

AN INTERVIEW WITH DAVID STEA ON 3-P's OF ENVIRONMENTAL COGNITION: PERCEPTION, POSITIVISM, PARTICIPATION*

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Little short of two decades now, you have addressed yourself to the question involved in the explanation and understanding of environmental cognition. Your more recent writings and your lectures delivered at the METU show that your search is not merely an intellectual inquiry. You are also trying to implement some aspects of cognition into the environmental design activity. Before we talk about the practical aspects, we would like to start with the theoretical and conceptual issues involved in environmental cognition. We would like you to draw a theoretical frame of reference for environmental cognition and also state the clear distinctions or nuances between some concepts such as imagery, symbolism, retention, recall, sentiment, meaning, representation, schemata, etc. Will you, also elaborate especially on perception and cognition where the distinction, in spite of many valuable studies, at least theoretically, has not gained a clarity?

STEA

No single theoretical frame of reference for environmental cognition seems to have emerged. My own theoretical frame comes from several different areas within psychology: from the psychology of learning, broadly interpreted, (for example, in the context of spatial learning, in the sense that the environment is in part a spatial entity); and from some aspects of development theory. One of the problems in environmental cognition has been explaining how is it that understanding of the environment, knowing of the

environment, emerges in the small child from the early stages of childhood into later stages of development. Also, I have worked cross-culturally with various societies of the world and have been concerned with their cognitive categories as they relate to dealing with and building the environment, and to explaining phenomena that are fundamentally environmental. In wrestling with these problems I have drawn upon concepts coming from such theoretical frames as ethno-science, which is primarily anthropological and sociological in its origins, and from personal construct theory (which was developed within psychology but is actually more used in geography and environmental design). These two theoretical frames attempt to explain the categories or systems people develop for cognizing the environment in their own terms. They are of fundamental importance because, even though environmental cognition may have its roots in psychology, a limitation of psychology (because psychology is the science of behavior) is that it tends to deal only with those aspects of life regarded as universals (in the sense that they do not vary from one culture to another). And my findings in environmental cognition indicate rather wide cultural variations and therefore the need to look at research findings in terms of societal differences, in terms of the cognitive categories of people themselves, rather than in terms of the categories that we impose upon these experiences. Some of the comments I hope to make later on in this interview will tend to clarify that.

Now, an attempt to draw really clear distinctions (such as) among terms such as imagery, symbolism, retention recall, sentiment meaning, representation, schemata and so forth would probably be several doctoral dissertations in length. So let me try to say only a few words about them as they relate to what interests us in environmental cognition. Retention and recall, for example are part of the study of memory as it is pursued in psychology, determining what is remembered, and why and how it is remembered. Imagery, representation, and schemata are sometimes grouped into the general category of image formation. Retention and recall (within memory) are studied in a very behavioral manner, as part of the general field of learning, but imagery, representation and schemata, while related to memory, have been much harder to study in purely behavioral ways because they deal with more subjective aspects of experience, less quantifiable aspects, and are often more "visual".

Terms such as "sentiment" and "meaning" represent other ways in which we come to understand environments around us. Sentiment, the feelings associated with environmental experience or experience of a particular environment, refers to an emotional response, again hard to measure in a purely behavioral way. Meaning, one of the important aspects of environmental cognition, is often ignored in much psychological research. One recent effort has been to try to bring the concept of environmental meaning back into the arena of environmental research, to make it an important

1. See the Interview with G. BROADBENT on Meaning in Architecture, METU Journal of the Faculty Of Architecture, v.6, n.1, Spring 1980, pp. 7-31.

dependent variable in environmental cognition studies. Its role in recent architectural theory, I think, was brought out very well in an interview you did with Professor Broadbent,¹ not so very long ago.

Now, I would like to elaborate somewhat more on perception and cognition. Perception, at least as it has been pursued in recent years in psychology, has been the study of the sensory apprehension of certain objects at such a spatial and temporal scale that they can be experienced at once. This is an over-simplification but I think it covers many aspects of the study of perception in psychology the perception of light, the perception of colour, the perception of certain simple forms, are all experienced at one time. Some aspects of meaning and some aspects of affect were studied within the context of perception at one time under the label "directive state" but such studies are no longer in vogue, I think.

Now, cognition is more the process of knowing. It is the psychological term for how we know what we know, how we come to know it, how we acquire information and knowledge through experience. It seems inherently more "macro" both in the environmental spatial and temporal sense: that is, it can deal with larger environments, ("environmental cognition") than narrowly defined, perception and it can deal with broader time scales, because the formation of cognition extends over a period of time.

2. G.T. MOORE and R.G. COLLEDGE, Ed., *Environmental Knowing: Theories, Research and Methods*, Stroudsburg, Pa.: Dowden, Hutchinson and Ross, 1976.

3. See, for example, D. LOWENTHAL, *Geography, Experience, and Imagination: Towards a Geographical Epistemology*, *Annals of the Association of American Geographers*, v.51, 1961, pp. 241-260; D. LOWENTHAL et al., *Environmental Perception and Behavior*, Chicago: Univ. of Chicago, Dept. of Geography Research Papers, 1967.

The "knowing" aspect of environmental cognition, I think has gained prominence through the publication of the book called *Environmental Knowing*² not so very long ago. The two areas, however -perception and cognition- have come together in some clarifying ways and in other ways that have tended to muddy the waters a bit. For example, many geographers speak about the studies that we now call environmental cognition as studies in environmental perception.³ It is thus a bit difficult to understand exactly what is going on because of the confusion of the two terms: perception as used by psychologists is not the perception that has been treated by the geographer who is concerned with the interaction of values and previous experience and of systems of knowledge and other aspects of life with images or impressions or ideas concerning parts of the environment. This is closer to one of the theoretical frameworks for perception, frame more closely related to the environmental area than many others. In fact, William Ittelson, one of the people most responsible for this theoretical position, has become an environmental psychologist: he calls his approach "transactive" in the sense that it views perception as an interactive process, or *transaction*, between the perceiver and the thing that is perceived.⁴ This is at variance with other uses of perception which view the person as a passive receiver rather than as someone actively involved in the perception process. This involvement, perhaps, is the constructive or creative aspect of perception which brings it more in line with the sorts of things that we think are going on in cognition. Indeed, some psychologists, now, view perception

4. W. ITTELSON, *Environment and Cognition*, New York: Seminar Press, 1973; W. ITTELSON, *Visual Space Perception*, New York: Springer Pub. Co. 1960.

as sub-area of the more general area of cognition. And within cognition of course, falls environmental cognition.

S. U. NEISSER, *Cognition and Reality: Principles and Implications of Cognitive Psychology*, San Francisco: W.H. Freeman, 1976.

In fact, our area of interest achieved a certain legitimacy through a recent book by Ulrich Neisser on cognition, which devoted a good deal of space to environmental cognition.⁵ He is one cognitive psychologist who seems to be particularly concerned with environmental aspects. But we are still a long way from clarity. The uses of the term perception are confused in part because social psychologists also talk about perception -social perception: how people perceive characteristics of other people instead of characteristics of objects, forms, colours, lights and so on. This contributes to the theoretical "muddiness" of the area, so your impression that the theoretical distinctions between perception and cognition are unclear comes as no surprise.

Architecture, and built environment in general, are concerned with aspects of both perception and cognition. For various reasons, and perhaps unfortunate reasons, in the past, there has been a tendency in architectural work to stress almost exclusively the perceptual aspects of aesthetic experience, particularly visual perception. And while I think that visual perception is quite important to an understanding of the architectural experience, it nevertheless comes out of an area of psychology that tends to emphasize the one-time experience or the first-time experience of architecture's perceptual object rather than the effects of repeated exposure. So the effects of repeated exposure over a period of time during which other kinds of experiences are combined with one's original perception are not adequately taken into account. The latter complex process falls more into the area of cognition, specifically environmental cognition. And it is this kind of cognitive experience, this combination of earlier perceptions with later, other, experiences in the built environment, that really constitutes the causative element, the major shaping factors in most of the architectural experiences that we have, which are of buildings experienced not just once but repeatedly. We need more studies of this repeated experience of an architectural environment at whatever scale, to see how it is that people form their impressions, their ways of dealing with the environment and in particular their adaptations to architectural environments that are often quite unsatisfactory for ordinary activities. This adaptive ability of human behaviour is a fascinating thing and how it becomes shaped by an environment is, I think, a very interesting question.

