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An Epistemological Critique of Environment-Behaviour Studies

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Summary

This essay is an epistemological critique of Environment-Behaviour studies in relation to the current discourse on environmental design. The critique examines Environment-Behaviour discursive practice and its epistemological presuppositions. First, the evolution of Environment-Behaviour studies is reviewed in its social and historical context. Then, the author elaborates upon the substance of Environment-Behaviour theoretical discourse to see how Environment-Behaviour studies deal with three different issues: spatial form, form-context relationship, and application. Finally, a social critique concentrates on two methodological aspects: (1) The Environment-Behaviour problematique in the ideological framework of environmental discourse, and (2) the lacunae of Environment-Behaviour applications in planning and design.

Résumé

Cet article propose une critique épistémologique des études Homme-Environnement en relation avec le discours actuel de la planification de l'environnement. La critique examine la pratique du discours Homme-Environnement et ses présupposés épistémologiques. Tout d'abord, l'évolution des études Homme-Environnement est examinée dans son contexte social et historique. Ensuite est passée en revue la substance du discours théorique Homme-Environnement pour analyser comment les études Homme-Environnement traitent de trois thèmes différents: la forme spatiale, la relation forme-contexte et l'application. Enfin, une critique sociale est développée sur deux aspects méthodologiques: (1) la problématique Homme-Environnement dans le cadre idéologique du discours sur l'environnement ainsi que (2) les lacunes des applications des études Homme-Environnement dans la planification.

Introduction

What is termed Environment-Behaviour studies has no clear boundaries. However, the core area could be more or less defined as research regarding the interactions between the physical environment and human behaviour [1].

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[1] This paper is a summary of Chapter 2 of *An Epistemological Critique of Contemporary Aesthetic Theories on Architecture: Towards a Social Theory on the Cultural Form of Space*, a dissertation in architecture at the University of California, Berkeley, 1987. I would like to thank Professors Sara Ishikawa, Jesse Reichek, Manuel Castells, Russel Ellis Jr., Clare Cooper Marcus, Necdet Teymur, and John Liu who gave their constructive comments on earlier drafts of this essay.

1.1. Relation between environment and behaviour

The Environment-Behaviour "relation" has been emphasized as a "dynamic interchange" (Ittelson et al., 1974, 5) [2], and this is considered a basic premise in the epistemological formation of Environment-Behaviour studies (Hillier and Leaman, 1973, 507). Environment-Behaviour studies are concerned with the place-specificity of human behaviour. Most early Environment-Behaviour studies assume that the environment (E) exerts a direct causal influence upon behaviour (B). This B=f(E) assumption actually presents the stimulus-response (S-R) relation of a positivistic environmental determinism.

Subsequently, after a series of challenges, a modified Environment-Behaviour relation has emerged. With Herbert Gans (1969) and Jane Jacobs (1961) this current position can be named "environmental probabilism", which considers that the environment provides possibilities for choice and is not determining (Rapoport, 1977,2). People are thought of as more cognitively active. On the one hand, behaviour is mediated by image or schemata which work as a filter in man-environment transactions. On the other hand, place is referred to as a "perceived" geographical unit (Russell and Ward, 1982, 652-655). Thus, environment is defined by Amos Rapoport as a series of relationships among elements and people. These relationships are orderly, that is to say, they have a pattern and a structure which is not a random assemblage of things and people (Rapoport, 1977, 9; 1982, 178). In the same vein, Daniel Stokols is concerned with "molar units of environment and behaviour" (1983, 269) and assumes "human-environment optimization" as a major theme in Environment-Behaviour transactions. He defines the concept of environmental optimization which assumes that

> "people ideally strive to achieve 'optimal environment' {to fulfil their goals} on a cyclical feedback model of human cognition and behaviour" (Stokols, 1978, 258).

At the same time, a constructivist position on the Environment-Behaviour relationship is stressed by some psychologists. Reality is formed by the mind, by the product of intellectual operation (Moore, 1976; 1979a).

1.2. Application of Environment-Behaviour studies

Researchers in Environment-Behaviour studies are often not interested in the application of their results. However, some researchers are concerned about bridging the gap between social science and the design professions. They will talk about environmental design research and associate it with design yet not consider it equal to design. The distinction is critical for those who propose, use, or assess research (Brill and Villeco, 1981, 29; Bender and Porman, 1984, 60). "Environmental design research" is defined as

[2] Or "interrelationship" (Holahan, 1978, 9; 1982, 3), "mutual interactions" (Rapoport, 1976), "mutual relation" (Moore, Tuttle and Howell, 1985, ix), "interplay" (Craik, 1973, 403), "interface" and "transaction" (Stokols, 1978).

> "basic and applied research and research utilization dealing with environment-behaviour relations and applications for improving the quality of life through better informed environmental policy, planning design and education" (Moore, Tuttle and Howell, 1985, 3).

Thus, Environmental Design Research is equal to Environment-Behaviour studies or to Environment-Behaviour studies plus application. For Robert Sommer, design, social science concepts, and participatory planning methods are integrated under the heading of "social design" (Sommer, 1983, 13).

