

ENVIRONMENTAL MANIPULATION ATTITUDES
OF DESIGNERS AND NON-DESIGNERS

by

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES.....	iv
LIST OF APPENDIXES.....	v
Chapter	
I. INTRODUCTION	1
II. PROBLEM STATEMENT.....	5
Attitude Definition.....	6
Hypotheses.....	7
Review of Literature.....	8
III. METHODOLOGY.....	12
Measurement Issues.....	12
Reliability.....	12
Attitude Scale.....	13
Validity.....	14
Model Test.....	15
Sampling Procedure.....	19
Subjects.....	19
The Testing Situation.....	20
Data Collection.....	21
Statistical Procedures.....	21
IV. RESULTS.....	22
V. DISCUSSION.....	31
APPENDIXES.....	38
REFERENCES.....	55

LIST OF TABLES

Table		Page
1	Reliability Coefficient (Alpha) for the Attitude Scale: Environmental Manipulation.....	22
2	Mean Scale Scores for United States vs. Dominican Republic Sample.....	23
3	Mean Scale Scores for Designers vs. Non-Designers in the United States.....	24
4	Mean Scale Scores for Students vs. Faculty in the United States.....	24
5	Three-way Analysis of Variance on Mean Scale Scores for U.S.A. vs. Dom. Rep., Students vs. Faculty, and Designers vs. Non-designers.....	25
6	Two-way Analysis of Variance on Mean Scale Scores for Students vs. Faculty and Designers vs. Non-designers: United States Sample.....	26
7	One-way Analysis of Variance on Mean Scale Scores for Non-design students vs. Non-design faculty: United States Sample.....	26
8	One-way Analysis of Variance on Mean Scale Scores for Design Faculty vs. Non-design Faculty: United States Sample.....	27
9	Scale Scores Correlations with Biographical Data: United States Sample.....	29
10	Model Test Mean Scores for Subjects with High and Low Scores on the Scale: United States Sample.....	31
11	Scale, Model Test and Personality Test Scores Correlations: United States Sample.....	32

LIST OF APPENDIXES

Appendix		Page
A	Attitude Scale.....	38
B	Attitude Scale (Spanish Translation)...	43
C	Item Total Score Correlation (Pre Test).....	49
D	Instructions for Model Test.....	51
E	16 Personality Factors.....	53

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CHAPTER I

INTRODUCTION

One of the major objectives of the architecture profession is to provide man with shelter from the elements so that he may adequately carry out his everyday chores and duties. Another goal of the profession is to provide an environment that accommodates the needs of people, enhancing at the same time the visual characteristics of the surroundings. Man-environment relations evolve from the notion that the environment affects man and man affects the environment. Nevertheless, linkages between man's needs and behavior and the environment have somehow been neglected. Architects have been preoccupied with economic, structural and aesthetic matters to have become involved in behavioral concerns.

The crux of this problem seems to lie in the overemphasis of architecture as art and the exclusive use of intuition as the main problem solving process. Architecture has been regarded as an endeavor suited to those gifted with artistic and drafting abilities, primarily because buildings are judged according to visual criteria and aesthetical values. However, a shift in attitude is taking place which Sommer¹ describes as follows:

"Design students no longer merely as technical questions about construction methods or philosophical questions about the nature of beauty. Their most important questions turn out to be related to finding out who determines what is built, who gets dispossessed by it, and how the effect of a building on his occupants and neighborhood can be measured."

The implication is that architecture must be supportive of man's needs allowing him to behave as he wishes without restricting his behavior.²

Broady³ criticized architects' understanding of social theory by stating that "...architecture, therefore, is not a kind of magic by which man can be redeemed or society transformed. Its primary social function is to facilitate people's doing what they are obliged to do." This implies that while it is not possible to satisfy everyone's particular needs in all possible instances, there are situations, however, where behavioral accommodation is a must in order to optimize the relation between the designed environment and man's behavior.

A current area of concern is the way people develop feelings and attitudes towards the environment, how these feelings and attitudes affect behavior, and how this behavior can be best accommodated. Many designs have failed in this regard. For example, Pruitt-Igoe, a housing project in St. Louis, Missouri, has been one of such failures that

captured widespread attention due to its large-scale characteristics. Ironically, the buildings were commended and accepted for their innovative features such as the absence of wasted space between dwelling units; however, it did not take too long to realize that the units were no longer a successful enterprise. "Pruitt-Igoe represents, in its architectural design, an example of a national housing policy whose single goal is the provision of housing for individual families, with little knowledge about or concern for the development of a community and neighborhood."⁴ This project serves as a reminder of the importance of psycho-social issues in design.

Designers spend considerable time solving minute details of the container rather than carefully analyzing and evaluating the nature and characteristics of that which is contained. Fitch⁵ was aware of this dilemma when he stated that: "In Architecture, there are no spectators: There are only participants!"

It seems evident that in order to obtain information about the user, architects will have to take a closer look at him, and thus obtain feedback to guide his decisions and solutions. The value of this feedback should not be underestimated. The Royal Institute of British Architects (RIBA),⁶ states:

"There is a double gap between research and design: one at the assimilation stage (putting research results into practice) and one at the problem-stating stage (finding out from designers what needs to be done). To a designer, much of the research that is undertaken does not seem relevant to the problems encountered; to researchers, designers do not understand what research can do and refuse to use the results which are achieved."

While the issues raised by the RIBA reports support the notion that research applicability in design has been discouraged, they also pose the contention that much powerful and effective links between research and design must be developed within a conceptual framework integrating contributions of related disciplines.

The fact that needs to be emphasized is that there is a need in architecture to investigate man-environment relationships and that such an enterprise must be undertaken with as much high spirit and devotion as other professional endeavors.

CHAPTER II

PROBLEM STATEMENT

The main task of the profession is to provide mankind with facilities to meet the habitational demands and requirements of society. These facilities call upon the inclusion of devices, artifacts and amenities to assist and optimize the functions called for in satisfying human needs. It is expected that people manipulate differently these artifacts and furnishings depending upon perceived needs, motivation, personality, education, age, ethnic composition and cultural background. An individual with strong manipulative tendencies may feel distressed and disgusted when he is unable to open a window, to move a chair, to lower a thermostat, or isolate himself. On the other hand, a low manipulator may require a prosthetic environment to help him cope with the necessities of life.

The above argument suggests the need to enable the manipulator and non-manipulator alike to be environmental participants. For example, the elderly and handicapped may demand special supportive arrangements, while the avid college student may suffice on a wide variety of settings.

Another facet of the problem deals with how individuals develop manipulative tendencies. Do these feelings develop

by unique exposure to the environment, or do they evolve in the educational process? Do attitudes people have about the built environment strongly correspond with observable behavior? Will attitudes people disclose necessarily reflect behavioral intentions? Is there a cause-effect relationship between attitudes and behavior?

This study will empirically explore the nature and manifestations of environmental manipulation attitudes among designers and non-designers, students and non-students at Kansas State University in the United States, and Universidad Nacional Pedro Henriquez Urena in Dominican Republic. The results in both countries will be compared and analyzed.