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There are certainly differences, in some instances big and in others not so big, between various positions advanced on the subject how people get to know their environments and in what ways they behave in those environments. Most of these various approaches treat, very roughly stated, the environment as independent and

the behavior as dependent variables. Again, most of these positions place an intervening stage or variable in between the two above mentioned variables. Among these various approaches one can mention the behaviorist, cognitive behaviorist, structuralist, phenomenological, cognitive, perceptual, ecological, gestalt theories that deal with the subject-object question. What are the fundamental differences between these various positions advanced? Are these differences mainly lie in epistemological or ideological bases? Or, is it primarily a question of methodology?

STEA

One of the variables that is placed in between environment and behaviour is the person, the *experiencing* person. How that person experiences, represents, or reconstructs events may have to do with the mental state of the individual, prior experience of the person, social or economic or cultural class membership, and so forth. Some of the variables are of course, not taken into account in psychological position that tend to exclude such questions as class membership. But as you indicate, there are a number of ways of trying to bridge the gap between environment interpreted primarily as an input variable, as an output of the whole interactive or transactive process mediating between environment and behaviour.

However, almost all the approaches you mentioned have excluded the physical environment entirely, one way or another. That is, the physical environment is often viewed as a natural setting in which other more important things occur; it is generally a highly controlled experimental environment or experimental room where such things as lighting level, heating level or some other easily measurable physical aspect of the environment is varied in order to look at some behavioral output, the dependent variable. So, we sometimes in our search for architecturally-relevant data in the past, found ourselves going through a good deal of psychological literature which seemed to involve environmental variables only to find that the environmental variables were never adequately considered.

Now, most of the positions you are referring to emphasize one or another behaviorist approach. Ecological Psychology for example, is primarily concerned with overt behavior, with dependent variables that are measurable, definable, reproducible and agreed upon by all investigators. Similarly the output variable is something which is measurable, observable, easily definable in an operational sense, reproducible and so forth. Each of these positions fulfills the fundamental canons of positivism and works within that framework. The behaviorist approach, the behaviorist's views provide an umbrella, methodologically and theoretically speaking, in which perceptual approaches based on observed perceptual behavior, ecological approaches based upon observed ecological behavior -measured behavior- find a theoretical home. But some of the

residents of this theoretical home included within others. Thus, Gestalt theory is a subset of perceptual theories; while perceptual theories are subsets of an overall behavioral framework.

Cognitive theories came out of the same positivist frame. Past tendency in psychology has been to investigate cognition with only operationally definable and measurable kinds of dependent variables, as with other areas, narrowing the field of study very much. The newer, richer, cognitive approaches, are just starting in America right now. There is a rapidly expanding interest in cognitive theory in psychology: cognitive theory coming from language, cognitive theory coming from cultural research, cognitive theory coming from other areas. And this has occurred primarily within the last five years. In a sense, it is taking rather narrow cognitive behaviorism and expanding it to include many other kinds of explanatory frameworks. I think this provides more possibilities for explanation in environmental cognition than we have had previously because there are people now doing research in this area who are not burdened with the dual responsibility of trying to be applied environmental designers and cognitive theorists at the same time. Structuralist views have been of particular significance in the development area, especially as represented by the work of Piaget⁶ and of some followers⁷ of Piaget. These structuralist approaches produce a framework based upon postulation of an inherent or "deep" structure guiding development, including the development of environmental understanding. Piaget's description of stages in the early part of the life-cycle is very well known; in fact, it may be the most significant theoretical position in present-day psychology.

When you ask whether the differences among theoretical positions are mainly epistemological, ideological or methodological, I have to say "all three". But only two of these differences are overtly acknowledged. The first involves differences in epistemology: how we know what we know. There are distinct routes to this, and some of the theorists regard these routes as mutually exclusive. For example, ecological psychologists deal primarily, or in some cases exclusively, with behavior, and some of them reject cognitive approaches.⁸ So there are clear epistemological differences, clear differences in what they consider to be the important, appropriate, and legitimate roads to environmental knowledge.

Secondly, there are acknowledged methodological differences. The approaches of B.F. Skinner,⁹ for example, are very, very different from the structuralist approaches of people studying child development within the Piaget framework. Similarly, the approaches of ecological psychology, associated with Roger Barker and the students of Roger Barker,¹⁰ are quite different from the Gestalt approaches to environmental understanding of Rudolf Arnheim.¹¹ So, there are differences, both in terms of what is considered important and in terms of the approved way of understanding

6. J. PIAGET, *The Child's conception of Movement and Speed*, Trans. by G.E.T. Holloway and M.J. Mackerzie, New York: Basic Books, 1970; J. PIAGET, *The Child's Conception of Physical Causality*, London: Humanities Press, 1966; J. PIAGET, *The Child's Conception of Space*, Trans. by F.J. Langden and J.L. Longier, London: Routledge and Paul, 1956; J. PIAGET, *The Construction of Reality in the Child*, Trans. by M. Gok, New York: Basic Books, 1954.

7. B. INHELDER, H.H. CHIPMAN, and C. ZEVINGMANN, *Piaget and His School: A Reader in Developmental Psychology*, New York: Springer Verlag, 1976; N. USAACS, *A Brief Introduction to Piaget*, New York: Schocken Books, 1972; F.B. MURRAY, Ed., *Critical Features of Piaget's Theory of Development of Thought*, New York: MSS Information Corp, 1972. J.H. FLAVELL, *The Developmental Psychology of J. Piaget*, Princeton, N.J.: Van Nostrand, 1963.

8. R. BARKER, *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior*, Stanford, Calif.: Stanford University Press, 1968.

9. B.F. SKINNER, *Cumulative Record*, New York: Appleton-Century-Cofts, 1961.

10. See, for example R. BARKER, and P.V. GUMP, *Big School, Small School*, Stanford, Calif.: Stanford Univ. Press, 1964.

11. R. ARNHEIM, *Dynamics of Architectural Form*, Berkeley, Calif.: Univ. of Calif. Press, 1977; R. ARNHEIM, *Toward and Psychology of Art: Collected Essays*, Berkeley, Calif.: University of Calif. Press, 1972; R. ARNHEIM, *Visual Thinking*, Berkeley, Calif.: University of California Press, 1969; R. ARNHEIM, *Art and Visual Perception: A Psychology of the Creative Eye*, Berkeley, Calif.: University of California Press, 1954.

these important things. The fundamental route to understanding in psychology has been the *experiment*: the *experimental* approach, however, is but one of many *empirical* approaches that can be applied.

Experimentation represents the prime research technique of all of the approaches you mention. But, the way in which experiments are designed, how they are conducted, the appropriate subjects, the appropriate settings, the appropriate tools, and even the appropriate statistical treatments differ among these various approaches to understanding.

Finally, there is a question of ideological bias. Now, epistemological differences are acknowledged and methodological differences are acknowledged, but ideological bias is hardly ever acknowledged in the kinds of psychology that are perhaps most influential in the developed countries of the western world. Modern American and British psychology emerged primarily from positivism, an operationalism which views science as objective and value-free and quite free of ideological bias. In practice, however, unacknowledge ideological differences are large and the ideological baggage is often rather heavy. And such problems are not confined to positivist approaches alone. We can take an example from structuralism, not from research that has been applied to environmental design but rather something derived from the structural-development views of Piaget. The late Heinz Werner, of Clark University, attempted to extend the notion of developmental structure within an individual to developmental structure within a species: specifically, to cognitive development within the human species.¹² Conclusions thus arrived at, to my way of thinking, were debatable in an empirical sense, but also ideologically very heavily loaded: the idea that "primitive" people are representative of an earlier stage of cognitive development than the "civilized", members of industrialized societies. This reminds one of the role played by 19th century anthropology in justifying imperialism, based upon the conception that some societies are culturally inferior. Werner's position enables us to assert that some societies are *psychologically* inferior, thus justifying various kinds of differentials in educational opportunity, social opportunity, and locational opportunity, based upon the presumed inferiority of certain members of the society. Some of what has emerged in America over the last 20 years, concerning the inferiority of intelligence among certain racial groups, is apparently supported by such work in the structuralists realm. By no means, of course, are all structuralists like this, but the above case provides an example of implicit, unacknowledged ideology.

