesting differences occur in the responses to Picture #12 (see Table 77). The female ecologist (#268) and the engineer (#307) both tell stories of wartime road-building. The main difference between the two is that the female ecologist clearly condemns the role the men play, whereas the engineer casts them as heroes. The businessman (#285) sees a hunt for gold which fails, whereas the male ecologist (#290) sees alienated coal miners.

TABLE 77
THEMATIC RESPONSES TO PICTURE #12
"Men on a Cliff"

#268

These are people in Vietnam, and these are the army privates who have been told to go out and build a road for big tanks because the country wasn't for an army, so they have to go out and dig a road. These guys never ride in the tanks or see them; they just build the roads then go on to build more roads. They just know they're stuck there for two years. They just build roads that bring tanks that destroy the country but they're not really bothered by that, because they're leaving in two years and it's not their problem at all.

#285

This is back in the old days in the west, during the big hunt for gold. These people have decided to look for gold but they'll probably only find a few here and there, and most will return east or settle down there.

#290

Three guys are inside a cave, and they're shoveling for coal. Looks like they're all in the process of working. Some are standing around; they probably do the same thing every day, just a general working group. They're shoveling something, I'd say probably coal. They're probably thinking what a drag it is and wishing they could do something else and they'll probably realize they'll be doing the same thing every day in the future. Coal miners are sort of like trapped, you know. Their sons and their sons' sons will go into the coal mines. So they realize they're stuck there and they feel sorry for their sons too, and they wish there could be a way out for their sons too.

#307

This little band of men worked very hard day and night on the road. It was in wartime and the road had to be finished. These Americans had come by plane to create a road over which trucks could travel to relieve the beleaguered troops. Day and night they labored, suffering

TABLE 77—Continued

from diseases and fatigue. Yet, on and on the road went, creeping through the hills behind concealment. The road had to be completed and the men knew the necessity of it. They had no heavy machinery but worked by hand, yet still the road proceeded on and on toward the distant fire.

Summary of Clinical Analysis

The preceding discussion demonstrated the variations in imagery generated on the thematic test. Not every theme and not every picture is equally valuable. However, the entire set of twelve pictures yields a general impression of each subject's values. The female ecologist (#268) consistently sees modern lifestyles as alienating and condemns those who destroy nature. The male ecologist (#290) gives similar imagery with perhaps a bit more emphasis on outdoor recreation (he is the most involved in outdoor life. See Table 65.). The businessman (#285) stresses a childlike recreational orientation and a mildly exploitative view of nature. The engineer (#307) stresses utilization and modification of nature more than the other subjects. In a sense he holds an "over" nature orientation.

In addition to the above summary, other valuable information concerning the thematic test was obtained from the clinical analysis. One very important conclusion concerns

the general adequacy of the pictures employed. In choosing scenarios for the original set of twenty pictures, the criterion employed was that at least one over, with, and under nature outcome be conceivable for each picture. This eliminated from consideration many pictures which may have been of great value in distinguishing values of a conservationist-exploitationist type since no "under" nature outcome was visualizable for these scenarios. In this sense, the over-with-under theory was used in a restrictive fashion and resulted in a test more sensitive to fear-non-fear of nature values than to ecological values per se.

Another criterion employed in the selection of pictures was that they be subtle and ambiguous. In this particular case, subtlety often led more to confusion than to projection. Perhaps ambiguity is preferable where deeply personal values and beliefs are concerned; however, where attitudes and beliefs concerning nature are being tapped the less subtle pictures seemed to work best at eliciting relevant imagery. (On an intuitive basis, these would be the dam scene, the farmer, the men on the cliff, and the moose and man scene.)

