# 11

# Developments in Research Design, Data Collection, and Analysis

## QUALITATIVE METHODS

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The mandate for this chapter evolved from the recently published conceptualization of the field by Moore, Tuttle, and Howell (1985). From their comprehensive discussion emerges an image of environmental design research as a field that includes qualitative methodologies, but that relies on research and data generated by quantitative methods characteristic of the psychological and social sciences. They suggest that qualitative methodologies need to be clarified and explicated and that anthropological and historical techniques should be added to the qualitative repertoire of design applications. Better training in qualitative research design and analysis will improve the overall credibility of qualitative methods for the design professions (Seidel, 1981). Current reviews of environment–behavior theory and method further emphasize the importance of a transactional world view (Altman & Rogoff, 1987) as well as holistic (Wapner, 1987) and ecological (Barker, 1968; Bechtel, n.d.) approaches to environment–behavior research, and identify an increased need for methodologies that focus on events, settings, and contexts (Wapner, 1981).

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Innovative uses of qualitative methodologies and techniques have been employed since the field's earliest beginnings. Rapoport (1969, 1977, 1982, 1984) consistently has argued for the use of ethnographic data and cross-cultural comparison in the study of meaning as the basis of open-space and house design. Perin (1972) developed a unique method to study peoples' use of microenvironments through the application of participant observation within the home. Cooper (1975) employed in-depth interviewing and behavioral mapping in a postoccupancy analysis of low-income housing with such success that these methods have become an important part of the repertoire of collection techniques for housing evaluation. Multiple applications of qualitative methods have resulted in environment–behavior studies which employ behavioral observation, photographic documentation, interviews, and diaries, which describe not just individuals, but the resident population as an integrated social community (Howell, Epp, Albright, Ebbe, & Reizenstein, 1976). Even national surveys of resident housing satisfaction employ qualitative techniques of data collection (Lawton & Nahenow, 1979).

Environment–behavior studies, because of the range of projects and interests, are composed of many methodologies and theories. Qualitative methodologies are characterized by their humanism and holism—a philosophical position which argues that humans, and human behavior, cannot be understood or studied outside of the context of a person's daily life, life world, and activities. The methodologies currently grouped within this philosophical orientation include cognitive approaches, context-dependent observational approaches, phenomenological approaches, comparative historical approaches, ethnographic approaches, discourse approaches, and action approaches to research. (Action research will be presented in a later volume in this series.) These methodologies are comparatively new to environmental design research and, in the case of ethnographic, cognitive, and observational approaches, have been underutilized. They represent the cutting edge of qualitative research and provide an innovative approach to the complex social and cultural dimensions of person–environment transactions (Moore *et al.*, 1985; Villecco & Brill, 1981).

This chapter emphasizes methodologies; methods are critiqued as part of the review of a particular research project. The following section examines the relationship of qualitative and quantitative methods and applications, and presents an operational definition of qualitative methods. The next sections cover current methodologies and analytic approaches in the field, their critique, and a prediction of qualitative methodologies for the future. The chapter does not attempt to cover all recent studies or research in the field, but represents selections considered interesting and noteworthy, that have received little coverage, and that hold the greatest promise for the environment, behavior, and design field.



## QUALITATIVE AND QUANTITATIVE METHODS

The difference between qualitative and quantitative methods and methodologies is a source of constant debate and argument because the discussion implies that one is more important, more scientific, or more effective than the other. Within the field of environment–behavior research, however, the substantive issues necessitate the acceptance of both kinds of methods in order to understand complex research problems and applications. Researchers are more concerned with ecological validity (Winkel, 1985; 1987), triangulation of methods (Moore, 1983b), and a "systems" framework (Wapner, 1987)—concepts which bridge various methods and methodologies in order to solve environmental design problems.

Most authors of methodology texts attempt to separate these two modes of research. Filstead (1970) identifies qualitative methodologies with an approach which requires the researcher to interpret the real world through the discovery of substantive or "grounded" theory (Glaser & Strauss, 1967). Patton (1980) equates qualitative methods with a holistic point of view and naturalistic inquiry. Field studies that allow important theoretical dimensions to emerge, and that discover and verify the meaning of human behavior, characterize qualitative research (Whyte, 1984).