Another example from a different area of psychology has to do with some studies that came close to relating perception to environmental experience. These dealt with the environment as a "field," dividing people into categories called "field dependent" and "field independent" and then correlating membership in one or the other

12. H. WERNER, *Comparative Psychology of Mental Development*; rev. ed.; New York: International Universities Press, 1948.

category with personality characteristics. Now, as soon as you begin doing this, categorizing people into dichotomous groups and then correlating group membership with their other characteristics, you leave the door open for other individuals who are not themselves social scientists to take this information and to use in ways that may be advantageous to certain groups and disadvantageous to other groups. One group, for example, may be termed "superior" and the other "inferior": supposedly value-free differences often incorporate a "good-bad" dimension. One of the problems in all of these approaches to environmental cognition as it relates to designed environment is that the social scientists involved in these studies take no responsibility for the uses of their results. By refusing to take responsibility, one is implicitly adapting an ideological stand.

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Cognitive theories, as well as some others, stress the importance of experimental value in the person. In the meantime, *positivism* overwhelmingly is governing the theoretical construction of most studies. Empiricism seems to be accepted as one of the Ten Commandments. Yet there are difficulties and inconsistency both at theoretical and practical levels, in combining experimental value and positivism. Will you, please, comment on this controversy? Could we say that the idealism which the early positivists reacted against is carried on in a different manner by the researchers in environmental cognition?

STEA

One of the problems in this area lies with the use of the term 'value'. Another one lies with the false equation which is sometimes made between empiricism and experiment. In a sense, it is possible to study aspects of experience within a positivistic framework. After all, even micro-behavioral studies in the laboratory involve small segments of experience. And it is the richness of overall experience with which cognitive theories are concerned, with which environmental cognition, in particular, is concerned. Thus, while I tend to support a broadly based empirical view toward the conduct of research, the equation of empiricism with experiment is one with which I find it difficult to deal. And that's in part because of my own background, - I was trained as an experimental psychologist and it was not until I had obtained my Ph.D. and gone out to work in environmental psychology (as I came to call it) that I realized there was any road to scientific knowledge other than experiment.

Each science -not just social science- tends to have its method, its particular method which it considers a legitimate road to information. For psychology, this is experimentation. And in fact, there are many schools of psychology where the *only* form of acceptable doctoral dissertation is experimental. This excludes a number of applications of survey research, and many aspects of (participant) observation, and so on. Survey research is

something that sociologists do. Participant observation is something that anthropologists do. The only way in which I was able to question the experimental approach, which I thought to be characteristic of all really good behavioral science was in terms of such sciences as astronomy where you cannot possibly experiment: you can't manipulate the position of Saturn very easily in an experimental laboratory. So, I came to that there are different kinds of empiricism, different roads to empirical knowledge within social science. And I came to believe, as well, that some aspects of experimental value are not incompatible with positivism.

However, I don't think that all aspects of positivism must be thrown out simply because it has been applied autocratically in the past. After all, you don't get rid of government as a concept because some governments are dictatorships. The resolution may come through a new methodological frame, through the application of a number of methods which, *individually*, may be based on positivism but together give you a picture of the richness of the value associated with environmental experience. For example, if you are dealing *solely* in an experimental manner with the certain kind of experience, the only thing you can do, in order to maintain the required control, is to simulate that experience and environment in a laboratory. This is something like one blind man trying to determine the shape of an elephant with a single feel. What you really need is a number of equally blind but very different social science techniques applied to a phenomenon to get at the various aspects of that phenomenon and this is what I have tended to advocate in teaching courses in research methods: to encourage students to use multiple techniques in order to get at various aspects of the phenomena with which they are trying to deal. This approach is well-represented in the writings of E. Webb¹³ and others on unobtrusive, or non-reactive, measures.

13. E. WEBB, *Unobtrusive Measures: Nonreactive Research In the Social Sciences*, Chicago: Rand McNally, 1966.

Thus, I have found it quite useful to think in terms of multiple of measures probing multiple aspects of environmental experience and therefore giving us a picture, at least, of environmental richness. This can be done without entirely discarding the positivist view, which is still regarded as legitimate in social science. You talked about empiricism as one of the "Ten Commandments" of social science and to a large extent that is true. Purely phenomenological descriptions are not yet legitimate.

Now, talking about idealism, to which early positivists reacted, being carried out in a different manner by researchers in environmental cognition: the answer to your question is "yes" We have to look back in history to see what kinds of things were occurring which caused this, so-called idealism to disappear. Idealism may be the wrong word: you may be referring to attempts to study aspects of experience that are not directly amenable to most stringent, "hardest", behavioral approaches. In 1919, J.B. Watson, an outstanding psychologist of the early twentieth century,

14. This is mentioned in *Toward a Developmental Theory of Spatial Learning*, written jointly by J.M. Blaut in *Image and Environment*, R.M. Downs and D. Stea, Eds.; Chicago: Aldine Pub. Co., 1973, pp. 51-62 (p.52); for Patson's behaviorist arguments, approach and perspective, see, for example: J.B.WATSON, *Behavior: An Introduction to Comparative Psychology* New York: Holt, Rinehart and Winston, 1967; also, J.B.WATSON, *Behavior: An Introduction to Comparative Psychology*, New York: Holt, Rinehart and Winston, 1967; also J.B.WATSON, *Behaviorism*, rev.ed.; Chicago: Univ. of Chicago Press, 1957 (1930).

15. R.HOLT, *Imagery: The Return of the Ostracized*, *American Psychologist*, v.19, 1964- pp. 254-264.

16. K.LYNCH, *The Image of the City* Cambridge, Mass.: MIT Press, 1960.

gave an address in which he said that studies of phenomena such as imagery must be dismissed from psychology because they are not amenable to a purely behavioral approach.¹⁴ And the study of imagery obediently died at that point. Even in the highly structured and constricted German school of imagery had been very significant: Some nineteenth century psychologists asked whether there was even a possibility of such a thing as imageless thought. Later, and for a period of 40 to 50 years, this entire area of study was completely dismissed. In the mid-1960's, an article appeared in the *American Psychologist* entitled "Imagery: The Return of the Ostracized,"¹⁵ attempting to deal with the problem of how the study of imagery could now be re-incorporated into psychology. This was 10 years before cognition began returning to popularity, but several years after studies of imagery had been reintroduced into psychology through the back door partly because of the work of Kevin Lynch,¹⁶ a person obviously very influential in my own work.

Positivistic views, of course, came out of ideas promoted by the Vienna circle, concerned very heavily with operational definitions, with the reproducibility of scientific data, with objectivity, quantifiability and observability. These might be termed the five canons of positivism as applied to experiment, particularly social science experiment and these canons are violated by the inclusion of values. For example, values influence reproducibility, they influence the way in which scientists tend to approach a particular problem. One scientist, no matter, how much he tries to be like another, will be different in his approach because of his values, which, of course, influence objectivity. The problems with the operational definition, I think, are perhaps best illustrated by trying to define intelligence as that which is measured by an intelligence test or in environmental design by trying to define complexity as the sum total of a number of angles that a building presents. The latter is an operational definition because the necessary operation by which a measure can be obtained is known, but it is often very far from the original phenomenon with which we are trying to deal.

Here, we return to the long-banished image, sneaking back into psychology in the mid-1960's after 50 years of exile. The people who are most enthusiastically propelled to it, I think, are people who are involved in studies of cognition, people who are involved in cognition both within and outside environmental area.

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Environmental determinism has been rejected or reacted against by most students of environmental cognition. Yet, there definitely seems to be some touch of it in the interpretation of cognitive or mental maps especially, and of other studies in environmental cognition investigating imagery and meaning. Furthermore, basic assumptions of environmental determinism are certainly present in most of the architectural and planning implementations of the findings of these studies. Will you elaborate on this issue with reference to environmental cognition?

STEA

Well, Mete, first of all, are you sure that all of your readers fully understand what "environmental determinism" is?