Attitudes Definition

"Attitudes are likes and dislikes. They are our affinities and our aversions to situations, objects, persons, groups, or any identifiable aspects of our environment, including abstract ideas and social policies."⁷ Thurstone,⁸ states that attitudes are "the sum total of man's inclinations and feelings, prejudice or bias, preconceived notions, ideas, fear, threats, and convictions about any specific object." Attitudes have also been identified as "a state of readiness for motive arousal",⁹ or as "an enduring organization of motivational, perceptual, and cognitive, processes with respect to some aspect of the individual's world."¹⁰ Many others refer to attitudes as pre-disposi-

tions to respond.^{11, 12}

Consequently, environmental manipulation attitudes, as considered in this study, are feelings and expressed opinions towards the change, alteration and modification of the physical environment.

Current attitude research supports the notion that attitudes tend to be unrelated to overt behavior, and that attitude measurement is insufficient for the prediction of behavior. Fishbein,¹⁴ however, found that attitudes do predict behavior, provided that a) the attitude measure is appropriate for the type of criterion being predicted, and b) that the criterion is itself methodologically acceptable.

Hypotheses.

Designers vs. Non-designers.-- It is argued that educational background fosters the development of environmental manipulation attitudes-the curriculum structure in architecture schools serving as the medium.

Therefore:

- (1) Designers will have stronger attitudes towards environmental manipulation than Non-designers.
- (2) Design students will have stronger manipulative attitudes than design faculty.

Younger people vs. Older people.-- It is argued that younger people are less stable, more mobile, and more eager to accept change than older people, thus enabling them to be enthusiastic, avid and enterprising. The assumption is that:

- 3) Younger people will show higher environmental manipulation attitudes than older people.

Dominican Republic vs. United States.-- Geographical areas presenting socio-cultural differences and ethnic composition, usually account for variation in responding to similar issues. Life styles, customs and traditions also affect these diversifications. It is hypothesized that:

- 4) Environmental manipulation attitudes in Dominican Republic and the United States will differ significantly.

Review of Literature.

The area of man-environment relations is a developing field and at present, lacks full coverage of all potentially relevant issues. Theoretical and methodological avenues have not been clearly determined thus offering minimal direction for researchers and designers. One theoretical view of man's relationship to the environment is expressed in the following taxonomy:¹⁵

- 1) Man's condition is one of subjugation with nature,
- 2) Mastery over nature, and
- 3) Harmony with nature.

None of them has control over the other; each one acts independently. It is conceivable to regard the environment as challenging, to be modified to meet perceived needs and desires, and as something to be worshipped and respected.

Rapoport¹⁶ has also reported a three stage relationship between man and landscape that supports the above classification:

- 1) Religious and cosmological. The environment is regarded as dominant, and man is less than nature.
- 2) Symbiotic. Here man and nature are in a state of balance, and man regards himself as responsible to god for nature and the earth and as a steward and custodian of nature.
- 3) Exploitative. Man is the completer and modifier of nature, then creator, and finally destroyer of the environment.

This viewpoint is further acknowledged by Glacken¹⁷, who suggests that "these attitudes have coexisted in the high cultures from the earliest times. The view that nature is inanimate matter which is to be exploited by applying technology for man's comfort and that this is man's aim, reaches the ultimate in the United States, the Soviet Union, Australia and so on. The theoretical assumptions of this

study center around the above classifications.

McKechnie¹⁸ has developed an instrument to measure environmental dispositions that takes into consideration the attitudes, beliefs, values and sentiments of those being studied. The obvious assumption is that people differ greatly in the way they relate and make use of the natural and physical environment. The instrument identified eight scales or dimensions representing a fairly large set of environmental themes. Some of these dimensions relating to environmental manipulation were:

- 1) Pastoralism -- taps an appreciation of and sensitivity to the primitive natural environment, and a desire to preserve it.
- 2) Environmental Adaptation -- identifies the man over nature (Kluckhohn & Strodtbeck, 1961) impulse to modify the environment to human desires and perceived needs, and to restrict the environment to private use.
- 3) Environmental Trust -- measures attitudes of trust vs fear of the environment, especially threatening environments as the city, the wilderness, and machinery.

In his study on the environmental dispositions of elderly females, Windley¹⁹ measured with attitude scales such concepts as preferences for environmental privacy, environmental complexity, environmental change or stability and environmental manipulation. He clustered environmental manipulation into two broad categories: man over environ-

ment and environment over man. In the former man is the master, in the latter man is subjugated by nature. The design implications of Windley's study are centered around the manipulator on the one hand and the non-manipulator on the other.

The literature available, while limited in scope and content, suggests that more study is needed in attitudes toward environmental manipulation and what these attitudes mean in the real world.

CHAPTER III

METHODOLOGY

Measurement Issues

In its most simple form, measurement "is the assignment of numerals to objects or events according to rules."²⁰ Quantification of individual characteristics such as intelligence, need for privacy, and anxiety, is carried out by assigning numbers to events according to certain rules just about the same way volume, weight and length are estimated in the natural sciences. However, the procedure to assess psychological factors is badly misunderstood, and many allege it can not be done. Measuring devices with unclear or doubtful rules for assigning numerals to the characteristics being measured, are seldom very good. Certain properties, like sex and age, are determined more accurately than others because the criteria are very clear. The extent to which a measuring procedure corresponds to reality is called isomorphism.²¹ Two important cannons of measurement are the reliability of the instrument, and its validity.

Reliability.--Reliability is concerned with how well something is measured. It is the consistency of a measure, its stability over time and its precision. The consistency of a test refers to the homogeneity of the items²², and stability to the extent to which repeated measurement yield

similar results.²³

One of the various types of computation for reliability is Cronbach's²⁴ coefficient alpha. It estimates the reliability from a single test by considering it a composite of tests all measuring the same attribute. This facilitates the testing process since the measure does not have to be administered to the same subjects on repeated occasions to assess stability over time. The magnitude of coefficient alpha depends on 1) the homogeneity of the test (average inter-correlation) and 2) the length of the test.

Attitude Scale.-- Various strategies exist to construct reliable attitude scales: the internal method (factor analysis of large attitude item pools), the external method (aligning attitude items with some external criterion), and the intuitive method (relating attitude items to an assumed existing dimension).²⁵ In this study the intuitive method was used. A Likert-type²⁶ scale was developed (see Appendix A). Statements previously endorsed as relating to environmental manipulation were conceived or selected from other investigators' scales.^{27,28}

The item pool consisted of 61 positive or negative statements about environmental manipulation. The item pool was administered to a group of 50 subjects that included 13 Design faculty, 13 Design students, 12 Non-design faculty

and 12 Non-design students.

Items with a positive meaning were scored highly when eliciting "strongly agree" responses. For example, subjects who strongly agreed with "Technology is leading us to a new, more satisfying life", were given a score of 5, whereas those who strongly disagreed were assigned a score of 1. Conversely, items with negative meaning eliciting "strongly agree" responses were assigned the lowest score. For example, subjects who strongly agreed with "It is good to submit to the forces of nature", were assigned a score of 1, whereas those who strongly disagreed were assigned a score of 5.

Individual item scores were summed for all respondents and correlated with the respondent's total score. Items which showed a sufficiently high correlation were retained and the others discarded. The final scale was comprised of 20 items (see Appendix C).