Bogdan and Biklen (1982) and Cook and Reichardt (1979) contrast the attributes of qualitative and quantitative research and conclude that the critical areas of comparison are in the setting, goal of the research, emphasis on process and inductive theory, and differences in determining reliability and validity. Qualitative methods focus on validity and draw their strength from the close fit between the actual situation and the researcher's description, understanding, and interpretation of that situation. Theory is generated by the process of data collection and tends to be context or subject dependent. Quantitative methods, in contrast, sample a wider range of phenomena and emphasize reliability of the measures. The strength of quantitative studies lies in the generalizability of the findings and the testing of deductive theory.

Another way to contrast these methods is to sort the basic research designs—fieldwork, survey, and experiment—by the kind of environment in which the research takes place and by the techniques of data collection. Fieldwork is characterized by the use of unstructured observation, participant observation, and open-ended interviews in naturalistic or "field" settings. Survey designs utilize questionnaires, observation, and structured interviews in a variety of settings or contexts but preferably in matched or similar environments. Experiments are the most constrained by a laboratory environment, planned treatments, control groups, operationalized instruments, and randomization. (See also quasi-experimental designs in Chap. 10 of this volume.) As an heuristic device, the

dimension of the degree of control of the environment or of the data collection technique suggests a range of research designs from the most qualitative, with an uncontrolled environment and unstructured techniques of data collection, to the most quantitative, with a controlled environment and highly structured techniques of data collection with a specific instrument or treatment.

Qualitative methods thus can be defined as field methods which emphasize (a) naturalistic, nonlaboratory settings, and (b) the use of the researcher as the instrument of data collection. Qualitative analysis encourages the researcher to view the research situation from the standpoint of the people who are being studied, from the folk or "emic" point of view, while quantitative analysis produces an analytic or "etic" understanding from the researcher's or the discipline's point of view. Qualitative methods focus on the importance of the "quality" of the data in terms of meaning and interpretation (Agar, 1980a, 1985).

## AN OPERATIONAL DEFINITION

For the purposes of this chapter an operational definition of qualitative methods includes: (a) the researcher is the major instrument of data collection although he or she is aided by interview schedules, observational diagrams, or linguistic prompts; (b) data collection and recording encompass both the subject and the context usually recorded in terms of their interrelation; (c) the research setting is the natural environment of the activity, person, or situation; and (d) data analysis is an interpretive process generating its own theoretical and data categories. These criteria are a guide to the selection of projects and studies included in this chapter as advances in the development of qualitative research design and analysis.

Qualitative methods within the field of environment, behavior and design research are most effective when applied in: (a) research problem definition, (b) hypothesis generating research, (c) cross-cultural and culture-specific research, (d) research that requires interpretive or detailed contextual data, and (e) process-directed research. A majority of environment–behavior-design research questions are included within these parameters. Selecting a qualitative method implies a particular philosophical orientation and the choice of a problem which is either exploratory, interpretive, cultural or process-directed.

## CURRENT QUALITATIVE METHODOLOGIES AND ANALYTIC APPROACHES

For this discussion, methodologies are arranged in order of their complexity and scope of inquiry beginning with cognitive and observational approaches that focus on one dimension of human activity, a mental or behavioral process,



followed by phenomenological and historical comparative approaches that integrate human activity and the environment, and concluding with ethnographic and discourse approaches that include the activity, environment, and social, cultural, or political context. The order is a loosely constructed indicator of the degree of control within the research situation, and ranges from the least to the most naturalistic of the research strategies.

### Cognitive Approaches

In his chapter on environmental cognition, Rapoport (1977) distinguishes between the psychological or "knowledge" orientation and the anthropological or "meaning" orientation of environmental cognitive studies. These orientations are combined in environment–behavior studies through the close identification of cognition as a mental (knowing) process, often reflected in language, with cognition as a set of cultural categories or a taxonomic system which structures perception through the attribution of meaning. It is difficult theoretically to determine whether a mental map, linguistic category, or cultural label is a reflection of mental or environmental processes when applied to environmental design problems. Recent research strategies emphasize a generic cognitive approach, but modify the methods derived from other disciplines to meet the criteria of their research design (Moore, 1983a). These strategies can be grouped into linguistic, ethnoscientific, and mental-map approaches. A number of researchers also have explored cognition through literature employing literary analysis as a strategy for the study of environmental knowing (Buttimer, 1984; Buttimer & Seamon, 1980; Seamon, 1981, 1985; Tuan, 1976, 1978). It should be noted, however, that the vast majority of studies using a cognitive approach are quantitative (see Chap. 10 by Marans and Ahrentzen in this volume).