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It may be necessary to elaborate on it a little bit to bring some clarity to the concept.

STEA

O.K. Environmental determinism is superficially just what its name implies: the theory that the environment *literally* determines and controls all kinds and aspects of behavior. Now, in experimental psychology, this is something like the "strong" position in operant conditioning which holds that there is effectively no freedom of choice, since all of our behavior is conditioned one way or another by past experience. In the macro-environmental realm, environmental determinism has its roots in geography, tracing its ancestry back to some of the ideas put forth, at or just past the turn of the century, by geographers such as E.Huntington¹⁷ and E.C. Sample.¹⁸ These geographers promoted the theory that environments -literally physical characteristics of environments- determine the mental and personality characteristics of the people who live in these environments. For example, they were concerned with the influence of climate upon creativity, and claimed that the most creative people must come from climates that vary widely in temperature. One of the best examples is, of course, Cambridge, Massachusetts, USA where Harvard University is located and where most of the seminal thinkers in this theoretical realm were lodged. That's another bit of unacknowledged ideology.

17. E.HUNTINGTON, *Civilization and Climate*, New Haven, Conn.: Yale Univ. Press, 1915.

18. E.C.SEMPLE, *Influences of Geographic Environment*, New York: Holt, 1911.

19. L.FESTINGER, S.SCHACHTER and K. BACK, *Social Pressures in Informal Groups: A Study of Human Factors in Housing*, Stanford, Calif.: Stanford University Press, 1963 (1950)

20. W.F.WHYTE, *The Organization Man*, New York: Simon and Schuster, 1957.

Similar notions have been reinforced at various times in various other areas. In architecture, for example, there were the very famous studies by Festinger, Schacter and Back, reported in *Social Pressures in Informal Groups*,¹⁹ and the work represented by chapter 25 of Whyte's *The Organization Man*.²⁰ These dealt with communities of people where friendship patterns seemed to be entirely determined by environment, more specifically by the location of other people in the environment. Nearly everything the community residents did seem to be completely a function of how the architecture was manipulated in space, which is what many architects wanted to believe for a long time. Architects felt that as a result of these studies they could "design for friendship," quite literally. In the earlier, geographical, form of environmental determinism, we had climate influencing personality, creativity, and so forth, and in this latter form we found designed environment determining sociability or isolation, friendship or loneliness.

Well, each of these notions of environmental determinism has failed to hold up under scrutiny: there has been little empirical verification. It is clear that there are creative

people in realms other than Cambridge, Massachusetts and in other kinds of climatic zones. It is clear as well, that designing for friendship does not work with heterogeneous groups of people in other than the kinds of circumstances that were involved in the studies done in the 40's and early 50's which supported the "designing for friendship" idea. However, it is equally clear that environmental determinism, while it may have been rejected or reacted to later on, was explicitly or implicitly involved in various kinds of environmental research.

But I would say that environmental determinism does not really underlie interpretations of cognitive or mental maps. This is because a fundamental assumption of environmental cognition is that the environment itself does not determine behaviour, but rather the *mental construction* or *representation* of environments. And it is not so much determination as it is influence: mutual influence.

21. A. RAPOPORT, Ed., *The Mutual Interaction of People and Their Built Environment*, World Anthropology Series, Chicago: Dresford Book Serv. 1977.

Recognition of this was expressed in the title of a recent book edited by Amos Rapoport: *In Mutual Interaction of People and Their Built Environment*.²¹ This interaction between people and environment is similar to what the transactive theorists were referring to in the interaction between the perceived, and the perceiver somewhat earlier in the history of social science. Given this mutually, and the postulation of people-environment processes occurring through mental constructions or representations, we have such a softening of environmental determinism that is no longer really deterministic; rather, the environment and behavior come together in what the ecological psychologists call a synomorphic manner. What is determined by our mental images is more what we do to the environment than what the environment does to us. It involves the values that we impose on landscape, for example. If we, because of our experience, value wilderness land negatively, we will do things to destroy that wilderness land, and will support actions that destroy that land. If we value old buildings negatively, we will do things that destroy the possibility of maintaining an historic heritage. And cities like Los Angeles are ideal examples of this, expressing values based primarily upon newness and money. Experience thus determines values (cognition) and, in turn, values determine how we treat (behavior) the environment that surrounds us. In other words, environment does influence behavior that in turn, influences cognition of that environment, that in turn influences behavior impinging upon the environment. And it goes in round and round like that in a sort of spiral. Here, cognition is viewed broadly as the integration of experience, perception, value systems, prior stages in life, and so forth.

The assumptions of environmental determinism have had considerable influence upon architecture and planning in various phases, which we can call "strengthening" and "weakening" phases "designing for friendship" certainly represented a "strong" form of environmental determinism.

22. R. GOODMAN, *After the Planners*, New York: Simon and Schuster, 1972.

Then later on, environmental determinism was very much weakened by participatory kinds of design: the movements of the 1960's. Physical planning and physical planners were then regarded as so deterministic that they were referred to by Robert Goodman as "the soft cops"²² So, with regard to the relationship of environment to behavior, architecture has gone through "strengthening-weakening" cycles, perhaps several times. But I think that we are now at an extraordinary stage in architecture: the *ignoring* phase: some architects no longer seem to care whether what they do influences behavior or anything else. They are designing primarily for other architects. This is my brief and hard personal criticism of what has been called "architectural narcissism" by certain critics, within which they include some aspects of the currently popular "post-modernist" movement.

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Will you, please, tell a little more about the *ignoring* phase?

STEA

Membership in the "ignoring circle" in North America includes certain significant individuals along the Philadelphia-Princeton-New York axis (notably the "New York Five")²³ who are regarded quite highly by some people and have in many cases created very impressive monumental sculpture, but whatever they affirm, they also represent on extreme reaction to the more behavioral and social approaches to architecture. Some regard themselves as disciples of *Louis Kahn* but their ideas seem to be at variance with my understanding of Kahn's philosophy; their positions appear quite alien to the kinds of things that *Kahn* was talking about.

23. P. EISENMAN, Ed., *Five Architects: Eisenman, Graves, Gwathmey, Hejduk, Moler*, New York: Oxford University Press, 1975.

24. C. JENCKS, *Post-Modern Classicism: The New Synthesis*, New York: Rizzoli Int. Pub., 1980; also see, C. JENCKS, *Le Corbusier and the Tragic View of Architecture*, Cambridge, Mass: Harvard University Press, 1973; C. JENCKS, *Modern Movement in Architecture* (1st ed) Garden City, New York, Anchor Press, 1973; C. JENCKS, *Architecture 2000: Predictions and Methods*, London: Studio Vista, New York: Praeger Publishers, 1971.

Post-modernism is a movement that Charles Jencks²⁴ traces to the dynamiting of the Fruit Igoe housing project in St. Louis, in 1972. That fateful demolition, he wrote, dates not only the decade, not only the year, not only the month but the exact week and day and hour at which the modern movement in architecture collapsed. Some of the post modernists traced the failure of modern architecture more generally to its attempt to incorporate social and behavioral ideas, but outside of architectural education very few empirical findings were ever incorporated into environmental design. In fact in modern architecture one was more concerned with socio-behavioral slogans than with socio-behavioral research. Good architecture would create good people, thought the modernists, hoping that public housing would somehow create middle-class people. This was the idea behind Fruit Igoe. Thus, in the realm of architectural education, the post-modernists reacting against the inclusion of social and behavioral factors in architectural education are reacting against fallacious slogans of the modern movement.

JOURNAL

Environmental complexity has been one of the important questions that some researchers and theoreticians addressed themselves to. However, there seems to be not very

certainly the group that had to deal with complexity itself had the most complex aspect of that problem. So they went satisfactory theoretical construct of it nor is there much supporting empirical data and research. Needless to say it is a very complex and a difficult question both by the nature of it and the hardships confronted in methodology. Could we have your view on the subject, first a theoretical outline of it and secondly the nature of methodological difficulties that arise?