A third issue under consideration involved the cross-situational nature of the values, that is, were values vis-a-vis nature consistent on the ecological level, the everyday life level, and the medical level. In the attitude

survey (see Chapter IV) this consistency was not found. A similar lack of consistency occurred here. This lack of consistency contributed to the complexity of results that occurred on each of the empirical analyses described above. One conclusion is that empirical analysis might only be adequate with pictures grouped by situation (e.g., separate analysis of medical scenes, ecological scenes, etc.). The end point of this line of reasoning would be the development of separate thematic tests of man-nature values for different areas such as ecology, fear-non-fear, recreation and health; or at least separate scoring systems for each area.

In deciding upon the directions employed and on the degree and type of experimenter-subject interaction permitted, the criterion employed was to be as subtle and non-biasing as possible. In this way, man-nature imagery that was generated could be considered valid and not primarily the result of experimenter suggestion. In light of the mild results obtained using this procedure, stronger questioning techniques and more suggestive directions might be employed in future studies. In these studies, the effects of differential modes of administration could be evaluated. In this study the only major change in mode was from the written response format used in the pilot study to the spoken format employed in the final study. Although

the spoken format permitted completion in a much shorter time span (20-50 minutes average) than the written format, the stories generated were not found to be appreciably longer or richer in imagery based on a cursory examination. In fact, some subjects seemed to find the tape recorder and/or the experimenter somewhat inhibiting. Thus, the privacy and anonymity of the written format could prove to be of value at least for some subjects (the price paid is longer administration time and an inability to question).

The above considerations all concern things that might be changed in future studies; however, some results of value did occur in this study. One result concerned areas of imagery generated in the thematic test which were not covered by the attitude survey. One such area revolved around a dimension which might be called urban alienation vs. nature idealism. In this case, imagery concerns the impossibility of dealing with problems in the city and the ease with which problems vanish when in the country. Marx (1972) refers to this as the "pastoral retreat." He states that:

From a psychological viewpoint, the pastoral retreat affirmed the possibility of maintaining man's mental equilibrium by renewed emphasis upon his inner needs. The psychic equivalent of the balance of nature (in effect the balance of human nature) is a more or less equal capacity to cope with external and internal sources of anxiety. In a less developed landscape, according to the

fables, behavior can be more free, spontaneous, authentic or, in a word, more natural. (p. 92)

This type of imagery often occurred on the picture of the boy running in the fields. His purpose in going there was to escape the "hassle" of city life and "get it together" in the country.

A second dimension uncovered in the thematic test concerned nature realism vs. nature naïvete. In this case, the dimension concerned the naïve belief of some subjects that life in nature is easy, with few hazards or hardships. The plenitude and fecundity of nature is emphasized and difficulties are downplayed. In a sense, this dimension represents a "material safety valve," whereas the previous one concerned a "psychological safety valve." The myth goes that when the city breaks down, we can all move to the country and live blissfully. Although imagery of this type did not explicitly mention the above, the naïve treatment of nature's hazards often implied such. As discussed by Burch (1971), these nature myths have played big roles in American history, often acting as a safety valve for unrealized aspirations of city dwellers. He points out the return to the noble savage myth (primitivism-strong individuality-lack of inhibition) of the "hipster" and the presence of yeoman myths (pastoral, benign, uncomplicated existence) of many of the current counter-culture advocates.

It is interesting that these myths also manifested themselves in this study.

The areas of imagery discussed above could be integrated into the attitude survey through the addition of relevant items. This would further extend the range of the attitude survey and thus increase its value for research. In general, the thematic test form should prove to be more valuable as a heuristic aid than as a survey device. Due to many of the problems of administration and scoring, its use will be primarily in limited and specific studies of man-nature values where some specific feature (e.g., unconstrained response format) is required.

One of the primary reasons for developing the thematic device was to provide an alternative to the attitude survey in the event the attitude survey proved to be prone to response sets. Since this did not prove to be the case (see Chapter IV), the need to employ the thematic test in survey research was not demonstrated. Thus, the thematic form did not emerge as either an alternative form or as a substitute for the attitude survey; rather, it appears to be a unique instrument, which, after further development, could prove to be of value in some research areas.