Although architects and social scientists discuss the language of the environment as a meaning system (Rapoport, 1982), within the environment–behavior-design research field there are few qualitative linguistic studies. By linguistic I mean studies that depend on the structure and meaning of language terms as reflections of an underlying cultural system. This area of investigation is relatively new even within linguistic anthropology and derives from the work of Tyler (1969) and Frake (1981) in cognitive anthropology, Hymes (1974) in sociolinguistics, and Randall (1977) and Geohagan (1973) in natural decision-making processes. The current work of Prussin and Eastman (1984) best represents the future of this innovative methodological approach; although their research is still in the pilot project stage, the proposed research design, methods, and analysis suggest a model which relates language use to the process of place making and social change.

Prussin and Eastman(1984) argue that place making is a learned behavior of all cultures which provides a congruence of verbal language and architectural

behaviors. They have selected domestic place making of nomadic African societies as an example of gender-specific behaviors that are repetitive and recurrent, implying a patterned domain of activity. Their methodology derives from Hymes's "ethnography of communication" in which the place-making event can be described as a communication event within a society. Each act of place making can be described, discussed, and recorded through the linguistic categories and labels that are used by women; these linguistic categories then are united with their meanings through an analytical construct known as an action plan (Randall, 1977). Action-plan analysis suggests that routine activity is the result of a memory-stored plan which encodes aspects of a cultural world view. Actual behavior is the interaction of this cultural plan with the immediate situation (Prussin & Eastman, 1984; Randall, 1977). Further, the implication is that a researcher interested in the relationship of new environments to routinized behavior could study the linguistic categories of that behavior, generate the culture specific action plan, and extend this plan to various new situations which would modify the cultural schema or reframe the original activity meanings.

Another application of linguistic anthropological theory is in the area of ethnoscience and ethnosemantics—the study of cognitive meaning from the culture's own point of view. Ethnoscientific methodology contends that culture is encoded in language that can be elicited through taxonomic and domain analysis. The methods for eliciting verbal data vary from frame analysis (Goffman, 1974) in which highly structured questions organize response into taxonomic categories (Spradley & McCurdy, 1972) to unstructured interviewing on the limits of a domain. These methods have been applied in a modified form to studies of vernacular architecture and culture-dependent environmental design (Low & Ryan, 1985; Pavlides, 1984). The studies focus on the ethnosemantic structure of architectural features in studying the meaning of architectural details of traditional Greek village houses in terms of social status (Pavlides, 1984) and the selection of culturally appropriate architectural details of eighteenth-century stone farmhouses in a rural Pennsylvania community (Low & Ryan, 1985).

Both studies apply a research design that first determines the range of architectural variation in the local community, investigates the categories of possible meaning for the variation, and then verifies those meanings employing a modified ethnoscientific method. Pavlides, in his 1984 study, photographed architectural details of Greek village houses which he suspected were symbolic of a family's social standing based on his previous interviewing and house survey. He then presented these photographs back to the community and asked them to tell him what each meant. The responses of the community members were used as a method of verification to insure that his interpretation of symbolic meaning reflected that of the community. The study of the meaning of vernacular architecture in Oley, Pennsylvania, was designed to elicit what local residents identified as the important architectural characteristics of the stone farmhouses in



their community (Low & Ryan, 1985). The project was part of a rural preservation program and utilized a historical buildings survey as a guide to local architectural variation. A representative panel was interviewed as to the degree of "Oleyness" for the architectural details found in the survey. The study linked architectural elements with cultural images through the exploration of "Oleyness" as a culturally relevant cognitive domain.