STEA

Well, first I think it is interesting that you refer to environmental complexity as a complex question. But I must admit that I don't know what complexity is; I don't know how we explain complexity to natives in Papua, New Guinea involved in attempts to design a new village. Nor do I think that any theoretical framework has adequately accounted for complexity. Historically the one that has come closest has been information theory. There have been attempts to use information theory to study the nature of aesthetic response, both in terms of visual aesthetics.²⁵ A number of studies applied Information Theory to the aesthetic experience of music in the late 1950's and early 1960's. I was responsible for one paper on the subject (which fortunately did not get into print). There are difficulties in the application of this theoretical view, even to a spatially one-dimensional experience, such as music. That is music is experienced in a specific sequence, with predictable musical forms reappearing in certain predictable positions. In some respects, architectural experience, which occurs in 3-dimensions and which can be experienced spatially and temporally in a number of ways in control of the perceiver, becomes inherently more difficult to describe. Information Theory had problems handling music; it would have a lot more problems handling the experience of architectural complexity, the relationship of complexity to aesthetic judgement and aesthetic enjoyment.

One of the problems that attempts to formulate theories relating to complexity had to deal with is that there are so many different meanings of complexity. Complexity in the built environment cannot be accuted for by simple descriptions of a static built object, because that static built object is experienced in a number of different ways involving at least two temporal dimensions: a short-term dimension of change in perceptual perspective and a relatively long-term temporal dimension involving overall changes in environment. Changes in environment include climatic changes which influence one form of perception (perception of physical comfort), seasonal changes in light conditions which cause the building to be seen differently, and so forth. And the "complexity" changes as well.

An example of this problem is the difficulty we experienced trying to deal with the issue of complexity in last week's studio jury.²⁶ Now, the studio, problem that had been presented to the students was an extremely complex one, and

25. A.A. MOLES, *Information Theory and Esthetic Perception*, Trans. by J.E. Cohen, Urbana Ill.: University of Illinois Press, 1966; F. ATTNEAVE, *Applications of Information Theory to Psychology: A Summary of Basic Concepts, Methods, and Results*, New York: Holt, 1959.

26. The Studio Jury referred was held on April 17, 1981 in the Department of Building Science and Environmental Design (BSED 502/ Environmental Analysis and Design II) "Environmental Complexity" as a sub-set of a broader "environmental indicators" was taken as part of the studio research.

back to operational definitions. They operationally defined complexity in terms of the number of angles on the street scape, yet before they had even developed their stimulus materials they were varying the street direction whether the street was straight or curved (the element of surprise) they were varying street texture, and they were varying of social complexity (the presence or absence of people in the environment). It is interesting to note that, conveniently, architectural magazines generally exclude people from photographs of architectural environments, whether such environments are interior or exterior. People constitute one of those really disturbing elements of complexity. So, your studio presented an extremely difficult problem whose partial resolution, I think, was not very satisfactory. We had not determined whether the students would be able to deal with the issue of complexity in any methodologically sound way or not.

However, if the students find out *anything* about complexity from their theoretical structure, however simple, and from their empirical treatment of this structure, it will be a contribution. In fact, any contribution will be a considerable one; the difficulty of dealing with this issue is indicated by the fact that so few studies have been done on complexity *per se*. And there are a number of possible reasons for this. One of them revolves about the use of the term complexity itself. Is it meaningful? To whom? It may not have equivalent meanings even among various strata of people who are members of the same society, who speak the same language but are likely to understand complexity in different ways. Consider the view in which complexity is looked upon as a linear scale with two end points. These two end points might represent "complexity" versus "simplicity", or "stimulating" versus "boring", or "chaotic" versus "regimented", or "disorderly" versus "orderly". Each one of these bipolar dimensions means somewhat different things although all of them supposedly are dealing with this notion of complexity. A frequent assumption made by social scientists is that behavioral response to complexity somehow ought to be curvilinear; that is there ought to be an optimal level of complexity for aesthetic experience. This has been demonstrated for a few other variables related to complexity but nobody has been able to show even what the *shape* of the curve is for aesthetic experience versus complexity in such realms as architectural design. So, I have cause to wonder whether this is something upon which, in and of itself it is worthwhile spending energy. That is, the problem of complexity is so complex that it is possible that it cannot be attacked by traditional experimental approaches. It's a question that we really need to consider since the whole is greater than the sum of its parts and architectural complexity is clearly more than the sum total of building angles.

JOURNAL

Again in your more recent writings and at your lectures here, you have emphasized the significance of implementation of cognitive theories in design and planning practice. One of the points you have been stressing upon is participation. There has been a vast literature on the subject and numerous applications both at planning and architectural scale. Approaches taken towards-it basically are due to a reaction to professionalism and institutionalized architecture, maybe rightfully. These approaches, furthermore, consciously or unconsciously carry with them the fundamental assumptions and hypotheses of anarchist philosophy. This being the case, however, there also seems to be a controversial issue of alienation. Alienation, here, is the estrangement of people from their environment. Will you, please expand on participation with respect to environmental cognition, and also, with respect to professionalism and the existing alienation of people from the environment? Are the advocates of participation forming a new professionalism?

STEA

My theoretical views on participation derive in part from some of the writings of the Brazilian educational philosopher Paulo Freire. I was greatly influenced by his book *Pedagogy of the Oppressed*.²⁷ As a result, I came to view participation as a possibility not just for influencing the course of environmental design but as a form of liberation of people from the state of total dependency in which some people -particularly Third World people- have found themselves as a consequence of the Industrial Revolution. This dependency is also a result of some constricting and confining aspects of hyper-specialization. By hyper-specialization, I mean specialization into very narrow categories of existence, the forms of specialization that are promoted by an educational system that causes a person to feel incompetent in all fields but one very narrowly defined area, called the person's "specialization". Planning is something done by specialists called "planners" and design by specialists called "designers." Thus, when we call upon people schooled in this educational system to "participate" in planning and design, we are asking them to do something quite contrary to their training.

A number of approaches to participation, therefore, seem to have contributed more to the problem than they have to the solution because they are ineffective in getting people actually to participate. It's my opinion that the community meetings approach with its hierarchical arrangement of people sitting as an audience and designers and planners as a groups of experts on an elevated stage, presenting a plan that is largely complete and simply asking for questions and comments from the audience, is not an effective means of participation: it is too much like a lecture. It is simply a way of eliciting a few questions, of informing people in what is often not a very clear way about things that have already been determined. I think that the applications of survey research (which I often use myself) to participation -uses of interviews and questionnaires- have also been

27. P. FREIRE, *Pedagogy of the Oppressed*, Trans. by M.B. Ramos, New York: Herder and Herder, 1970.

inadequate: the questions on the survey usually represent the cognitive categories of the person who has put together the survey. If architects do this in consultation with sociologists hired to provide methodological input, the questions that result are not the questions that participants would ask of an environmental design: they are the questions posed by an elite (remember complexity?). That, too, is, only a very partial approach to participation. The danger is that alienation can be increased in the following way: earlier failures of environmental design to satisfy human needs had been traced to professional failures on the part of the people who created these designs, including failures to understand the needs of the inhabitants, to properly respond to these needs, and so forth. What the institutionalized participation of the more recent past has tended to do, which is dangerous, is to provide another opportunity for "blaming the victim." That is, the failure of a building to "work" may be laid to professional failure in the absence of participation; when however, people have participated in some way and the building "fails," it can then be said that the "failure" of the building is due to the failure of participation. This exonerates the design professional. After all, he tried, didn't he? This provides excuses, of course, for ignoring participation in future design attempts.

That is what I think has occurred. First, we experienced "participation" as a reaction, as you said, to professionalism and institutionalized architecture. Now, I think, we are experiencing a reaction to participation because methods of participation have been ineffective and because they have not yielded the results that professionals have expected. I think this is parallel to the reaction of architecture to the incorporation of behavioral and social research. That the forms of behavioral and social research that social sciences had provided to architects have not been particularly helpful, does not damn the entire area of behavioral and social research; rather, what it does is to suggest that the interaction of these research with the process of creating environmental design has been inadequate.