Validity.-- The best description of validity is summarized by the question: Is the instrument measuring whatever it was intended to measure? There are three types of validities: 1) Content validity, is how well the content of an attribute is sampled, 2) Criterion-related validity, refers to the predictability of the test, and 3) Construct validity,

is evaluated by investigating what qualities a test measures, that is, what constructs or concepts account for performance on the test.²⁹

Since this study is interested in distinguishing the underlying factors of environmental manipulation, construct validity is most significant. The goal of construct validation is not only to validate the test; it also tries to validate the theory behind the concept. Construct validation of an attitude scale can be achieved by correlating scores on the scale with measures of other concepts. If there is a high correlation between the two measures, the second measure is used as an indicant of the validity of the scale. Validation requires continual correlation of the construct with real world phenomena and is thus, a never ending process.

To assess validity, biographical and personological data were obtained from each subject. Selected subjects scoring high and low on the scale were administered a model test and a standardized personality test. All measures were then correlated with scale scores.

Model Test.---The model test consisted of a slotted plywood board, rectangular cardboard panels and wooden pegs (dowells). The board was a 15" square peg board piece $\frac{1}{8}$ " thick glued to a $\frac{1}{2}$ " thick piece the same size. (See Plate 1)

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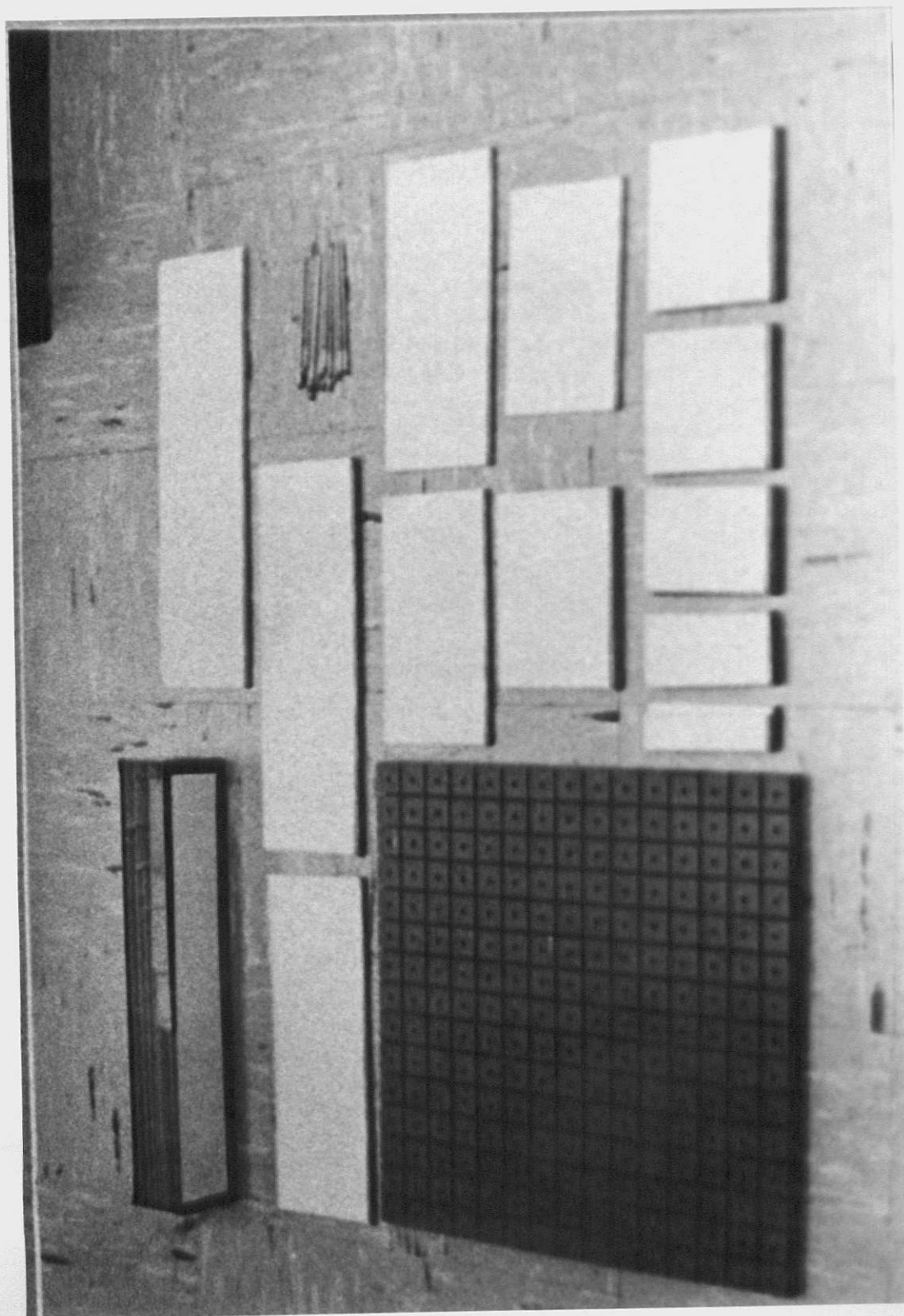


PLATE 1
MODEL MANIPULATION TEST COMPONENTS

The board was slotted at 1" intervals in both directions, deep enough to allow the insertion of panels.

All components of the model were:

7	panels	1	"	wide
7	"	2	"	"
7	"	3	"	"
6	"	4	"	"
6	"	5	"	"
6	"	6	"	"
1	"	7	"	"
2	"	8	"	"
2	"	10	"	"
2	"	11 $\frac{1}{2}$	"	"
4	"	13	"	"
2	"	15	"	"

and 24 pegs $\frac{1}{8}$ " in diameter to fit the pegboard holes. All panels and pegs were 4 $\frac{1}{2}$ " high. These materials were kept in a specially designed box so that everything could be visually spotted without difficulty.

The rationale behind the model is that individuals with strong manipulative tendencies will shift and use more panels and pegs, will manipulate more pieces and will make more complex and intricate arrangements.

The instructions requested the subjects to make an abstract arrangement using the materials provided (see Appendix D). It was also indicated that there was no time limit. However, a measure of total time spent was recorded in addition to number of pegs and panels used, pegs and panels removed from the board, and pegs and panels relocated. Unusual circumstances affecting the administration of the test were

also recorded when appropriate.

After each subject completed his arrangement a black and white photograph of it was taken. The photograph was then analyzed to find intricacies or complexities in the arrangements. The purpose, nature, and objectives of the test were disclosed only upon the request of the subject. Whenever this occurred, extreme caution was taken so that this information would not reach the rest of the subjects.

✓ Biographical Data.-- Data concerning age, sex, and education were obtained from all subjects. Questions addressing such issues as technological influences upon education, life styles, transportation, education and recreation were incorporated. A measure of frequency of mobility and dwelling areas in which subjects lived most of the time was also included. It is assumed that subjects with strong manipulative attitudes are likely to come from large and complex surroundings, are frequently on the move, desire technological improvements, as well as changes in society.