The most popular method derived from cognitive theory currently used in environmental design research is the mental map. Mental maps are another way to elicit images of a place which reflect cognitive processes that sort the environment for relevance and meaning. Stea (1978) stated that people operate, that is, make plans and strategies, in accordance with their representations of the real world. The researcher can elicit these representations by asking people to draw maps and can analyze these representations by developing structural or developmental typologies (Appleyard, 1978; Moore, 1983a). Mental maps have been used extensively as part of both qualitative and quantitative environmental design studies (Gould & White, 1974) and are mentioned because of their potential as an interpretive, cognitive method. Mental maps as a research technique or "instrument" in their raw form are in disrepute; however, they could be analyzed in conjunction with the verbal action plans proposed by Prussin and Eastman (1984). A series of mental maps collected from one cultural group, or a sequence of maps collected over time from the "place maker," could provide a set of "visual" impressions of culturally meaningful space to supplement the verbal elicitation of linguistically categorized activities. The researcher could test the assumption that "action plans" which can be analyzed from the observation and recording of natural decision making might also be available in a cognitive spatial form. In this context the techniques of mental map elicitation should be modified to fit the social and cultural setting. Other analytic techniques proposed as part of the mental map critique are structural analysis which examines the unconscious organization of space and images (Hester, 1985; Pipkin, 1983), and literary analysis of landscape which relates environmental images with meaning through metaphors and the experience of journey (Buttimer, 1984; Seamon, 1985; Seamon & Mugerauer, 1985). These and other phenomenological, ethnographic, and discourse methodologies are discussed later in this chapter.

The cognitive methodologies hold the promise of linking mental categories with cultural designations and meanings in the environment. The linguistic, ethnoscientific, and mental map approaches suggest applications which establish this relationship and tell us something about it. They are somewhat limited in their scope and constrained by their reliance on verbal or visual materials; however, they offer a solution to the environmental design research issues of environmental cognition and the interaction of culture, behavior, and environmental or social change.

## Observational Methodologies

Observational methodologies in which overt behavior is observed by the researcher are the mainstay of qualitative research in environment, behavior, and design, and are reviewed extensively in Michelson (1975), Sommer and Sommer (1980), Webb, Campbell, Schwartz, and Sechrest, (1966), and Zeisel (1981). Yet, a number of these methodologies have been overlooked and underutilized, and many of the commonly used strategies and techniques have taken on new applications. Advances in the area of observational methodologies focus on the development of nonverbal communication theory (Rapoport, 1982), and the application of ethnoarchaeological methodologies from anthroplogy (Kent, 1984). Refinements of observational methods include new strategies of behavioral mapping (Francis, 1984; Moore, 1983b) and observation of public spaces (Whyte, 1980). Observational methodologies have both quantitative and qualitative applications in environmental design research, therefore, only those studies which reflect an interpretive or holistic application are reviewed.

Rapoport (1982) advocates the use of nonverbal communication theory for the study of built environments. He argues that nonverbal behaviors are both prevalent and important, provide the context for other behaviors, and are studied by observation and recording. "Basically, the use of nonverbal models in studying environmental meaning involves looking directly at various environments and settings and observing the cues present in them, identifying how they are interpreted by users—that is, the particular meanings these cues have for human behavior, affect, and so on" (Rapoport, 1982, p. 87). The method for these studies is based on careful observation of defined settings in which the fixed, semifixed, and nonfixed features are recorded and compared. His examples of the model's application are cross-cultural and comparative, so as to test the limits of the approach; but as a method, he is suggesting an ethological approach to observation, that is, naturalistic observation of humans in their habitats. His method employs diagrams, maps, and other recording frameworks in an effort to pinpoint the relationship of the various identified features to behavior; he then demonstrates how his model generates typologies and contrasting types that explain the observed behavior. His application of an ethological methodology with an analytical nonverbal communication model presents an innovative approach to the study of behavior which is particularly useful in cross-cultural settings.