Interactive inadequacies have been traced to professional language but I do not believe that has been the problem. People can communicate using their common ordinary, language when need is pressing and motivation sufficiently strong, and can get around barriers posed by professional jargon. A much greater problem involves time-scales: when two professionals are working on completely different time-scales and dealing with two very different kinds of professional legitimacy, then a real difficulty does exist. Environmental designers have to solve specific environmental problems on a professional time-scale which includes all phases from formulation of the program, through creation of design, to realization of the design in the form of built environment. Social scientists work within the time-scale of social science, which involves framing researchable problems, writing proposals, getting these proposals

funded, performing studies (which in the case of psychology, are often extended experiments) and coming up with results years after, they have some practical use to the environmental designers who originally posed the problems. Of course there are difficulties with problem formulation, too. Problems are formulated in different cognitive professional categories by designers and planners than by social scientists. Numerous difficulties are also posed by the nature of professional contracts, which usually include no money for research. Thus, social scientists collaborating with environmental designers often must pursue independent sources of funding.

Now, back to participation. You claim that many approaches to participation have one way or another, incorporated some of the fundamental assumptions or hypotheses of anarchist philosophy. Basically I, too, function as an anarchist communitarian and some of the writings of Murray Bookchin²⁸ have influenced my recent thoughts in this realm. I have also been influenced by the work and writings of people such as John Turner and his associates,²⁹ who have worked on the participation of urban squatters in Third World Countries in the determination of their own future environments. Now, the "alienation" you talked about emerges in large part from some of the consequences of the Industrial Revolution: the removal of people from the creation of built environment, often from the financing and maintenance of built environment, and from other kinds of interactions with the environments as well. Many people in technologically advanced countries don't build, they simply inhabit; they produce no tangible products, but simply consume. Primary contacts with environment are reduced to secondary or even tertiary contacts. And the participation which has the potential of reducing this alienation, as indicated before, can paradoxically increase alienation by providing additional excuses for environmental designers to ignore the needs of people, for "architectural narcissism". I think that post-modernism is not just a reaction to modern architecture but is representative of this movement away from participation. The result may be an increase in the problems associated with professionalism and increased separation between professionals and the people who are supposed to inhabit, to consume, the product these professionals are creating.

Now, the final aspect of your question is a serious issue: it asks whether the advocates of participation are forming a new professionalism. The answer, unfortunately, is that in some cases they are. The professionalism may be a benign sort, it may again be a "soft" professionalism. I like some of the techniques that are produced by people who have turned professional in the participation area, such as Larry Halprin's work,³⁰ but at the same time I realize that these also have the potential for distancing "participation professionals" also from the users of environments.

What I have tried to do with my own approach to participation is to turn a lot of things around. First of all, most of the

28. M. BOOKCHIN, *Post-Scarcity Anarchism*, rev. ed.; Palo Alto: Ramparts, 1980.

29. J. TURNER, *Housing by People*, New York: Pantheon Books, 1976; J. TURNER, and R. FICHTER, Eds., *Freedom to Build: Dweller Control of the Housing Process*, New York: McMillan Press, 1972.

30. L. HALPRIN, *Cities*, Cambridge: MIT Press, 1972; L. HALPRIN, *The RSVP Cycles: Creative Process in the Human Environment*, New York: G. Braziller, 1970; L. HALPRIN, *Freeways*, New York: Reinhold Pub. Corp. 1966.

participation approaches used in the past have asked people what their attitudes and values were with regard to the environment, what did they "want", etc. which is a very difficult question to answer. If we simply ask a scientist -a highly educated scientist with Ph.D. in hand "what do you want in your new laboratory?" the response is likely to be, simply, just more space. What I want is more space. That's not terribly helpful. My approach has been to ask people to design or plan a space, themselves using a technique that I call "the revokable decision." Through manipulating extremely simple environmental models, they have to make decisions concerning what they want an environment to be like, but they don't have to live forever with those decisions. And by making those decisions they then are able to make clearer to themselves their own values and bases for wanting certain kinds of environments. It is not a technique that generates built environments directly. The environmental modeling approach which I have been developing over the last few years is basically a clarification of those things which designers really need to consider if they are going to generate environments that are responsive to users, issues what people value most, issues -especially in Third and Fourth World Societies- of the relation of cultural context to environmental design.

Ideally, participation should be an iterative process. In the modeling approach, people design for themselves, then use the designs that they have created as a basis for clarifying their own values. Thus they communicate these values to a designer who can then respond with ideas as to how these values might be incorporated into built environment. People can then go through the process again, with the designer also acting as a participant: the designer is not simply a leader, with the public "participating" but the whole group -professionals and users alike- participates. So the focus then shifts from participation to *communication*.

Communication is thwarted when people have to respond to questions about environment. That is, people must convert their mental images into words which are then translated by the designer into words of his own which then somehow get retranslated into the images that are in the designer's head a multi-stage process of translation. It's very difficult to get any environmental communication going in this way. What I think is essential is to get communication on a common level, to get the production of people involved in the participation process more into graphics and manipulative modes -what designer actually deals with- and to get the designer's productions in this mode away from the boards and finished models that are created primarily to communicate with other designers. These may work for architects communicating with architects, they don't work well when architects try to communicate with potential users.

Is a new professionalism being formed? I would say "yes", there is certainly the potential for the forming of a new professionalism. I hope, however, that this new professionalism will not involve further alienation, but, by converting participation into communication, will bring the alienated users and the elite of the architecture and planning professionals closer together.

JOURNAL

In connection to the issue of participation, we would like you to elaborate upon perception of resources in reference to squatter settlements.

STEA

One of my favorite subjects. My interest in squatter settlements was generated by certain experiences I had in Mexico and Brazil and particularly stimulated by the writings of anthropologists such as Anthony Leeds³¹ and also by some of the work of John Turner,³² mentioned previously. Now, I do not romanticize squatter settlements: they have many problems of infrastructure, not the least of which is disastrous sanitation, and are certainly not where most people would choose to live, if they had real opportunities to live elsewhere. Nevertheless, one of the characteristics of the second half of the 20th century has been the formation, especially in Third World capital cities of vast areas containing anywhere from 20% of the population of the cities up to, in the cases of some African countries, even 80 % of the population. What all squatter settlements have in common is that they represent, at least initially, illegal occupation of a piece of land, often by people who see no other alternative in housing. These are people, who at one time or another, inhabited the kind of architecture that we, in environmental design, all have learned to love, what we call "vernacular architecture." And when it is out in the countryside, out in rural areas, out in a village or on small town, it's considered quite beautiful.

People inhabiting this vernacular architecture in recent times, however, for variety of reasons, have found it very difficult to live and to "make do" economically in rural areas. So, they go to the cities and bring to the urban setting, two things: (1) extreme poverty; and (2) skills which are irrelevant to conventional wage-earning life in an urban society but which are ideally suited to the generation of the kind of self-built housing which have evolved in rural areas. Associated with these abilities is a set of cognitions involving resources, and housing resources in particular. And that is what has most interested me about squatter settlements. How do they perceive building resources? We, of the middle class, especially in more developed countries, include among buildings resources such elements as bricks, concrete, wood (new lumber) and a few other materials that are conventionally used to construct buildings. Our cognitive category of building resources is thus very narrow.

31. A. LEEDS, *Estructura, Estratificación, y Movilidad Social*, Washington, D.C.: Pan-American Union, 1967.

32. For example, see, J. TURNER, *Housing by People*, New York: Pantheon Books, 1976.

Squatters, because their monetary resources are so few, have a much broader set of categories of possible building resources, including many of the things that we call "garbage".

This garbage piles, these collections of thrown away items are incredibly rich in more developed countries. I did a brief studio project with a group of students at the University of Auckland in New Zealand several years ago. The studio project asked each of the students to spend half a day at the city garbage dump (referred to as a "tip" in Auckland which is not a particularly wealthy city, by the way). The students were asked to list the material which had been thrown away in that half-day and to use that list of materials, and only that list of materials, to design some basic housing.

It turned out to be an impossible problem. And the reason it was impossible was that the stuff that has been thrown away as garbage was so wonderfully varied that if they used everything they had listed they could produce only mansions. So they imposed artificial constraints on themselves, using only a small portion of the available material, such as corrugated metal, to produce housing that was reasonably basic and applicable to squatter resource situations.

This tremendous array of throwaway stuff is indicative of the large quantity of material that we regard as discardable which people in other economic situations regard as eminently usable, such as old automobile hub caps, licence plates and other metals. This innovative use of resources has its roots in the rural peasant situations. In some rural areas of Mexico for example, housing is built entirely of the waste products of agriculture.