✓ Personality Test.-- It is assumed that individuals with high and low scores on the attitude scale share common qualities and traits, and that these traits may assist in attitude formation. Therefore, it is postulated that individuals scoring high on the scale will be active, extrovert, meticulous, versatile and exhibit creative thought. Conversely, those

with low scores will be passive, conservative, introvert, shy and depressive. To verify these assumptions the 16 Personality Factors Questionnaire (16 PF) was administered. The 16 PF is an instrument developed to give the most complete coverage of personality in a short time.³⁰ The research applications of the test spans over a period of more than 30 years of factor analytical investigations on normal and clinical groups. The test isolates 16 independent and psychologically meaningful dimensions (see Appendix E).

Sampling Procedure.

The sample population of this study comprises subjects from Kansas State University in the United States and from Universidad Nacional Pedro Henriquez Urena in Dominican Republic. The Design and Non-design samples included both students and faculty. Students were selected if they qualified either as a freshman or as a sophomore. The procedure to select the Non-design samples were as follows: five disciplines taught in common at both centers were chosen at random. These were: Economics, Sociology, Psychology, Animal Science and Agronomy. Similar procedures were observed in both countries.

✓ Subjects.-- A total of 200 subjects was investigated. This included 100 in Dominican Republic and 100 in the United

States. The subject composition is shown in Figure 1.

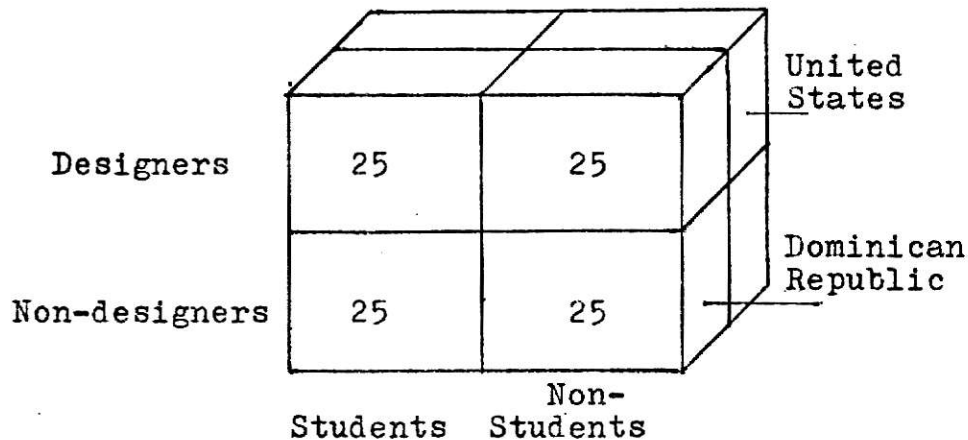


Fig. 1: Subject Composition

The procedure to select all subjects was as follows: Design students and faculty were selected from class rosters and faculty lists obtained from the Architecture Departments in both universities. Similarly, class rosters and faculty lists were acquired from the five Non-design Departments. Five subjects were selected for each group to compose the sample. All disciplines and subjects were obtained at random using the table of random numbers.³¹

✓ The Testing Situation.--The scale administration usually took place in front of the investigator; in rare instances subjects requested to take the questionnaire home. When subjects raised issues concerning the purpose of the test, they

consistently were advised to go back to read the instructions. In no one case was the real purpose of this research disclosed before the test was completed.

✓ Data Collection.

All data from the Dominican Republic sample were collected in August 1973, while the investigator visited that country. Data from the U.S.A. sample were collected early in the fall semester of 1973. All other data were obtained after the attitude scale was administered.

Statistical Procedures

Scores on each of the 20 items were calculated and added together to give each subject a total score. A coefficient alpha was computed for the Dominican Republic sample, the U.S.A. sample, and both countries combined. A three way analysis of variance for U.S.A. vs. Dominican Republic, Students vs. Non-students, and Designers vs. Non-designers was calculated. For the U.S.A., a two-way analysis of variance was computed for Designers vs. Non-designers and Students vs. Non-students. One-way analysis of variance was also executed for Design students vs. Design faculty, and Non-design students vs. Non-design faculty. Product moment correlations between scale scores, personality factors and model test scores were also computed. All data were analyzed with the computing facilities at Kansas State University.

CHAPTER IV

RESULTS

This chapter describes the data analysis, reliability of the instrument and how the findings bear on the hypotheses. To test the reliability of the scale a coefficient alpha was computed, using the following formula:²⁴

$$A = \frac{n}{n-1} \left(1 - \frac{V_i}{V_t} \right)$$

when n is the number of items in the scale, V_i is the total variance of the items, and V_t is the total variance of the scale. Table 1 displays reliabilities coefficients for the scale from Dominican Republic sample , United States sample and both samples combined.

TABLE 1
RELIABILITY COEFFICIENTS (ALPHA) FOR
THE ATTITUDE SCALE: ENVIRONMENTAL MANIPULATION

Sample	N	Alpha
Dominican Republic	100	.31
United States	100	.67
Combined	200	.55

The range of alpha spans from .00 (no reliability) to 1.00 (perfect reliability). In psychological measurement reliabilities higher than .50 are considered adequate for most practical purposes; however, lower measures yield no

meaningful results. The low reliability for the Dominican Republic sample can be interpreted in many ways. It could be argued that problems in language translation may have confused the intended meaning of the items, or subjects were responding differently to issues raised by the items. The relatively high coefficient for the United States sample suggests that the scale is homogenous and stable.

Mean scale scores for Designers and Non-designers and Students and Faculty from both countries are shown in Table 2. Mean scale scores for Designers and Non-designers, Students and Faculty from the United States are shown on Tables 3 and 4, respectively.

TABLE 2
MEAN SCALE SCORES FOR
UNITED STATES VS. DOMINICAN REPUBLIC SAMPLES

Samples	Mean Scores	
	United States	Dominican Republic
Design students	54.64	59.56
Design faculty	55.88	60.76
Non-design students	53.44	59.96
Non-design faculty	59.66	56.04

Note.-- N=25 for each of the eight samples.

TABLE 3
MEAN SCALE SCORES FOR
DESIGNERS VS. NON-DESIGNERS IN THE UNITED STATES

Samples	N	Mean Scores
Designers	25	55.26
Non-designers	25	56.50

TABLE 4
MEAN SCALE SCORES FOR
STUDENTS VS. FACULTY IN THE UNITED STATES

Samples	N	Mean Scores
Students	25	54.04
Faculty	25	57.77

The score range of the scale varied from a minimum score of 5 to a maximum of 100. The mean scores on the scale were submitted to a three-way analysis of variance for United States vs. Dominican Republic, Students vs. Faculty and Designers vs. Non-designers samples. A two-way

analysis of variance was executed with mean scale scores for Students vs. Faculty, and Designers vs. Non-designers samples in the United States. Two one-way analyses of variance were computed for United States samples, one for Non-design students vs. Non-design faculty and another for Design faculty vs. Non-design faculty. These results are shown in Tables 5, 6, 7, and 8, respectively.