1.3. Evolution of Environment-Behaviour studies

Environment-Behaviour studies have evolved gradually as a discipline since the late 1950s. Following the logic of state intervention through urban policies in welfare capitalism, there have been two opposing practices, theories, ideologies and epistemologies, which represented the two-fold face of a single social reality:

- control of technical rationality,
- management of human relations (Scott, 1982, 147).

Environment-Behaviour studies are part of the "humanistic" discourse on the ideological level in welfare states. They are concerned with the alienated environment of buildings, institutions, cities; the depletion of natural environments; the commitment to humanistic values; and the advocacy of participatory actions (Perin, 1970; Ittelson et al., 1974; Porteous, 1977; Mikellides, 1980a; Holahan, 1982; Appleyard et al., 1982; Sommer, 1983; Sutton, 1984; Moore, Tuttle and Howell, 1985). In addition, Environment-Behaviour studies also propose a concept of "environmental man" as distinct from "natural man" and "psychological man" (Ittelson et al., 1974, 7-10).

International conferences in this field are being organized. A dozen journals have started publication. Many courses, programmes, and degrees have now been institutionalized. More than sixty universities in the English-speaking world provide formal or informal graduate training. A series of textbooks, readers, research findings, directories, and bibliographies have been published. Since the 1970s, Environment-Behaviour studies have also extended to the Third World as teaching courses, translated works, and a small amount of research. Therefore, we can say that Environment-Behaviour studies are now emerging as a world-wide discipline. We might question Environment-Behaviour studies as to their role in this new context.

Environment-Behaviour studies are facing urgent theoretical and conceptual demands, according to Moore, Tuttle and Howell (1985). Although there is no single coherent theoretical perspective in Environment-Behaviour studies right now, it is worth examining some views related to spatial form which are competing with each other as the basic elements of the Environment-Behaviour discourse. My aim is not to touch on all relevant research, theories, methods, and findings, nor to summarize them. Instead, the works of Irwin Altman, Clare Cooper Marcus, Gary T. Moore, William H. Ittelson and Amos Rapoport are selected as major resources to review.

2. The Spatial Form

Environment-Behaviour studies usually are concerned with the functional aspect of space (Moore, 1979b, 46). They do not intentionally ignore the issue of form, or

of aesthetics. However, Environment-Behaviour studies consider the spatial form through the relationship between man and environment. That is to say, they consider form through how people shape their environment and how the environment affects people.

2.1. Subject and Object Relationship

For Environment-Behaviour studies, spatial form is considered as a perceptual form based on a perceptual unit. Although people perceive the environment as separate and distinctive stimuli - sight, sound, taste, smell, touch - the total constellation of stimuli determines how people respond to it (Ittelson et al., 1974, 12). Dealing with the relationship between behaviour and environment, there is a "dynamic process" between the subject and the object.

Amos Rapoport (1977) makes the distinction between environmental perception, environmental recognition and environmental evaluation. Even so, the terms of environmental perception, environmental cognition, environmental image, cognitive map, cognitive representation, etc. have sometimes been used interchangeably (Altman and Chemers, 1980, 44) . A formal definition of environmental cognition is offered as

> "a process composed of a series of psychological transformations by which an individual acquires, codes, stores, recalls, and decodes information about the relative locations and attributes of phenomena in his everyday spatial environment" (Downs and Stea, 1973, 9).

Cognitive representation stands as a hypothetical construct for handling the relationship between "external representations" and the "internal representations". The information extracted from external environments exists in some types of psychological space, that is, mental images. There is apparently no direct one-to-one relationship between psychological space and the same objects in physical space (Moore and Golledge, 1976b, 9-10). In dealing with the issue of how a subject receives, selects, organizes, feels, perceives, and knows an object, there are basically two epistemological positions in Environment-Behaviour studies.

First, the main stream of Environment-Behaviour studies is empiricism. Considerable research had followed from a positivist position which is "behaviourism" in psychology and sociology, and is "environmentalism" in geography and anthropology, for example Barker (1968), Craik (1970), Proshansky, Ittelson and Rivilin (1970), Gutman (1972), and Wohlwill and Carson (1972), etc. (Moore and Golledge, 1976b, 23). They treat knowledge as given entirely through experience. The understanding of spatial form is based on sensed data. The environment (object) is treated as real objective existence independent of the perceiver (subject). The environmental representation or environmental image which represents the object through sensuous experience is assumed to mediate between stimuli (S) and overt behavioural responses (R). This is the empiricist model of mediational Stimulus-Response theories and cognitive behaviourist theories (Moore and Golledge, 1976b, 12-13).

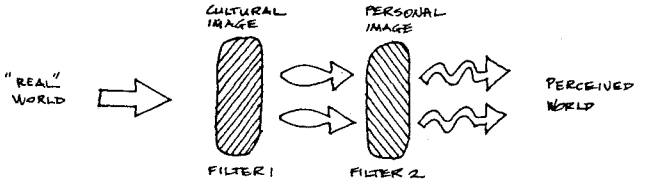

Fig. 1 The cognitive representation between the real world and the perceive world proposed by Amos Rapoport (1977, 38).