In sum, I have found studying perception of resources by squatter settlers to be very illuminating in understanding categories of environmental cognition, and particularly differences in environmental cognition, among people from different cultural groups and at different socio-economic levels.

JOURNAL

For long time now, you have been investigating into the question of how people cognize their environment. And this has been mainly at large-scale. How does this effect their use of the environment? Also, brought down to architectural scale, how can the research going on presently be helpful to architectural design or should there be changes in the methodology?

STEA

I talked a bit before about the relationship between cognition and use of the environment. The available evidence indicates that the ways in which people cognize the environment -more specifically, the values they bring into environmental use and occupation- considerably influence the ways in which they use environments. True, studies of

cognition have not told us directly what kinds of behaviors will be executed in built environments. What such studies do tell us is something about the values, pressuppositions, predispositions, images and so forth that will influence the behavior that actually occurs. They tell us what kinds of behavior, what uses of environment we ought to look for, as being perhaps most critical to the "success" of a setting, perhaps indicating danger points, the "misfits" that Christopher Alexander was referring to in *Notes on the Synthesis of Form*,³³ written almost 20 years ago. In terms of the spatial scales with which environmental cognition has dealt, it is true that much of the research has been at large scale, partly because many of the researchers in environmental cognition come from disciplines dealing with large scale environments: geography, urban design, and physical planning. There are very few studies, so far as I know, focusing upon how people cognize small-scale environments, particularly such very small scale environments as the house.

33. C.ALEXANDER, *Notes on the Synthesis of Form*. Cambridge: Harvard University Press, 1964.

34. See, for example, F.N.SHEMYAKIN, *Orientation in Space, Psychological Science in the U.S.S.R.*, B.G.Ananyev, et al. Eds.; v. 1; Washington, D.C.: Office of Technical Services, Report No. 62-11083, 1962, pp. 186-225.

A few things have been done by Russian psychologists, however, posing some interesting issues that have been investigated inadequately, in the West.³⁴ One problem is that we tend to imagine inhabitants of designed environments being individuals much like-ourselves, people who are middle class or above, people who have a large number of choices in environmental uses and in the kinds of environments with which they interact. These might be called the "normals." I find the concepts of "abnormal" and "normal" very useful here, only my category of "abnormal" is much larger than what most physiologists or psychologists consider abnormality. Thus we environmental designers tend to trend children as abnormal, old people as abnormal, all handicapped people as abnormal, poor people as abnormal, and so forth. They are not the people for whom we design but these paradoxically are the people whose values, whose uses of the environment as they relate to these values are perhaps most important to know. We need to find out more about the needs of these "nonstandard" people. And Russian psychologists, for example, have been looking into the perception of housing environments by blind people: what kinds of things tend to be most readily cognized and what things do not appear in the image? How are these cognitions different from those of "normals"? The Russians have done similar studies with children. I think that these are the most promising areas of "small-scale" cognitive research: the differences among categories of people in terms of how they perceive or cognize certain environments.

One of the reasons that people studying environmental cognition have tended not to deal with smaller scales is that very small scale, perception, in the psychological sense of perception, plays a much more important role; it becomes a more important area because so much of the environment can be apprehended at once. An environment consisting of only a few rooms does not have to be cognitively represented in extremely complex ways.

Environmental cognition thus seems most applicable to those aspects of architecture concerned with larger-scale buildings. I'm thinking, for example, of enormous health-care facilities such as hospitals and very large public buildings, not museums and the places with which people interact at a leisurely pace, but rather where they arrive with fairly desperate problems and often cannot find what they need, cannot find the people appropriate to their concern. This is certainly true of governmental buildings as well, but is particularly acute in hospital situations where bad design negatively affects staff as well as patients, increases the cost of staff training, and of health care provision and makes life generally more difficult. Understanding, for example, how people find their way around these places -the whole process of way-finding in a large scale disorienting environments- is, I think, of extreme importance to the architectural profession. Certain governmental agencies in the U.S. are now mandating legibility in large public buildings. They are concerned with questions of fire-safety and how people can get out of the buildings very rapidly, in case of a disaster.

The above illustrates a contribution to architectural design, at architectural scale, which environmental cognition can make and is only just beginning to make. I have done some research, myself, over the last few years on the subject of disorienting environments and have come to realize its importance. Similarly, at a scale dealt with by architects involved in urban design, public spaces and urban communities, large public areas, and so forth, there is a clear need to relate these spaces and places to the larger context of the urban areas in which they are embedded. Environmental cognition can make contribution both to the design of the spaces themselves and to the relationship between these areas and the larger urban context. This is where some of the major contributions of such people as Kevin Lynch³⁵ and Donald Appleyard,³⁶ for example, come into their own.

In summary, environmental cognition can be extended downward in scale from nations, regions and cities to those scales which are directly influenced by the architectural profession. But I feel that at the *smallest* scales of designed environment, the major contribution of environmental cognition will be in comparing cognitions of people treated as "normal" or "standard" people with those viewed as "non-standard" or "abnormal". The implications for housing, to give but one example, are extremely significant.

JOURNAL

Could you say few words about the title of the Working Papers published at the UCLA, called the *Fourth World Studies in Planning* Also, will these papers be dealing with the problems at architectural scale?

35. K.LYNCH, *Image of the City*, Cambridge: MIT Press, 1960.

36. D.APPELYARD, *Planning a Pluralist City: Conflicting Realities in Ciudad Guyana* Cambridge: MIT Press, 1976; D.APPELYARD, K.LYNCH and J.R.MER, *The View from the Road*, Cambridge: MIT Press, 1964.

STEA

With pleasure. The Fourth World Series answers a need that I have felt for a number of years during which I have been working primarily with traditional societies in both developed and underdeveloped countries. The Fourth World people, as they were labeled in a book by Manuel and Posluns³⁷ which appeared several years ago, are incapsulated native societies. That is, in contrast to the First, Second, Third World Countries which are nations, which have at least political independence, Fourth World people have no independence. They are minority, native societies inside larger populations who frequently maintain the Fourth Worlders as an internal colony. The Fourth World includes American Indians (both U.S. and Canadian), New Zealand Maori, Australian Aborigines, Tuareg of North Africa, Bedouin of the Middle East, Scandinavian Lapps, Eskimos (Inuit) of the Arctic, and all of the Indian tribes of South America. The last-named are in some cases not a minority in the population but majority; however, they are still treated as colonized inferiors by the Europeans who form the power structure in South American countries.

37. G. MANUEL and M. POSLUNS, *The 4th World: An Indian Reality*, New York: Free Press, 1974.

Over the past year, starting in the summer of 1980, I have begun to produce a series of working papers through the School of Architecture and Urban Planning at UCLA. This series is called *Fourth World Studies in Planning* and reports in the series contain research done by myself and by a number of other people at UCLA, concerning the housing, building and planning problems of a number of these Fourth World societies - U.S. Indians, Canadian Indians, New Zealand Maori, the Orang Asli of Malasia, and so forth. Some of these works, the major paper on "environmental modelling" in particular, attempt to deal with questions at the architectural scale, with the application of environmental cognition research to issues of housing and settlement design. Through our approach to participatory planning, we have dealt not only with issues at the usual scale of environmental cognition research, but also with the design of housing interiors through the use of environmental models. Many of these Fourth World Societies are facing transitions, little understood by Western architecture, from vernacular housing to something that is called modern. Very serious errors have been made in the past. Perhaps, through approaches derived from environmental cognition, we can get more information about traditional values, traditional uses of housing, about kind of transitions that people see as viable. Such information will aid interaction between professionals and the Fourth World Societies in the creation of more satisfactory housing environments.

JOURNAL

A final question about your cognitive mapping of Turkey: you must have had some image of it before you came here; has your visit to Turkey and especially the few places you could see and experience in the short time you have been here had any affect on it?

STEA

Well, first, I have to say that the image of Turkey, that is often publicized by the Western press, particularly the American press, is not a particularly positive one: we hear about violence occurring in Turkey, we get movies such as "Midnight Express," we see television reports of devastating earthquakes in such places as Izmir and the overall picture that is created is a rather strange one and a rather negative one as well. Thus I had to re-form my pre-arrival image of Turkey.