TABLE 5

THREE-WAY ANALYSIS OF VARIANCE ON MEAN SCALE SCORES
FOR U.S.A. VS. DOM. REP., STUDENTS VS. FACULTY
AND DESIGNERS VS. NON-DESIGNERS

Source	df	MS	F
USA vs. Dom.Rep.	1	511.99	10.16**
Students vs. Faculty	1	67.27	1.33
USA/Dom.Rep. vs. Students/Faculty	1	317.52	6.30*
Designers vs. Non-designers	1	10.58	0.21
USA/Dom.Rep. vs. Designers/Non-designers	1	144.50	2.87
Designers/Non-designers vs. Students/Faculty	1	0.18	0.00
USA/Dom.Rep. vs. Designers/Non-designers vs. Students/Faculty	1	312.50	6.20*

Note.-- N=200

*p. < .01.

**p. < .001.

TABLE 6

TWO-WAY ANALYSIS OF VARIANCE ON MEAN SCALE SCORES
FOR STUDENTS VS. FACULTY AND
DESIGNERS VS. NON-DESIGNERS:
USA SAMPLE

Source	df	MS	F
Students vs. Faculty	1	338.56	5.85*
Designers vs. Non-designers	1	38.44	0.66
Between Groups	1	148.84	2.57
Within Groups	96	57.88	

Note.-- N=100

*p. < .01.

TABLE 7

ONE-WAY ANALYSIS OF VARIANCE FOR NON-DESIGN STUDENTS
VS. NON-DESIGN FACULTY: MEAN SCORES
UNITED STATES SAMPLES

Source	df	MS	F
Between groups	1	487	8.69*
Within groups	48	56	

Note.-- N=50

*p. < .01.

TABLE 8

ONE-WAY ANALYSIS OF VARIANCE FOR DESIGN FACULTY
VS. NON-DESIGN FACULTY MEAN SCORES
UNITED STATES SAMPLES

Source	df	MS	F
Between groups	1	256	3.12
Within groups	48	82	

Note.-- N=50

Further analysis of data for the Dominican Republic sample is fruitless because of low reliability. The results can be summarized as follows:

- 1) Inferences drawn from Dominican Republic data are not possible.
- 2) Data on three-way analysis of variance shows no significant differences between Designers and Non-designers, and Students vs. Faculty.
- 3) Significant differences were obtained between Students and Faculty in the United States.
- 4) There are significant differences between Non-design students and Non-design faculty in the United States.
- 5) No significant differences were found between Designers and Non-designers and between Design faculty and Non-design faculty.

A high level of significance is obtained when the probability of results occurring by chance is very low.³²

The levels of significance most often used are $p. < .05$. and

$p < .01$. Sometimes, $p < .001$. is used. The $p .05$. level means that an obtained result that is significant at that level could occur by chance only five times in 100 trials. Many researchers admit that results significant at the $p < .01$. level reach a high level of certainty.

The hypothesis suggesting differences between cultures is inconclusive because of the low reliability of the scale for the Dominican Republic sample. However, there may be a tendency in subjects from Dominican Republic to possess stronger environmental manipulation attitudes than their counterparts in the United States.

The hypothesis that Designers are higher manipulators of the environment than Non-designers was not supported. The findings revealed no significant differences.

The hypothesis that Students would be higher manipulators of the environment than Faculty was not supported by the findings. The results did not show significant differences in the hypothesized direction.

To check for validity, scale scores for the United States sample were correlated with biographical data. These results are shown in Table 9.

Individuals obtaining high scores are older and have a tendency to desire changes in life styles. Older subjects

TABLE 9

SCALE SCORES CORRELATIONS WITH PERSONOLOGICAL DATA
FOR THE UNITED STATES SAMPLES^a

Item	Score	Age	Sex	Design ^b vs Non- design	Dwell. Area	Mobil.	Hous.	Trans.	Recr.	Educ.	Life Style
Score	--										
Age	29**	--									
Sex	-11	-07	--								
Design/Non-des.	03	23*	-14	--							
Dwelling Area	04	05	-01	35**	--						
Mobility	-06	-24*	20	15	14	--					
Housing	13	02	03	21*	12	21*	--				
Transportation	-01	-22*	10	14	-04	23*	37**	--			
Recreation	04	03	-03	08	-10	05	-32**	24**	--		
Education	07	-11	03	08	10	-03	36**	38**	22*	--	
Life Style	22*	15	01	15	21*	15	44**	33**	37**	--	

Note.- N=100.

^aAll decimal points are omitted.

^bHigher values given to designers.

*p. < .05.

**p. < .01.

move very seldom from the place they live and oppose to changes in the transportation system. Those favoring changes in life styles are anxious to see technology change the housing, recreation and educational systems. They come from larger urban centers.

CHAPTER V

DISCUSSION

The purpose of this chapter is to analyze the results, evaluate the scale concerning validity issues, discuss the design implications of the findings, and outline future areas for research.

Validity Issues.-- To better understand what the scale was actually measuring, scale scores were correlated with biographical data, a model manipulation test, and the personality factors in Cattell's 16 PF inventory. The five individuals who scored highest and the five with the lowest scores on the scale were contacted and administered these tests. Table 10 shows Model mean scores and Table 11 the correlations.

TABLE 10

MODEL TEST MEAN SCORES FOR SUBJECTS WITH HIGH AND LOW
SCORES ON THE SCALE: UNITED STATES SAMPLE

Groups	Time Spent (min.) ^a	Panels Rel. ^a	Panels Rem. ^a	Panels Used	Pegs Rel. ^a	Pegs Rem. ^a	Pegs Used	Total Pieces Manip. ^a
High	12	3.0	2.7	12.7	2.3	0	18.3	39.0
Low	5	.7	0	12.3	0	0	17.3	30.3

Note.-- N=5 subjects in each group.

^aRel.: Relocated, Rem.: Removed, Manip.: Manipulated
Min.: Minutes.

TABLE 11

SCALES SCORES CORRELATIONS WITH MODEL MANIPULATION TEST AND PERSONALITY TRAITS^a

Scale Scores	Time on Model	Personality Traits																Model Scores
		A	B	C	E	F	G	H	I	L	M	N	O	Q ₁	Q ₂	Q ₃	Q ₄	
52	--																	
60	72	--																
46	-12	-28	--															
37	80**	42	03	--														
24	08	23	-16	-27	--													
38	67*	22	06	80**	11	--												
24	66*	74*	-29	51	06	34	--											
75	54	54	25	13	63	09	13	--										
11	28	40	10	20	-27	-37	27	23	--									
28	18	-25	26	40	-11	65*	-05	-04	-55	--								
14	-17	-27	47	-39	09	-41	-65*	47	29	-21	--							
11	04	22	-11	-54	51	-36	-13	56	05	-47	58	--						
-55	-59	-49	-23	-66*	-34	-56	-55	-44	-07	-15	36	28	--					
Q ₁ 45	60	14	15	69*	-10	72*	-13	37	-07	49	18	-15	-32	--				
Q ₂ 48	25	-10	24	23	16	56	-30	37	-54	80**	20	02	-05	70*	--			
Q ₃ 28	73*	42	-18	76*	-21	66*	66*	06	06	59	-50	-41	-34	41	32	--		
Q ₄ -26	-44	-31	-25	-48	-25	-24	-31	-40	-38	29	00	06	81**	-24	27	03	--	
Model Scores	55	83**	68*	13	73*	05	49	48	56	48	-15	00	02	-72*	56	-01	34	-78**

Note.--N=10 subjects scoring the highest and the lowest.

^aAll decimal points are omitted.