La représentation cognitive entre les mondes réel et perçu, telle qu'elle est proposée par Amos Rapoport (1977, 38).

Second, attempting to respond to the critique of positivism and to bridge the gap between empiricism and idealism, a neo-Kantian epistemological model has been adopted in Environment-Behaviour studies in recent years, for example by Gary T. Moore (Moore, 1979a; Moore and Golledge, 1976b), and by William H. Ittelson (Ittelson et al., 1975). This model is expected to be more subtle as an explanatory theory to describe the dynamic interaction between environment and behaviour. Knowledge is treated as the "active construction" of the objects through "intentional acts" by an active human agency from the interaction between sensation and reason and from the transition between behaviour and environment (Moore and Golledge, 1976b, 14). The observed environment is not necessarily the "real" environment, which is cognized as a set of mental images (Ittelson et al., 1974). The constructivist assumption is that

> "there is no one 'environment' - rather 'environment' is a mental construct" (Moore, 1979a, 35).

Empirical reality of environment (object) can only be "actively constructed" through the effort of particular minds (subject). Therefore, it is impossible to separate what is "reality" for a subject from the nature of that subject and its socio-cultural context, and

> "it is impossible to define 'reality' independently of the perceiving-cognizing individual" (Moore and Golledge, 1976b, 14).

2.2. Form and Value Relationship

Rapoport (1977) proposes a cross-cultural theoretical framework which treats environmental perception and cognition as mental interrelationships of value and spatial form. He considers spatial form as a value system, or the rules system of different groups. However, according to the constructivist view there is no one-to-one correspondence between values and behaviour, between culture, subculture, world view, or life style, to space, although relationships do exist. The critical link is image, or schemata. Values embodied in the different images lead to certain specific choices. This leads to the concept of environmental perception, environmental cognition, and environmental evaluation in Environment-Behaviour studies (Rapoport, 1977, 20, 24-25). The image, schemata, or cognitive representation, filters the real world and the perceived world (Figure 1). At first, the cognitive schemata is encoded (expressed) in the space; then, it can be decoded (read) if and when it matches the receiver's schemata.

Rapoport provides a framework for thinking about environmental meaning. There are at least three characteristics which he has defined: a) multichannel communication; b) meaning and behaviour; c) situation of cues of the built environment (Rapoport, 1982, 51-53).

Therefore, Rapoport builds up a theoretical framework to consider the space which is structured through four interacted elements: the organization of space, time, meaning, and communication (Rapoport, 1977, 9-12). Here,

> " 'communication' refers to verbal or nonverbal communication among people, while 'meaning' refers to nonverbal communication from the environment to people" (Rapoport, 1982, 178).

A broader theoretical framework to restructure the value-form relationship of conventional aesthetic value, and the style of the space, both can be defined as a system of consistent choices based on the rules and criteria of a social group (Rapoport, 1977, 16).

3. Form and Context Relationship

Since the beginning, empirical work in Environment-Behaviour studies has been focused on socio-behavioural interactions with the physical environment. The multidisciplinary characteristic of Environment-Behaviour studies implies that research covers many different levels of human behaviour from internal psychological behaviour to external cultural behaviour (Moore, Tuttle and Howell, 1985, 51-52). First, I will mention a conceptual model provided by Irwin Altman and Martin M. Chemers (1980) as a case dealing with the cultural context and form relationship in Environment-Behaviour studies. Next, a framework provided by Gary T. Moore, D. Paul Tuttle and Sandra C. Howell (1985) will be examined to see how it considers the issues of the different social relations and the space. In fact, both of these works are attempts at theory-building, to synthesize past contributions and guide future research directions in Environment-Behaviour studies.

3.1. Cultural Context and Form

According to Altman and Chemers (1980), culture has four key elements:

"First, culture refers to beliefs and perceptions, values and norms, customs and behaviours of a group and society.

Second, culture is used to indicate that cognitions, feelings, and behaviours are shared among a group of people in a common way.

Third, culture implies that these shared beliefs, values, and styles of behaviour are passed on to others, especially children, and that the socialization and education of new members of the culture help preserve a consensus from one generation to the next.

Fourth, culture appears in objects and in the physical environment.

The physical environment is a real object which can be divided into the natural environment and the built environment and has different scales" (Altman and Chemers, 1980, 49).

Psychological processes link culture and physical environment; they comprise mental activities (internal) and behavioural activities (external) (*ibid.*, 5).

Altman and Chemers propose a theoretical socio-psychological perspective of the relationship between culture and environment. Their interest is in interpersonal relations and social interaction processes which function in the context of the physical environment, along with perceptions, cognitions, and attitudes that bear on social relations. Adopting several psychological and anthropological analyses of cultural ecology, they conclude that the exact causal-effect relationship is hard to point out between culture and physical environment, although the physical environment is obviously important in t relation to cultural practice. As a result, the culture-environment relationship is suggested as a network of relevant variables (*ibid.*, 5-9) (Figure 2).