Appendix IX

Thematic Stimulus Pictures

Test of Creative Imagination

The following test is designed to measure your creative imagination. On the following pages you will find a series of drawings with a space underneath in which you are to make up a vivid and dramatic story about the picture. You will be given about five minutes to write each story. Try to make your stories interesting and imaginative. When writing your stories be sure to answer the following questions:

1. What is happening? Who are the persons?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

These questions are repeated for your convenience underneath each picture.

Try to write legibly and clearly. It will be best if you could write about two paragraphs for each picture. If you need more room use the back of the page. I will tell you when to begin and end each story. When the test is over you will have a few minutes to complete any stories that you left incomplete.

In order to determine the nature of the people taking this test, it will be necessary to ask you a few questions about your background. The information on this sheet will be kept strictly confidential.

SEX _____ AGE _____ OCCUPATION _____

ANNUAL INCOME _____ HIGHEST GRADE IN SCHOOL COMPLETED _____

MAJOR IN SCHOOL _____ SIZE OF CURRENT HOMETOWN _____

NATURE OF CURRENT HOMETOWN: RURAL SUBURBAN URBAN (Circle one)

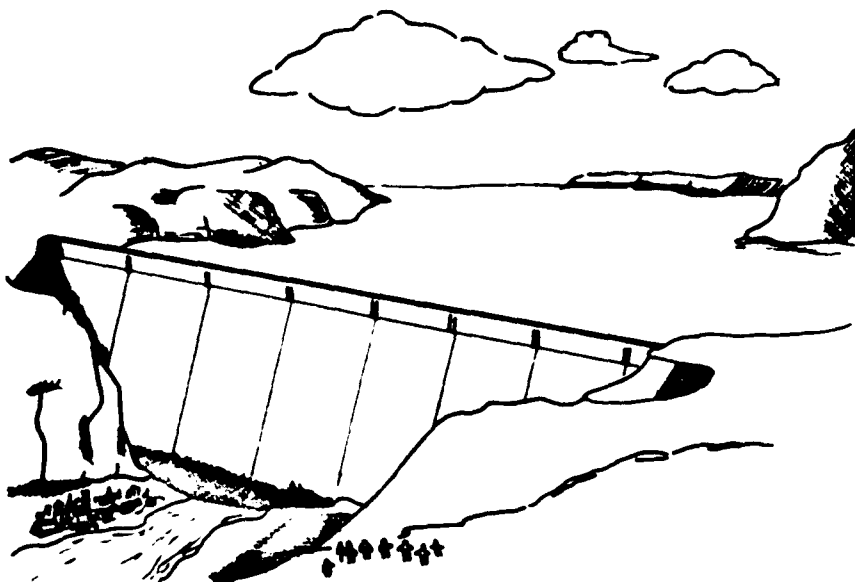
TYPE OF RESIDENCE: HOUSE, GARDEN APT., SMALL APT., HOUSE, HIGHRISE APT., DORMITORY. (Circle one)



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

[illegible]



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

[illegible]

Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

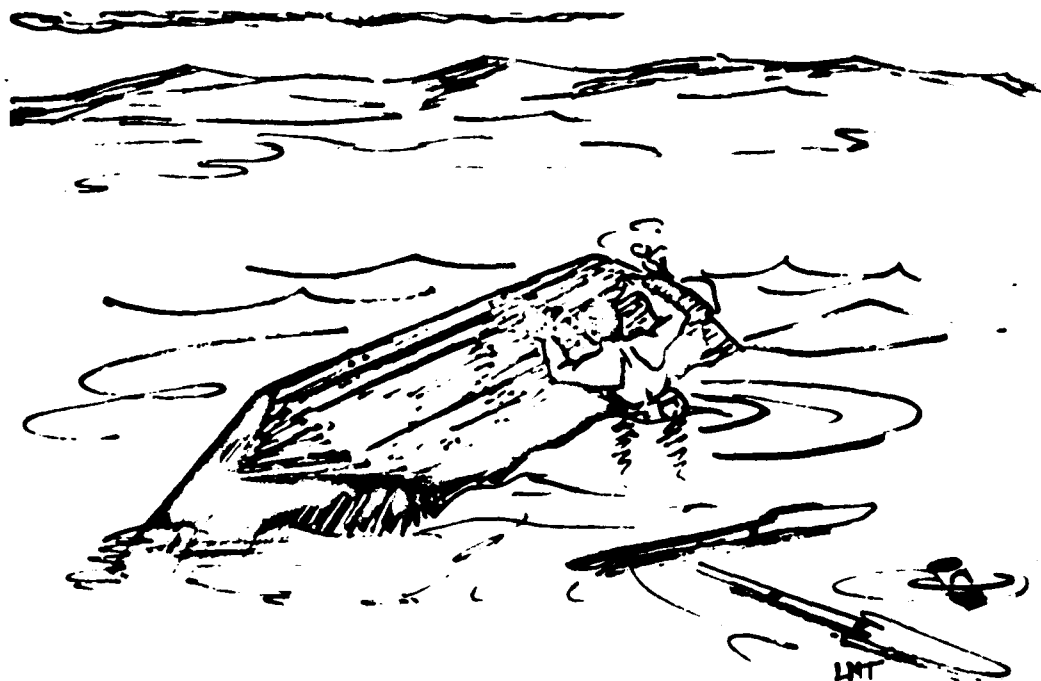
[illegible]



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

[illegible]



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

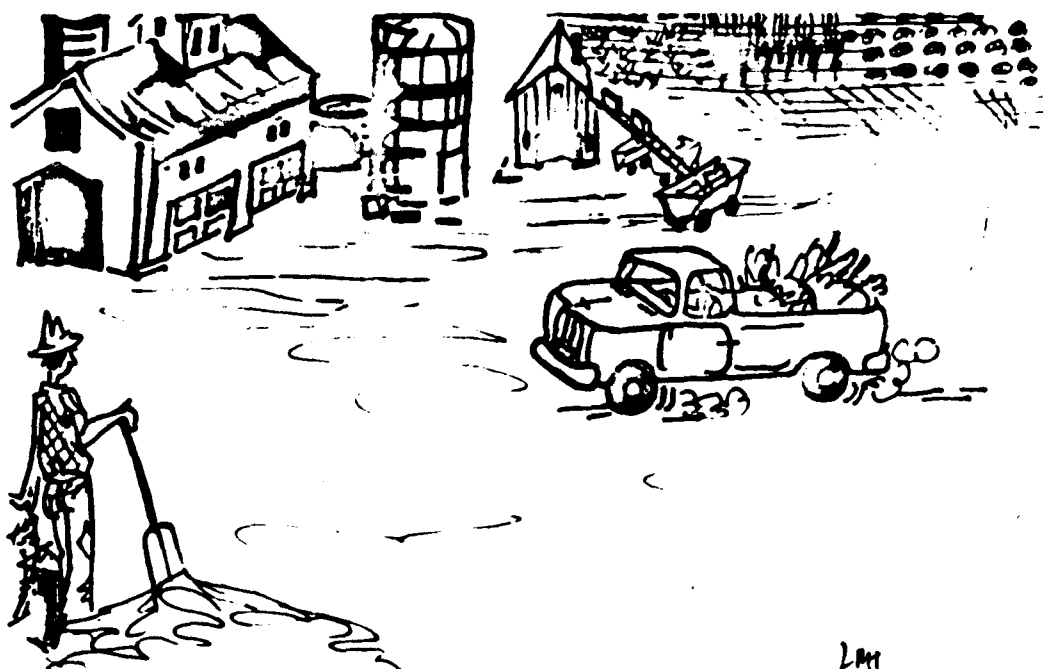
[illegible]



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook or legal pad style.