*p.<.05.

**p.<.01.

The correlation with biographical data suggests that high manipulators are willing to accept technological changes on education, transportation, housing and life styles, are constantly on the move, and come from larger urban areas. The model test seemed adequate as a tool to assess manipulative behavior since those individuals who manipulated the model extensively obtained high scores on the scale. Furthermore, personality characteristics of high scoring subjects for both the scale and the model reveal them as outgoing, venturesome, experimenting, imaginative, self-sufficient, and more extrovert than low scoring subjects.

Design Implications.-- Because of the exploratory nature of this study the data gathered refer to general design considerations rather than to specific and capsulized specifications to be inserted into the actual process of design.

The design implications of this study should be regarded as possible design alternatives. The major design implication is that there are differences in the way people wish to manipulate the environment. Since Architects are designing for a large and diverse population, these differences ought to be taken into account. The fact that older people and Non-designers revealed stronger feelings toward the manipulation of the environment, suggests that there is a need to provide some people with environments capable of being manipulated

by their users. This could also mean the need to provide for individuals with high manipulative tendencies, such household amenities as movable partitions, portable component furniture, variable lighting or acoustical conditions, and flexible decor. On the other hand, individuals with low manipulation desires may need typical facilities, for example, built-in accessories, fixed walls, and furniture.

Other implications of this study refer to the finding that faculty members disclosed stronger environmental manipulation feelings and higher manipulative behavior than students. This finding could suggest that the educational process is influencing and modeling manipulation tendencies thus inculcating the idea that the environment is to be manipulated to meet man's needs, consequently, the client is conceived as the non-manipulating type and the environment is usually designed to the last nut and bolt.

The educational process should be further investigated to ascertain how and under what conditions it influences the development of environmental manipulation. The fact that needs to be underlined is that there is a great deal to be learned about the people Architects design for. This knowledge helps the profession by allowing it to offer environments adequate enough for the functions intended, and capable to provide man with a setting to suit his needs.

Methodological and Theoretical Issues.-- The findings of this investigation depended upon the reliability and validity of the measuring instrument. Since the scale was not reliable for the Dominican Republic sample, it is suggested that the measuring instrument be pre-tested and calibrated in the countries involved before further cross-cultural analysis is made. This entails, obviously, the use of the same item-pool from which the statements were selected.

To increase the reliability of the scale it might be necessary to include additional statements. To test for validity, the model manipulation test seemed adequate, however, it might be advantageous to include a greater number of pieces and provide greater variance in shapes and sizes. Possibly a man-made environment to full scale could also be considered a future check on validity.

The findings to a certain extent confirm the classification advanced by Rapoport about man's relationship to the environment. It was found that there are high manipulators, low manipulators and many who desire a state of balance. Although inferences relating to the Dominican Republic sample are not possible because of the low reliability of the scale, the results nonetheless tend to indicate that man-environment relations vary from culture to culture.

The correlations between scales scores and personality traits tend to describe the high manipulator as versatile,

outgoing, participating, uninhibited, socially bold, extrovert, self-assured and complacent. The individuals scoring low are introvert, reserved, timid, sensitive to threats, apprehensive and insecure. High manipulation seems to be related to mobility and action; low manipulation to passivity and security.

Future Areas of Research.-- The area of environmental manipulation needs to be theoretically developed. The relationship between attitudes and observable behavior needs further clarification. A follow-up to this investigation might study under what conditions manipulative behavior is displayed, what environmental features inhibit or enhance manipulation, when or how environmental manipulation is optimized, and other factors which contribute to the development of manipulation tendencies.

Cultural differences should be assessed following suggestions made earlier to increase the reliability of the scale. Cultural factors that account for such differences need to be identified and verified. In addition, variables such as sex, age, and socio-economic status might influence scores on the scale. To further demonstrate validity Environmental Manipulation should be subjected to experimental treatment.

Conclusions.-- The basic aims of this study were:

1) to empirically examine man's environmental attitudes, 2) to develop a reliable instrument to measure environmental manipulation, and test for its validity, and 3) to investigate environmental manipulation between Designers and Non-designers in both the United States and the Dominican Republic.

The empirical results obtained suggest that the reliability of the scale for the Dominican Republic sample was lower than desirable; for the United States it was sufficiently high; its validity was confirmed by various external criteria such as biographical data, a model manipulation test, and personality measures.

It was found for the United States sample that Faculty members were higher manipulators than Students. No significant differences were observed between Designers and Non-designers, between Design Faculty and Non-design Faculty, and between Design Students and Design Faculty.

Area for further research was briefly outlined. Methodological and theoretical issues were discussed and some design implications were drawn for both the high manipulators and low manipulators.

APPENDIX A
ATTITUDE SCALE

THE PURPOSE OF THIS STUDY IS TO OBTAIN YOUR OPINIONS AND ATTITUDES ABOUT BUILDINGS, CITIES AND THE NATURAL ENVIRONMENT BY ASKING YOU TO RESPOND TO A SERIES OF STATEMENTS. KNOWING HOW YOU FEEL ABOUT THESE STATEMENTS WILL HELP ARCHITECTS AND PLANNERS DESIGN BETTER BUILDINGS AND CITIES.

The following is an example of a statement:

I WOULD CONSIDER DESIGNING MY OWN HOUSE.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

If you strongly agree with the statement, circle STRONGLY AGREE. If you only agree, circle AGREE. If you feel neutral or cannot make up your mind, circle NEUTRAL. If you disagree or strongly disagree, circle DISAGREE or STRONGLY DISAGREE.

To illustrate we have circled AGREE in the example above.

IMPORTANT:

- A) Be sure to respond to every statement. PLEASE DO NOT LEAVE ANY OUT.
- B) Respond ONLY ONCE to each statement.
- C) There is no right or wrong answer to any of the statements.
- D) It is best not to think about any one statement too long, just your first impression will do.
- E) Please do not discuss your responses with anyone until after you have turned in the questionnaire.

PART "A"

01.- THE IDEA OF "LIVING OFF THE LAND" DOESN'T APPEAL ME. *sewing clothes*

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

02.- I WOULD RATHER REMODEL AN OLD HOUSE THAN BUILD A NEW ONE. *buy food from hotel then cook myself*

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

03.- OLDER SECTIONS OF THE CITY ARE MORE INTERESTING THAN THE NEW AREAS. *central square is more interesting*

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

04.- IT IS GOOD FOR MAN TO SUBMIT TO THE FORCES OF NATURE. *daily 2*

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

05.- I WOULD NOT ENJOY LIVING IN A HISTORIC HOUSE.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

06.- I FIND STREET NOISE VERY DISTRACTING.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

07.- IN SPITE OF ALL THE TALK ABOUT POLLUTION, THE EARTH IS STILL
A SAFE PLACE TO LIVE.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

08.- WHEN IT COMES TO SOCIAL GATHERINGS I LET OTHER PEOPLE PLAN
THE FURNITURE ARRANGEMENTS.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