Altman and Chemers's conceptual model is a framework of relevant variables and a general statement of culture-environment relations. That is to say, their conceptual model provides a way to view the network rather than a precise statement of exact relations among variables (*ibid.*, 9).

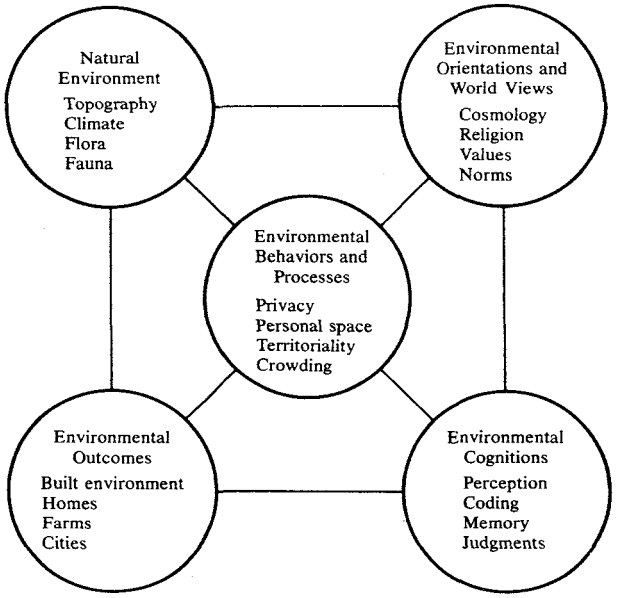

Fig. 2 Altman and Chemers's model of the culture and environment relationship (1980, 10).
Le modèle d'Altman et Chemers concernant les relations entre la culture et l'environnement (1980, 10).

3.2. Social Relations and Form

Moore, Tuttle and Howell (1985, 34) propose a new framework to describe the conceptual organization of Environment-Behaviour studies. It is expected to be useful in that it presents a structural connection between different points of the field, and helps members relate to each other in a consistent way. It also builds on earlier contributions and shows gaps for future studies in the field.

This framework consists of four elements: notion of scope, role of theory, process and context.

Scope means that any Environmental Design Research or Environment-Behaviour questions can be seen along four dimensions: place, user group, socio-behavioural phenomenon, and time (Moore, Tuttle and Howell, 1985, 35) (Figure 3). This concept constructs the link between people and place. Exploring these issues may tell us how this framework considers social relations and form.

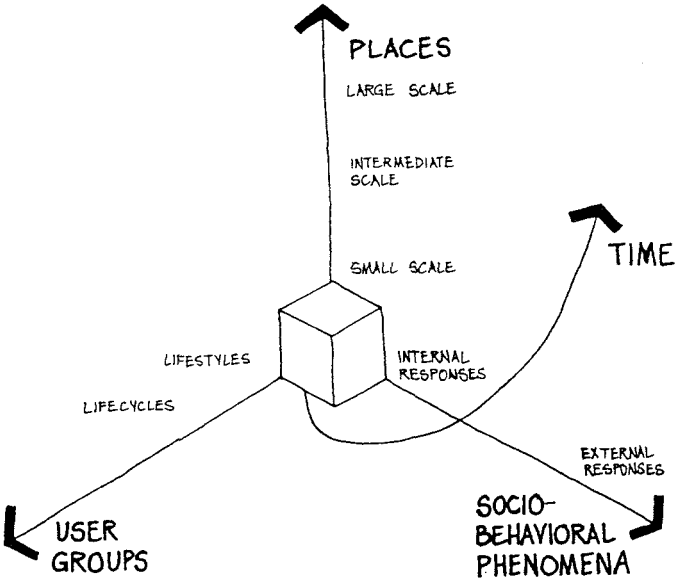

Fig. 3 Moore, Tuttle and Howell's model of Environmental Design Research (1985, 36).
Le modèle de la recherche sur les relations entre environnement et comportement, d'après Moore, Tuttle et Howell (1985, 36).

First, place issues are organized into different categories of scale of environment.

Second, user group issues are organized into:

- alternative life styles;
- special life cycle requirements needing greater environmental support (children, elderly people);
- groups highly impacted by their environment (handicapped people);
- politically and economically under-represented groups (minorities), ordinary people, new user groups, etc.

Third, socio-behavioural phenomena are categorized from internal physiological and psychological behaviour, to external individual and external group behaviour (*ibid.*, 84-91).

The authors suggest that theory links these four dimensions: people, place, behaviour and time.

> "Theory is the development of a systematic set of assumptions, accepted principles, and constructs devised to explain the nature of a specified set of environment-behaviour phenomena" (*ibid.*, 36).

The process refers to the cyclical sequence of environmental planning, design, evaluation, and research (*ibid.*, 84).

The context refers to urgent environmental problems and changing, social, economic, political climate (*ibid.*, 109).

Therefore, this framework is expected to provide a scope for seeing all available information in the field and to contribute an underlying structure of Environmental Design Research.

4. Aspects of Application

The Environmental Design Research Association (EDRA) was initiated by the Design Method Group (DMG) after 1968. The original interest in design methods still exists to some extent in Environment-Behaviour studies, for example, the notion that self-conscious processes of design decision-making can be improved through rational analysis (Moore, Tuttle and Howell, 1985, 11-12, 99).