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

[illegible]



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

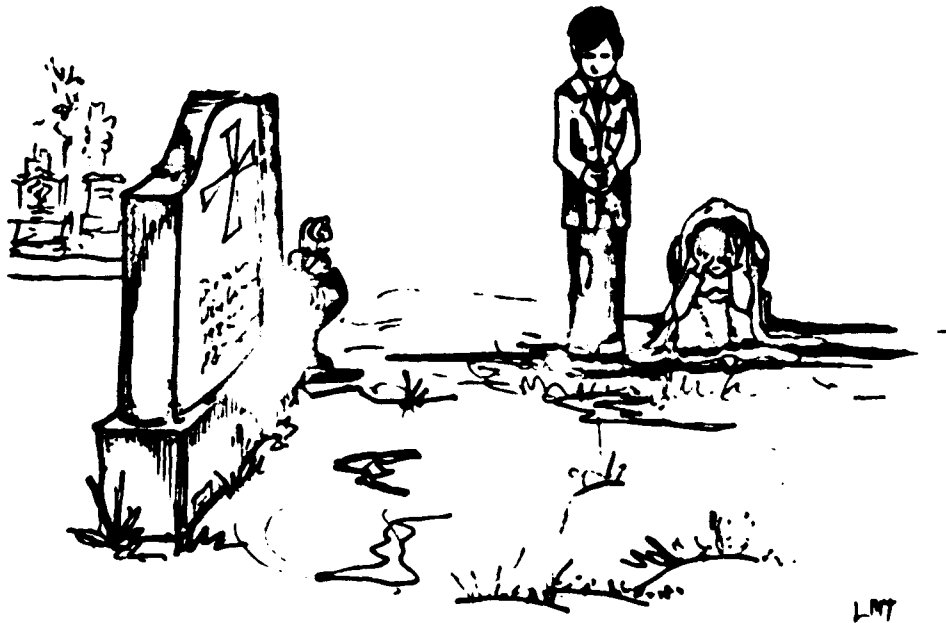
[illegible]



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
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[illegible]



Write your story for this picture in the space below. Be sure that your story includes answers to the following questions:

1. What is happening? Who are the people?
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4. What will happen? What will be done?

[illegible]

1. What is happening? Who are the people?
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3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

[illegible]

1. What is happening? Who are the people?
2. What has led up to this situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

[illegible]

Appendix X

Examples of Man-Nature Imagery Generated on the Thematic Test

Appendix X

Examples of Man-Nature Imagery Generated on the Thematic Test

The following thematic responses are given as examples of particularly rich man-nature imagery. In addition, themes which could be categorized under the headings of "Yeoman Myths" and "Psychological Relief" (see Appendix XIII for a discussion of these terms) are also given. All of these themes appeared in the pilot stage of the research. Similar themes occurred in the final stage; however, the written response format employed in the pilot stage facilitated easy scanning of the responses.

Picture #1 People in Snow Man-Under-Nature

Again three men are camping in the snow in pursuit of climbing the mountain on the left. The guy on the left, Joe, is talking to his close buddy Bill about forgetting about climbing the mountain. Edward is the leader of the three and is determined to go all the way. He convinces Joe and Bill to go on further until they refuse because they can't go on anymore.

Picture #2 Dam Scene Man-Under-Nature

Living at the foot of a dam is not a picnic, as you can well imagine. If the dam springs a leak you would have to look for the fastest way out. The people standing on the top of the hill are the people who live at the bottom of the dam. The dam has cracked causing water to rush through the town and the only thing on these people's minds is whether or not the town will be washed away. If so, they will do just as they have done many times before, rebuild their homes and go back to leading a normal life.

Picture #2 Dam Scene Man-Over-Nature

The people looking at the dam are from the village or town below. They are observing the water level making sure that it isn't too high since a lot of rain fell this season. I don't feel they are in too much danger or excited since the dam has been there awhile, they have lived with it. But it is still an uncomfortable feeling after a lot of rain to be living so close to the dam. The people will see it is safe and go about their business in the town.