09.- TECHNOLOGY IS LEADING US TO A NEW, MORE SATISFYING LIFE.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

10.- TODAY PEOPLE ARE TOO ISOLATED FROM THE FORCES OF NATURE.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

11.- I THINK WE SHOULD SPEND MORE MONEY IN OUTER SPACE RESEARCH.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

12.- MODERN BUILDINGS ARE SELDOM AS ATTRACTIVE AS OLDER ONES.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

13.- THE OLDER PARTS OF OUR CITIES SHOULD BE REPLACED WITH NEW
BUILDINGS RATHER THAN RESTORED.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

14.- BUILDING PROJECTS WHICH ALTER THE ECOLOGY SHOULD BE ABANDONED
AND THE LAND RETURNED TO ITS NATURAL STATE.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

15.- GOVERNMENTS SHOULD SPEND MORE MONEY IN ADVANCING TECHNOLOGY.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

16.- MOST MODERN BUILDINGS LOOK ARTIFICIAL AND UNREAL.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

17.- I CANNOT DO WELL WITHOUT MOST MODERN APPLIANCES.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

18.- OUR MODERN TECHNOLOGICAL SOCIETY IS DESTROYING OUR INDIVIDUALITY.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

19.- I ENJOY WATCHING OLD HOUSES TORN DOWN.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

20.- REALISTICALLY SPEAKING IT IS NEXT TO IMPOSSIBLE TO PREDICT THE WEATHER.

Strongly agree * Agree * Neutral * Disagree * Strongly disagree

PART "B" . BIOGRAPHICAL AND PERSONOLOGICAL QUESTIONNAIRE

21.- Age _____ yrs.

22.- Sex. M F

23.- If you are a student, what is your major? _____

24.- If your are a professional, what is your field? _____

25.- In which of the following have you lived most of your life?

_____ Rural area

_____ Small town (5,000 - 50,000 people)

_____ Medium-sized city (51,000-100,000 people)

_____ Large city (101,000 or more people)

_____ Other (please explain) _____

26.- Within the past 10 years, approximately how many different dwellings (e.g. house, apartment, trailer, etc.) have you lived in?

(Check only one)

_____ 1 to 3, _____ 4 to 6, _____ 7 to 9, _____ More than 10

27.- Many are predicting that technology will considerably change the following. When would you like to see this happen?

(Circle a number for each one)

	Never			As soon as possible	
HOUSING	1	2	3	4	5
TRANSPORTATION	1	2	3	4	5
RECREATION	1	2	3	4	5
EDUCATION	1	2	3	4	5
LIFE STYLE	1	2	3	4	5
OTHER (note)					
_____	1	2	3	4	5

28.- If you have additional comments please write below

29.- Name _____

30.- Address _____ Phone # _____

31.- Are you interested in the results of this test?

_____ Yes, _____ No

APPENDIX B
ATTITUDE SCALE
(Spanish Translation)

EL PROPOSITO DE ESTE ESTUDIO ES OBTENER SU IMPRESION Y OPINION ACERCA DE EDIFICIOS, CIUDADES Y DEL MEDIO AMBIENTE NATURAL. SOLO TENDRA QUE RESPONDER A LAS IDEAS QUE APARECEN MAS ABAJO. CONOCIENDO SU REACCION A ESTAS IDEAS LOS ARQUITECTOS Y PLANIFICADORES PODRIAN BENEFICIARSE PARA DE ESTA MANERA DISEÑAR Y PLANEAR MEJORES EDIFICIOS Y CIUDADES.

A continuación le damos un ejemplo de una idea:

ME GUSTARIA DISEÑAR MI PROPIA CASA.

Totalmente de acuerdo	* De acuerdo	* Me da igual	* No estoy de acuerdo	* Totalmente en desacuerdo
--------------------------	--------------	---------------	--------------------------	-------------------------------

Si estás totalmente de acuerdo, encierra en un círculo TOTALMENTE DE ACUERDO. Si solamente estás de acuerdo, encierra en un círculo DE ACUERDO. Si no puedes decidirte o te sientes neutral, encierra en un círculo ME DA IGUAL. Si no estás de acuerdo ó estás totalmente en desacuerdo, encierra en un círculo NO ESTOY DE ACUERDO ó TOTALMENTE EN DESACUERDO respectivamente.

IMPORTANTE:

- A) Asegúrese de responder a todas las ideas. POR FAVOR NO OMITA NINGUNA.
- B) DÉ UNA SOLA respuesta a cada idea.
- C) No hay respuestas que sean correctas ó incorrectas a estas ideas.
- D) Es preferible no pensar mucho para contestar las ideas. La primera impresión es suficiente.
- E) Por favor no discuta sus respuestas con nadie hasta que no complete su cuestionario.

PARTE A

01.- NO ME GUSTA LA IDEA DE "VIVIR DE LA TIERRA".

Totalmente De acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
--------------------------	--------------	---------------	--------------------------	-------------------------------

10.- LA GENTE HOY DIA ESTA MUY AISLADA DE LA NATURALEZA.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
-----------------------	--------------	---------------	-----------------------	----------------------------

11.- YO CONSIDERO QUE SE DEBE INVERTIR MAS DINERO EN INVESTIGACIONES EXTRA-TERRESTRES.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
-----------------------	--------------	---------------	-----------------------	----------------------------

12.- LOS EDIFICIOS MODERNOS SON RARAMENTE TAN ATRACTIVOS COMO LOS ANTIGUOS.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
-----------------------	--------------	---------------	-----------------------	----------------------------

13.- LOS SECTORES ANTIGUOS DE LA CIUDAD, EN VEZ DE SER RESTAURADOS, DEBERIAN SER REEMPLAZADOS POR NUEVAS EDIFICACIONES.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
-----------------------	--------------	---------------	-----------------------	----------------------------

14.- SE DEBE DESISTIR DE LAS CONSTRUCCIONES QUE ALTEREN EL SUELO EN SU ESTADO NATURAL.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
-----------------------	--------------	---------------	-----------------------	----------------------------

15.- LOS GOBIERNOS DEBERIAN INVERTIR MAS EN EL AVANCE DE LA TECNOLOGIA.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
-----------------------	--------------	---------------	-----------------------	----------------------------

16.- LA MAYORIA DE LAS EDIFICACIONES MODERNAS LUCEN IRREALES Y ARTIFICIALES.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
-----------------------	--------------	---------------	-----------------------	----------------------------

17.- YO NO PODRIA DESENVOLVERME BIEN SIN AYUDA DE LOS EQUIPOS ELECTRO-DOMESTICOS MODERNOS.

Totalmente de acuerdo	* De acuerdo *	* Me dá igual *	* No estoy de acuerdo	* Totalmente en desacuerdo
--------------------------	----------------	-----------------	--------------------------	-------------------------------

18.- NUESTRA MODERNA SOCIEDAD TECNOLOGICA ESTA DESTRUYENDO NUESTRA INDIVIDUALIDAD.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
91	92	93	94	95
96	97	98	99	100

19.- ME FASCINA PRESENCIAR LA DEMOLICION DE CASAS VIEJAS.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
--------------------------	--------------	---------------	--------------------------	-------------------------------

20.- ES CASI IMPOSIBLE PREDECIR LOS FENOMENOS DE LA NATURALEZA.

Totalmente de acuerdo	* De acuerdo	* Me dá igual	* No estoy de acuerdo	* Totalmente en desacuerdo
1	2	3	4	5

PARTE E .