With this assumption, the definition of planning and design is similar, whether it is policy planning or physical planning. The difference between planning and design is scale [5]. The application of environmental design research includes: public policy formation, environmental programming, computer-aided-design, participatory design methods, and post-occupancy-evaluation (POE), etc. (Moore, Tuttle, and Howell, 1985, 92).

Here, environmental programming, design guidelines, and post-occupancy-evaluation will be chosen as examples of the most critical aspects of the application in Environment-Behaviour studies.

4.1. Environmental Programming

Environmental programming, or facility programming, is a product of the reviews and critiques of architecture from the Design Method Group in the early sixties. Sometimes its early labels were "programming", "user studies", or simply "research" (Silverstein and Jacobson, 1978, 8). The definition may be considered as the identification of goals and criteria of different users, clients, and designers in the design process (Palmer, 1981); or, the process of defining problems and proposing criteria to fit the design solutions (Moore, Tuttle and Howell, 1985, 99). Basically, design is a problem-solving process.

[5] Rapoport would add an assumption that planning intends to deal more with locational and policy decisions rather than experienced urban elements and their relationships (1977, 6).

Because programming may be looked at as the beginning of the design process, it is the most critical stage where fundamental relationships and institutional forms can be re-analyzed and redefined leading to new spatial solutions. It is not only a necessary foundation for a good design product but also provides the period where different disciplines can meet together, provide ideas and guide future design directions (Lindheim, 1983). Research and design meet here, hopefully to ensure the quality of future environments. In other words, environmental programming has the potential for powerfully influencing social-physical form. A strong and basic form is cast in the structure of the programme, which provide a rough skeleton for the nature of buildings (Silverstein and Jacobson, 1978, 7). Therefore, to some degree, the legitimating process of environmental programming looks like the most recent labour division in the architectural profession as the structural engineers, planners, landscape architects have divided it some decades before.

There are different types of programmes. For instance, the earlier form of pattern language (Alexander, Ishikawa, and Silverstein, 1968) has interacted with and contributed to the growing process of Environment-Behaviour studies. Today environmental programming covers various activities ranging anywhere from studies of economic feasibility, activity analysis, user requirements, space layouts, consumer participation, and design guidelines, to the decision of whether to build, what to build, the size to build, and where to build (Lindheim, 1983).

The environmental programmer has some room to manoeuvre in the decision-making process. However, the professional limitation is always there. When the environmental programmer enters, the solution may have been long pre-determined. The political, economic rules are set. That is the reason why many programmes seem "empty". The most outstanding environmental programmers pursue programming as an instrument of social change, finding a hidden programme behind alienating, socially reactionary programmes which are frequently reinforcers of the *status quo* (Silverstein and Jacobson, 1978, 9-10).

4.2. Post-Occupancy Evaluation

A working definition of post-occupancy evaluation, post-construction evaluation, or after-the-fact evaluation is offered by Craig M. Zimring and Janet E. Reizenstein as

> "the examination of the effectiveness for human users of occupied designed environment" (1980, 429).

In a word, POE is

> "the evaluation of an environment after it has been occupied" (Moore, Tuttle and Howell, 1985, 192).

It can be focused on a single type of designed setting or on a project which spans a number of theoretical issues (*ibid.*, 102).

POEs tend to be setting-focused, descriptive in nature rather than manipulative, and applied in orientation. Three dimensions of POE goals may be considered: intended generality of results, breadth of focus, and intended timing of application (Zimring and Reizenstein, 1980, 431-433).

These three dimensions of POEs have three methodological implications: a) evaluations intended to be generalizable must broadly sample both time and setting; b)

systematic evaluations should consider organizational issues, multi-method techniques, and the design process; c) evaluations that are intended to be immediately applied should involve members of the organization being studied, should address the various needs of different information users, and should provide a particularly well-defined presentation (Zimring and Reizenstein, 1980, 439-446).

Although most of the works of POE have concentrated on housing, neighbourhood, college dormitories, work places, new communities, recreation areas, institutional setting (Marans, 1984, 117), and even handling consumer complaints (Sommer, 1983, 137-139), there is still a potential to shatter the ground of traditional aesthetics. Why so? Obviously, the keystone of POE is user-oriented (Friedmann, Zimring and Zube, 1978, 2; Zube, 1980, 12; Marans and Spreckelmeyer, 1981, 5; Cooper Marcus and Sarkissian, 1986). Evaluation through the users' perception and actions is the sharpest distinction with traditional architectural criticism. Traditional architectural criticism is mainly based on aesthetic evaluation, aesthetic pleasure and aesthetic judgement. There are problems of subjectivity, and there is no guarantee of the same conclusions by different judges (Marans, 1984, 117). What is more, conventional critic holds a narrow professional taste but their roles are hidden behind the surface of a universal aesthetic value.

4.3. Design Guidelines

Because of the immediate applicability of POE, it requires an effective way of organizing and presenting the research results. Design guidelines are one of the products [6] of POE research which may concretely bridge the gap between research and design and directly link environmental programme with physical design.