Picture #3 Medical Scene Man-With-Nature

The doctor and the nurse in this picture are trying to diagnose what the patient in this picture has. They

think he may have some kind of lung disease which may have been prevented if the air wasn't so polluted. More and more people each day have trouble breathing and are in the hospital dying. The air is really unhealthy and so we must try to stop air pollution because it doesn't matter to people who dies unless it's someone they know or maybe even them.

Picture #6 Boy in Rain Man-With-Nature and Nature for Psychological Relief (see Appendix XIII)

Young man is fleeing raindrops which started to fall while he was walking in a treeless isolated area. Walk was taken after a continued series of bouts of depression. He is annoyed at first, but gradually begins to enjoy the dampness of his water soaked clothes. He shall get home shortly and his depression will return.

Picture #7 Overturned Boat Man-Under-Nature

Two weeks ago the linear "Kartum" had sunk. The survivors were enough to fill one life boat. One by one, due to lack of food and water the survivors would die. Even the stronger ones found the beating sun and the ocean too unbearable. Now there were two men left. Out of sheer madness a fight erupted. The boat turned over and now

there was one.

Picture #8 People by a River Man-With-Nature

This used to be a duck pond. A place to enjoy a nice quiet afternoon fishing, feeding the ducks, picnicing or just taking in the sun. Now it is just a polluted swamp with such a terrible odor that no one will go near it. These two men are trying hard to save it and restore the beauty that was once there. They are testing the water to see if they can get it back in shape for the ducks and the fish. This part of nature was ruined by man carelessly throwing debris in it. The ducks and fish moved to another part of the lake. If we don't care about wildlife and nature no one else will.

Picture #8 People by a River Man-Under-Nature

They were worn and weary from walking for days on the parched desert floor. The sight of water kept them going those last hours beyond normal endurance. They would surely find it totally devastating when the mirage was finally exposed for them to see.

Picture #10 Farmer Man-With-Nature and Yeoman Myth (see Appendix XIII)

This lone farmer is looking upon a great "farm industry." He is only a small farmer but he has worked all his life for what he has now. All the new techniques, equipment and knowledge of agriculture he knows nothing about. Sometimes he is envious, but mostly he is grateful for his close-knit homelife on his small farm.

Picture #10 Farmer Man-Over-Nature

For six months Mr. Cooley has waited patiently for his new farm equipment. It had taken years but now with this new modern equipment he could almost double his output. It had cost plenty but it would pay for itself in two years. Now all he could do was watch the truck with the equipment not really believing it was finally here.

Picture #11 Man and Moose Man-Over-Nature

All Mack's life he had heard stories of "Tonka." He dreamed of the day when he would find out for himself if these stories were fact or fantasy. He had hunted these woods for many years and had never caught sight of "Tonka." Now, on the day of the fiftieth birthday Mack got his wish. While walking through the woods on the way home from a

day of hunting he was dazzled. In front of him not more than fifteen feet away stood "Tonka." (Story ends there with no indication of lack of time.)

Picture #11 Man and Moose ~~Man-With-Nature~~

The man is a native of the mountain-lakes areas where deer and moose are often found. He is an avid hunter and fisherman. He has been out in the woods hunting and he has seen no game. Finally he packs up to go home. On the way out he encounters this stately animal and for a few minutes he and the deer look at each other. For once, he realizes, they are fairly matched. His gun is packed away. The man has his intelligence, the deer his strength. After a few minutes the deer turns and disappears into the forest. The man's thoughts cause him to reflect more deeply about the "sport" of hunting. The man has changed.

Picture #12 Men on Cliff ~~Man-Under-Nature~~

These people represent the future population of the earth. They are trying to develop land which is located in the highest regions of the Rocky Mountains. The lack of growing space for food has led these people to take this action. All the people feel that this is a waste

of time and will amount to nothing in the end. This desperate attempt to grow more food will fail and the population of the world will decrease severely.

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