First, I anticipated that Turkey's natural environment would be much more homogenous than what I experienced since I've been here. I had imagined Turkey to be a largely arid area, and not a particularly beautiful arid area at that. I knew something about Istanbul. Everybody knows something about Istanbul, since it's one of the greatest and most famous cities of the world. Bits and pieces of its long history are presented to us in primary school classes, where, as an American child, I learned about monuments such as Hagia Sophia. Later on we learned about Topkapi and heard enticing stories of intrigue on the Orient Express. But our classroom information was all interpreted within a western framework. Istanbul was called Constantinople, Hagia Sophia was called Santa Sophia, and description ended in 1453. So, experiencing Istanbul within the framework of Istanbul itself has been quite remarkable. Certainly, the people who are often portrayed in the West, as well, in a negative way have been extremely friendly and helpful and through them I have obtained a better and more correct image of what things are like in Turkey, which has radically altered my cognitive map.

I now have a mental image of a highly varied country; one that needs to be experienced at relatively slow pace (not too difficult along winding Turkish roads). I have a more positive image of Ankara, I think, than the inhabitants of Ankara have of their own city, and perhaps this is because I have come here the "right" time of the year, when the smoke has dissipated and the air is relatively clear. During these bright sunny days, I've been able to look upon Ankara as a study in contrast between one of the early planned cities of the world and the much earlier classic Anatolian town. I find this contrast quite fascinating. I find the way in which the planned part of the city ignores the old parts of the city interesting as well.

But the most enjoyable aspects of Turkey for me have been the rural areas and seeing the variety which abounds in these rural places. In Capadocia for example, this involves not just the touristically appealing rock dwellings in isolated places, but seeing the way in which rock dwellings have been integrated into the towns which have formed around many of them over the last couple of centuries, towns that incorporate elements -both social and physical elements- of Greek habitation and Turkish

habitation, of Christian society and Muslim society, as well as elements, from other forms of European architecture. The successful integration of troglodytes and towns strikes me as most remarkable, and certainly worthy of further study.

My image of Capadocia, for example, was simply of isolated groups of rock dwellings occupying a relatively small area. My image, now, is of these dwellings spanning a much greater range in space and a much longer period in history. But it is the integration of these into the structure of towns in the Capadocia region that I found absolutely fascinating, the way in which one form integrates itself into a pre-existing form in a way I have not seen in the U.S. The closest in my experience to some Capadocian rock dwellings are prehistoric Anasazi cliff dwellings in the Southwestern U.S., but these cliff dwellings have never been integrated into the habitations of any European group in the area, although pueblo architectural forms have been imitated.

Similarly, I have been impressed with the great contrast between the Anatolian plateau on which Ankara is located and some areas to the north in the direction of the Black Sea. Part of my image was that Turkey had been largely if not entirely defoliated. I was surprised and delighted to find large areas of forest, to find towns still utilizing primarily wood construction at higher altitudes (and often at lower altitudes as well), to find communities like Safranbolu that have integrated architectural forms I always regarded as typical of Northern Europe, into the Turkish environment. Seeing the forested mountains and the combined use in dwellings of stone, brick, masonry and wood in very interesting and innovative ways have changed my cognitive map both of the variety of the Turkish landscape, and the nature of the dwelling, patterns of the inhabitants of Turkey.

So, in summary my map was formed by trying to put aside negative images that were publicized in the West. The map was mostly a reaction to these negative images and a highly over simplified one. It will be further altered by my forth coming visit to Antalya and the Turquoise coast. In all, I can only say that my all too brief visit to Turkey has been both surprising and delightful. I look forward, as they say, to an early return.

DAVID STEA İLE ÇEVRESEL BİLİŞ ÜZERİNE BİR SÖYLEŞİ

ÖZET

David Stea çevresel biliş alanında yapmış olduğu çalışmalarını ile isim yapmıştır. Bu söyleşide de çevresel biliş ve ilişkili konulardaki görüşlerini aktardı.

Stea çevresel bilişin henüz bir kuramsal çerçeveye oturtulmadığının ancak bu alanda öğrenme, gelişme, algılama kuramlarının önemli katkıları olduğu düşüncesinde. Algılama, hatırlama, inceleme, anlam gibi kavramları salt davranışsal bir biçimde incelemek olanak dışı. Broadbent'in söyleşisinde de açık bir biçimde ortaya konulan anlam (meaning) kavramının çevre algılama ve deneyiminde önemli bir boyut olduğu açık ancak ölçülebilme güçlükleri var.

Stea, çevresel bilişin mimarlıkta salt görsel, ansal, deneyimsel veya estetik boyutlar içermediği, tekrar eden, bütünleşen deneyimleri de kapsadığı inancında. Dolayısıyla çevreye uyumu da sağlayan bu tür davranışların ne şekilde ele alınacağı konusu açıklığa kavuşmamış.

Çevresel biliş konusunda çeşitli bakış açıları var. Stea, epistemolojik, ideolojik ve yöntemsel bakış açılarını birbirinden tümüyle ayırmanın olanak dışı olduğu görüşünde. Birçok sorunları yanısıra örneğin ideolojik taraflılığın (gelişmişlik-gelişmişlik ölçütü; gelişmiş, az gelişmiş gibi ikili gruplamalar) bilimsel yanılgılara yol açtığı savında. Çevresel deneyimleri anlayabilmek için de birçok ölçüm teknikleri kullanmak gerekli..

Çevresel gereklilik konusuna gelince, bu kuram fiziksel çevrenin insan davranışını tüm yönüyle kontrol ettiğini var sayar. Stea, bu tür çalışmaların deneylerle yeterince kanıtlanamadığından tutunmadığı kanısında. Ancak, çevresel gereklilik yadsınsa da kabul edilse birçok çevresel araştırmanın konusu olmuş. Mimarlıktaki katı gereklilik anlayışının da dolayısıyla daha yumuşak bir tutum aldığı görüşünde Stea.

Stea, çevresel karmaşıklığın yöntemsel ve kuramsal güçlükleri olan bir kavram olduğu inancında. Kuramsal bir çerçeve oluşturmada en çok bilgi kuramının katkıları var. Çevresel karmaşıklık kavramının ölçme tanımını (operational definition) yapmak gerekli; bu işe fiziksel karmaşıklığı tanımlayan öğelerden sosyal karmaşıklık göstergelerine kadar geniş bir ölçeği içeriyor. Dolayısıyla deneysel yöntemlerle karmaşıklık problemine yaklaşmak oldukça güç.

Katılım sorununa yaklaşımında ise Stea, katılım neticesinde ortaya çıkan üründen çok katılım süreci ve yönteminin nasıl ele alınacağı konusunun açığa çıkması bakımından ilginç katkıları olduğu düşüncesinde. Katılım, çoğunlukla katılımı yürütmekte olanların biliş süzgecinden geçen bir süreç. Stea, kullanıcıların değerlerine uygun, kültürel içeriği olan, çevreye duyarlı kişilerin yaşamını sürdürdüğü bir ortam yaratmak çabasında. Tasarımcı, katılımcının

değerlerini tasarıma, kendi değerlerini ise katılımcıya aktarmada öncülük yapmalı. Böylece katılımdan çok çevre tasarlayıcı-insan iletişimine ağırlık veren bir süreç oluşmakta.

Katılım ve kaynak gözetimi konusunda, değişik kültürler farklı ekonomik ve zorunlu koşullarda farklı davranıyorlar. Stea, gecekondü sakinlerinin yapı malzemesi olarak kullandıkları çeşitli kaynak gözetimini (şehir artıkları, araba parçaları, vs. gibi) izlemenin kişilerin çevresel bilişlerini anlamada çok aydınlatıcı olduğu düşüncesinde.

Stea, insanın çevre bilişini nasıl oluşturduğunun araştırılması gerektiği konusunda. Ek olarak mimari tasarım ve yöntemlerinin geliştirebilmesinin en geniş ölçekten mimarlık ölçeğine (hatta standart olmayan şartlara) değin çalışmaların yapılmasına bağlı olduğu görüşünde.