Design guidelines can be defined as descriptions of form, process, or relationships between environment and behaviour which are recommended in the design process. Design guidelines provide a skeleton of directions and principles in the steps from goal-to-programme-to-design (Cooper Marcus, 1985, 7). Values are necessary for policy and design. But, whose values?

The basic format of design guidelines could be classified as a) behavioural or attitudinal statements, as b) performance standards, or as c) prescriptive guidelines (Cooper Marcus, 1985, 8-10). Or, put another way, by a) prescription, or by b) specifying performance (Lynch, 1981, 278). In the last fifteen years, many Environment-Behaviour studies have resulted in design guidelines for improving future design qualities in specific types of settings and for specific user-groups.

Design guidelines are not necessarily restricted to social behavioural issues. We can also translate user's images through the studies of environmental cognition. Backed up by research, design guidelines are a hypothesis not only about the relationship between environment and behaviour (Cooper Marcus, 1985, 24), but also about the sensuous experience between the subject (user) and object (environment). Conventional aesthetic control regulations may in fact be taken over by convincing research-based design guidelines. Now, the question will be how the sensuous experi-

[6] The other products include user profiles, scenarios, annoted plans (Cooper Marcus, 1985, 4). In this paper, design guidelines are considered as the most significant case.

ence, namely, image, mediates in the process of form-proposing. And this is also a reason for dealing with Environment-Behaviour studies on an epistemological level.

5. Epistemological Critique

According to the preceding description, most Environment-Behaviour studies are committed to humanism. They are historically constituted as part of the social programme provided by the model of the social welfare state.

5.1. The Environment-Behaviour Problematique in the Ideological Framework of Environmental Discourse

After a briefing of the substantive body of Environment-Behaviour studies, we have to analyze them on their discursive, meta-theoretical level. That is to say, how the formation of knowledge in Environment-Behaviour studies is made.

How do Environment-Behaviour researchers formulate their questions? This is the initial location of meta-theoretical issues. Environment-Behaviour studies always constitute research questions on the models of human-environment transaction.

Accordingly, what are the methodological assumptions as to research objects and operational processes in Environment-Behaviour studies? The analytical elementary units are "environment" and "behaviour" in terms of "observable and "self-reported interactions". These are the source of data. Generally speaking, Environment-Behaviour studies emerged from positivism. This operationalistic approach treats the research process with the so-called five canons: reductive and operational definitions, reproducibility of data, objectivity of value-freedom, quantifiability and observability of the research object (Stea, 1980, 110).

Now, what is the social context of knowledge and interest of Environment-Behaviour studies? Environment-Behaviour studies grow in the epistemology of an empirical-analytic behavioural science and in the context of industrial capitalist society of the Keynesian model. There is a kind of mechanism which the technocratic ideology provides, a discourse that the technical professional and social engineers operate, think, present, and communicate. This is also the institutional interest for Environment-Behaviour studies technical control over objectified research processes.

In short, these epistemological assumptions predetermine the view of reality and the constitution of knowledge. There is also the epistemological bases of the current fragmentations in knowledge and isolation in design professions. Therefore, exposing the social political causes, deconstructing the epistemological mechanism, and uncovering the central propositions and omissions, are all necessary.

The problems in Environment-Behaviour studies are supposedly defined within a framework of discourse that basically determines the nature of their statement. This Environment-Behaviour discourse is constituted by a set of concepts (discursive objects) which are bound together by one or more "problematiques" (frameworks of concepts) (Teymur, 1981, 79). There seems to be no contradiction at all except between "man" and "environment" (Teymur, 1982, 188). Environment-Behaviour studies might be viewed as a typical functional settings which only deals with the interactive relation between selected, displaced variants. Environment-Behaviour studies tend to remove real socio-physical problems from their material conditions of existence (Teymur, 1984, 232). It make people assume certain statements and adopt certain

frameworks unconsciously. The terms "environment", "architecture", "social", "behavioural", etc., seem to be taken for granted as a given to everybody. Problems are hypostatized, conceptualized, theorized, and institutionalized without asking the very question about fundamental contradictions. Their humanistic values are part of the ideologies of social reform in welfare capitalism and are seemingly sufficient for using them as such. Some of these implicit values are taken for granted by designers and have become official values in government policies.

Yet, these assumptions and positions need to be exposed, deconstructed and transformed. We need a complete change of the terms and their relations as they are posed in Environment-Behaviour problematique.

> "What the designers design and the planners plan is not 'environment' but complex sets of objects and relations whose physical existence as well as theoretical conception are socially determined" (Teymur, 1982, 191).

As a matter of fact, space and society are not two separate things which are formulated as a conceptual couple in Environment-Behaviour problematique. We must never regard this artificial separation more than a matter of convenience for research and analysis. We should never forget its socially predetermined "theoretical imagination".

At this point, the adequacy of the substantive theories of Environment-Behaviour studies might be questioned.