CUESTIONARIO PERSONAL

21.- Edad años.

22.- Sexo. M ☐ F ☐

23.- Si eres estudiante, qué estudias? _____

24.- Si eres profesional, a qué te dedicas? _____

25.- Dónde has pasado la mayor parte de tu vida?

Area rural.

Ciudad pequeña (de 5,000-50,000 habitantes)

Ciudad mediana (de 51,000 - 100,000 habitantes)

Ciudad grande (de 101,000 ó más habitantes)

Otra (explique por favor)

26.- En los últimos 10 años aproximadamente en cuántas casas has vivido?

Chequee la casilla correspondiente:

____ 1-3 casas ____ 4-6 casas ____ 6-9 casas ____ más de 10 casas

27.- Muchos predicen que la tecnología alterará considerablemente los siguientes fenómenos sociales. ¿Cuándo te gustaría que sucediera?

VIVIENDA	Ahora * Pronto * Me da * En un futuro * Nunca
	igual lejano
TRANSPORTE	Ahora * Pronto * Me da * En un futuro * Nunca
	igual Lejano ;
RECREACION	Ahora * Pronto * Me da * En un futuro * Nunca
	igual lejano
EDUCACION	Ahora * Pronto * Me da * En un futuro * Nunca
	igual lejano
ESTILO DE VIDA	Ahora * Pronto * Me da * En un futuro * Nunca
	igual lejano
OTROS	Ahora * Pronto * Me da * En un futuro * Nunca
	igual lejano

28.- Si tiene comentarios o sugerencias por favor escriba debajo.

No. _____

APPENDIX C
ITEM TOTAL SCORE CORRELATION
(Pre-Test)

ITEM-TOTAL SCORE CORRELATIONS PRE-TEST

N=50

No.	Item	r^a
1.	The idea of "living off the land" doesn't appeal me.	.62
2.	I would rather remodel an old house than build a new one.	.68
3.	Older sections of the city are more interesting than the new areas.	.76
4.	It is good for man to submit to the forces of nature.	.51
5.	I would not enjoy living in a historical house.	.38
6.	I find street noise very distracting.	.50
7.	In spite of all the talk about pollution, the earth is still a safe place to live.	.68
8.	When it comes to social gatherings I let other people plan the furniture arrangements.	.57
9.	Technology is leading us to a new, more satisfying life.	.61
10.	Today people are too isolated from the forces of nature.	.60
11.	I think we should spend more money in outer space research.	.30
12.	Modern buildings are seldom as attractive as older ones.	.42
13.	The older parts of our cities should be abandoned and the land return to its natural state.	.40
14.	Building projects which alter the ecology should be abandoned and the land returned to its natural state.	.69
15.	Governments should spend more money in advancing technology.	.63
16.	Most modern buildings look artificial and unreal.	.62
17.	I cannot do well without most modern appliances.	.64
18.	Our modern technological society is destroying our individuality.	.47
19.	I enjoy watching old houses torn down.	.71
20.	Realistically speaking it is next to impossible to predict the weather.	.57

^aProduct moment correlation coefficient.

APPENDIX D
INSTRUCTIONS FOR MODEL TEST

INSTRUCTIONS

Here you have a pegboard with grooves and a box containing cardboard panels and pegs. I would like you to do an abstract arrangement that you like using the materials provided.

IMPORTANT:

- 1) The insertion of the panels and the pegs is made by aligning the red marks with the grooves on the board.
- 2) There is no time limit.
- 3) You should pay no attention to the color of the panels.
- 4) You can use as many (or as few) pieces as you like.
- 5) You can change, relocate or remove the panels and the pegs as you wish.

APPENDIX E
16 PERSONALITY FACTORS

16 PERSONALITY FACTORS: PRIMARY TRAITS

Factor	Low Score	High Score
A	RESERVED, detached, critical, aloof, stiff.	OUTGOING, warmhearted, easy-going, participating.
B	DULL, Low intelligence	BRIGHT, High intelligence
C	AFFECTED BY FEELINGS, emotionally, less stable.	EMOTIONALLY STABLE, mature, faces reality, calm.
E	HUMBLE, mild, easily led, docile, accommodating.	ASSERTIVE, aggressive, competitive, stubborn.
F	SOBER, taciturn, serious.	HAPPY-GO-LUCKY, enthusiastic.
G	EXPEDIENT, disregards rules.	CONSCIENTIOUS, persistent, moralistic, staid.
H	SHY, timid, threat-sensitive.	VENTURESOME, uninhibited, socially bold.
I	TOUGH-MINDED, self-reliant, realistic.	TENDER-MINDED, sensitive, clinging, overprotected.
L	TRUSTING, accepting conditions.	SUSPICIOUS, hard to fool.
M	PRACTICAL, "down-to-earth" concerns.	IMAGINATIVE, bohemian, absent minded.
N	FORTHRIGHT, unpretentious, genuine but socially clumsy.	ASTUTE, polished, socially aware.
O	SELF-ASSURED, placid, secure, complacent, serene.	APPREHENSIVE, self-reproaching, insecure, troubled.
Q ₁	CONSERVATIVE, respecting traditional ideas.	EXPERIMENTING, liberal, free-thinking.
Q ₂	GROUP DEPENDENT, a "joiner" and sound follower.	SELF-SUFFICIENT, resourceful, prefers own decisions.
Q ₃	UNDISCIPLINED SELF-CONFLICT low, follows own urges.	CONTROLLED, exacting will power, socially precise.
Q ₄	RELAXED, tranquil, torpid, unfrustrated, composed.	TENSE, frustrated, driven, overwrought.

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ENVIRONMENTAL MANIPULATION ATTITUDES
OF DESIGNERS AND NON-DESIGNERS

by

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This thesis studied attitudes toward manipulating the environment and compared these attitudes among Designers and Non-designers at Kansas State University and Universidad Nacional Pedro Henriquez Urena in the Dominican Republic. The hypotheses were: 1) Designers are greater manipulators of the environment than Non-designers, 2) there will be identifiable cultural variations on attitudes regardless of the Designer-Non-designer distinction. Environmental Manipulation is the desire and ability to alter, change or modify the built environment.

An attitude scale to measure environmental manipulation attitudes was developed, pre-tested and administered to 100 subjects in the United States, and 100 in the Dominican Republic; with 25 subjects in each of the following four categories for both countries: Design students, Design faculty, Non-design students and Non-design faculty. Because the reliability coefficient on the scale for the Dominican Republic sample was quite low, further analyses of these data were not considered in this study. The reliability for the United States sample, however, was significantly high to warrant further investigation.

No significant differences were found between Designers and Non-designers, between Design faculty and Non-design faculty, and between Design students and Design fac-

ulty. Faculty members were significantly higher manipulators of the environment than Students.

To test for scale validity, a Model test was constructed and administered to subjects scoring high and low on the scale. The model consisted of a peg-board with grooves and cardboard panels and dowells. Subjects were asked to do an abstract arrangement that they liked. Positive correlations were found between the scores on the scale and the manipulations of the model. To further test for validity, scale and model scores were correlated with biographical data and personality traits. The results of this analysis confirmed the validity of the scale.

Methodological issues were discussed, some design implications were outlined, and future areas for research were suggested.