5.1.1. Political-economic nature of space

Although Environment-Behaviour studies are still in a preparadigmatic stage and most of the "theories" remain taxonomic, descriptive theories for investigating neglected facets in Environment-Behaviour problematiques (Stokols, 1983, 268), and explanatory theories of the middle range are being sought to advance the theoretical state (Moore, Tuttle and Howell, 1985, ch. 5). However, there is no single theoretical reference to political-economic concern (Teymur, 1984, 231). In the cases introduced previously, such as a cross-cultural theoretical framework on environmental form and meaning proposed by Rapoport (1977, 1982), and a theoretical framework on culture and environment proposed by Altman and Chemers (1980), the nature of a constitutive and material social process of culture is totally ignored.

Rapoport goes beyond the ignorance of form in the Environment-Behaviour studies I have mentioned. He borrows a cultural anthropological notion of culture to signify the whole way of life of a society. The notion of culture is constructed in an idealist way which provides a general process to produce meanings, values, and physical things. However, the production of environmental form and meaning is an ideological production and reproduction process (Williams, 1977, 55). That is to say, the cultural production and reproduction of symbols and communication codes are social practice in a certain social historical formation.

In the case of Altman and Chemers (1980), the major substantive problems are also associated with their methodology. The empirical concepts identify with vague phenomena in ideological references - "culture", "environment", "psychological process", etc. They say nothing about the specificity of the characters of space, physical surroundings and society. For instance, in terms of "culture" and "psychological process", any serious analysis of culture has to see the concept of culture in the broad context of historical growth. How did the term "culture" come out and mix its sense

with the term "civilization" in the late eighteenth century? Then, how did it interact with changing history and experience in European capitalist society? (Williams, 1977, 11-20). "Culture" and "psychological process" are hard to separate in the research process. On the one hand, the concept of culture covers the sense of "inner process " when it relates to "intellectual life" and "art", etc. Here, the concept of "structure of feeling" by Raymond Williams (1977) can be considered an example of a different theoretical approach to cultural analysis (Pred, 1983). On the other hand, "psychological process" also involves the environment in social relation. As a constitutive social process, "culture" is an altered form of social reproduction.

It is necessary to establish theoretical constructs to articulate the interrelations between ideas and other aspects and conditions of human practice. Otherwise, it is impossible to differentiate the dialectical contradiction between essential and surface variants. As a consequence, the interaction in Altman and Chemers's model inevitably becomes a vague network between the variants.

Once we mention the notion of value, of experience, of environmental quality, we have to take into consideration the ideological and political aspects that underlie the organization of space (Pol, Muntanola and Monserrat, 1984). However, most of the theoretical frameworks raised previously - Rapoport, Moore, Altman and Chemers - do not incorporate an analysis of ideology. Perhaps, this epistemological absence represents their ideology of "end of ideology". As a matter of fact, this is the question of ideology of production and consumption of space.

Furthermore, since environment is a certain historically constituted social relation, the political-economic analysis of its exchange value is necessary. Environment-Behaviour studies indeed contribute in questioning the formalistic design of a conventional architectural approach in the sphere of consumption (use value). However, these studies scarcely consider the political economic nature of physical surroundings, that is, the exchange value of space. Why so?

In a capitalist economy, the environment has been built by the production of commodities and the signifying systems which pertain to social relations (Teymur, 1982, 230). Image of life, of dwellings, and of commodities are conditioned to commercial culture in such a way as to enhance the situation in which commodities are "needed" (Ellis, 1978). So, we have to consider space in the sphere of exchange in order to see the whole process. That is to say, what is the nature of space as a commodity? How is space produce, exchanged and realized into money? How does space make a profit for the owner? And how can the specificity of space be analyzed as the fetishism of commodity as well as the illusion of ideology? In short, the Environment-Behaviour problematique is functioning as fetishism in Environment-Behaviour studies. Social relations in reality, therefore, will never be opened up.

5.1.2. Constructive Activities of the Epistemic Subject

Although Environment-Behaviour studies have devoted themselves to the task of theory building (Stokols, 1983; Moore, Tuttle and Howell, 1985, ch. 5), they do not seem to consider that the root of the difficulties may lie in epistemology. This is not a problem which belongs to positivism only. Some psychologists, Gary T. Moore for example, reject the mechanistic perspective of environmental determinism and behaviouralism, and instead link Jean Piaget's genetic epistemology to environmental cognition.

> "Reality is constructed by an active subject. It is an attempt to adopt an idealistic neo-Kantian position on epistemology" (Moore, 1976, 139).

An objective idealistic position is changing to a subjective idealistic position.

However, there is a difference between a Piaget linking structuralism with constructivism and Kant's epistemology. On the one hand, Piaget asserts that

> "the object exists and the objective structures exist themselves before being discovered" (Piaget, 1970/72, 84),

but Kant doesn't. The critical point is that according to Piaget the object is not discovered at the end of operational inquiry; it is only discovered through being constructed. Piaget also opposes Kantian Konrad Lorenz's point of the innatism of the epistemological structure of the subject. There is no *a priori* factor as an aspect of Kantian "antecedent conditions".

> "Here we {Piaget} see the complete opposition between this interpretation {Kant's} and ours, according to which the structure of knowledge does indeed achieve necessity: but at the end of its development, without having it from the start, and does not involve any antecedent programming" (Piaget, 1970/72, 56).

To Piaget, rejecting the empiricism of environmentalism does not necessarily lead to idealism of innatism (*ibid.*, 55). In other words, the structure of the object exists before being known and the object is only known through actions of the subject including elaboration of theoretical concepts (theoretical objects) of the real object. This might be linked with the "theoretical practice" of Louis Althusser or, the intentional human agency, i.e. "intentional human labour" of Roy Bhasker (Bhasker, 1983, 254).

The idealistic discourse only makes the subject feel and react within ideological frames. The object always refers to some aspect of reality, ready-wrapped in ideology. The concepts are theoretical tools by which the subject confronts the object and uncovers its essence by theoretical abstraction. Theory-building, the production of knowledge, is the mediating process of constructive activities of the epistemic subject to the object.

So, both in academic and professional disciplines, by ignoring the epistemological separation, and the problematic in Environment-Behaviour discourse, humanistic Environment-Behaviour studies are only self-justifying in their closed circles.

5.2. *The Lacuna of Environment-Behaviour Application on Planning and Design*

With the exception of a few works, most of the Environment-Behaviour studies ignore the form - the cultural form of space, or, the aesthetics. POE may help bridge the gap to a certain degree. But current Environment-Behaviour literature fails to answer how or if design matters (Sutton, 1984). As a result, not only do Environment-Behaviour studies become difficult to communicate with designers, but also some critical links between professional practice and Environment-Behaviour research are missing, the issues of image thinking and sensuous experience of form for example.

Even when Environment-Behaviour studies do not intentionally ignore form, they are concerned with the form which is judged by users' values or their cognition (namely form-consumption of the consumers). Environment-Behaviour studies may be workable in the sense of finding out what various groups' attitudes, or which vari-

ants of sex, age, education, and residential areas, etc., interact with physical elements. Environment-Behaviour surveys may be accurate, but they do not look at the real problems. This is the fetishism of Environment-Behaviour studies. The social relations of the real world are not seen. To some extent, the user oriented Environment-Behaviour studies attempt to add a buffer to the alienation of modern professionalism. But they do not uncover the logic of the social process and social space, nor respond to urban social movements, nor challenge the basic structure of accumulation.

Environment-Behaviour studies ignore the political economic nature of space the thus they fail to apply it in policy planning. First, with the exception of a few, Environment-Behaviour studies tend to ignore the hidden programme behind environmental programming (Silverstein and Jacobson, 1978). Second, the scale limitations of the observations of Environment-Behaviour studies make them almost impossible to use at an urban and regional scale (Harvey, 1973, 33). Third, ignoring the political economic nature of space, Environment-Behaviour studies find it difficult to uncover the spatial structure. In other words, the spatial problem can not be treated only spatially. If you do not trace the sources of the form problems, you will not be able to really change something in planning. Spatial forms reflect materialized social, economic, political processes. We have to deal with the elements of explanation in the sense of economic, political and cultural questions. We have to see the social processes in the way space is structured, in the way human praxis, politics, policies, and resistance of dominant structure are articulated. On the contrary, operating as techniques of social programme, the research, programming, participatory workshop, public hearing, etc., Environment-Behaviour studies not only fail to follow the paradigm shift in planning discourse in the last three decades, but are manipulated as negative political tools to side-step the fundamental contradictions for determined policies.

On the other hand, the transformations within environmental discourse show us some new voices for Environment-Behaviour studies. There is a heated debated between positivists and phenomenologists. The weaknesses of quantitative approaches which have dominated for a long time have become clearer in Environment-Behaviour studies. To many researchers and professionals, phenomenological, psychoanalytic and other qualitative approaches are accepted as major alternatives instead of traditional Environment-Behaviour studies, for instance Christian Norberg-Schulz (1975, 1979, 1984), Charles W. Moore (Bloomer and Moore, 1977), Christopher Alexander (1985), Yi-Fu Tuan (1974, 1977), Edward Relph (1976), David Seamon (1982, 1985), Anselm Strauss (1976), Erving Goffman (1963), William R. Ellis, Jr. (1971, 1974, 1978), Galen Cranz (1982), Anthony King (1980). However, reality is always more complicated. For instance, rationalistic positivism and humanistic phenomenology may be said to compliment each other as a dominant ideology and alternative ideology which both function in the social cultural process of the welfare state. This is why neo-Marxism is a penetrating environmental discourse (Scott, 1982). A recent study by King (1984) shows new possibilities. It is a study on the bungalow as social production of space in the world system, or in the process of the international division of labour (King, 1984). Let us add that in the transition from the welfare state to the "Warfare State" (Castells, 1985, 32), the current high-tech ideology of techno-economic restructuring of the capitalist system in the 1980s not only concerns military power and economic growth, but also shrinks urban services (Castells, 1984). So what are the fates awaiting Environment-Behaviour studies? Perhaps, this is the moment when the real world is starting to appear in the midst of Environment-Behaviour studies. The real social relations will directly rush towards us.

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