Another approach to the study of cross-cultural behavior employs archaeological, ethnographic, and observational methods to understand the use of space. Ethnoarchaeological research is a recent development in anthropology which combines the ethnography of living populations with the archaeological remains of the cultural past. The objective is to interpret aspects of prehistoric life, where there is little documentation, based on the activity patterns and behaviors of contemporary peoples living in the same area. Their methods are behavioral in



the sense that the ethnoarchaeologist is observing behavior and behavioral traces related to specific sites in order to interpret archaeological artifacts or village settlement patterns. The underlying theory of this approach is that culture, behavior, and material culture are interrelated in such a way that an explanation of any one dimension is dependent on the others.

Ethnoarchaeology and environmental design share many of the same concerns; they both attempt to understand human behavior in its environmental context, utilize indirect evidence of human activity, and often do not have a living or present population available for study. A recent study by Kent (1984) draws this comparison by suggesting that her methods could be employed to study contemporary and future patterns of housing through the analysis of activity areas. Her research evaluates accepted archaeological assumptions about the use of space. She studied three cultures in the southwestern United States—the Navajo, Euroamericans, and Spanish-Americans—by observing residential behaviors and domestic activities, determining culture-specific spatial patterns of the households, and relating these descriptions to the existing archaeological record. She found that "assumptions result from the tendency of archaeologists to view spatial behavior as independent of culture. In this case, it has led to the implicit acceptance of assumptions about the use of space that apparently are true for Euroamericans, but not necessarily for other groups" (Kent, 1984, p. 187).

Horne (1980, 1982), another ethnoarchaelogist, focuses her analyses on the household in space and the morphology of village structures and activities in Iran. Her study relates behavior, in terms of activity patterns, to an interpretation of the existing and past village architecture. She recently has applied her skills to the study of vernacular architecture and architectural surveys, directly relating an ethnoarchaeological approach to environmental design.

A basic component of all behavioral methodologies is behavioral mapping; mapping in some form has been used in all the studies reported in this section (see Chap. 10 for behavioral mapping as a quantitative method). Behavioral mapping as a methodology has a long history in professional practice as a vehicle for the integration of behavioral data with planning and design schemes. A behavioral map arrays social activities and individual behavior in space, usually where it occurred. The potential of a behavioral map is as a recording device that synthesizes many observations and interpretations into an easily accessible format. A recent article by Francis (1984) refines the concept of behavioral mapping to present a detailed "snapshot" of current downtown activity to a concerned public. He points out that behavioral mapping has limitations as it ignores the details of some behavior and public perceptions, but he suggests that it is a method which is useful for public support and understanding. Another variant of this approach is Cuff's (1985) use of a design competition with behavioral mapping of the neighborhood and community participation in generating

interest for public housing in Houston. The new application of behavioral mapping lies in its effectiveness for qualitative data utilization.

Data utilization also is the advantage of filmed or publicly recorded behavioral observation, represented in the work of Whyte (1980) and Brower (1980). In 1970, Whyte formed a small research group, The Street Life Project, and began looking at small urban spaces. "We mounted time-lapse cameras overlooking the plazas and recorded daily patterns. We talked to people to find where they came from, where they worked, how frequently they used the place and what they thought of it. But mostly, we watched people to see what they did" (Whyte, 1980, p. 16). Their basic methods—observations of plazas by hand-recorded sighting maps and time-lapse film sequences, were not unusual, but their methods of analysis and utilization changed public zoning for New York City. Whyte analyzed his observations by an open-ended process of hypothesis generation. He would watch the films and ask questions about what he saw, forming hundreds of hypotheses and discarding or accepting them as he reviewed the data. He was searching his own intuitions and perceptions for the key to the film documentation that had been produced. His findings include a number of insightful axioms about how people behave in public spaces, and corollaries about what can be done to encourage or enhance this behavior. These conclusions produced the guidelines for the zoning of New York City.

Brower's (1977, 1984) research on residents' use of and attitudes toward various outdoor spaces in their neighborhood included "a walking census to record, in a systematic way, what spaces were used for what purpose and by whom; resident diaries, to record individual outdoor use; interviews, to identify attitudes and neighboring patterns; perceptual tests, to find the symbolic value attached to objects and spaces; doll play with elementary-age children, to discover the location and nature of children's play spaces; and systematic observations of use and conditions of various urban spaces" (Brower, 1980, p. 195). His goal was to describe the differences in the use of neighborhood spaces by low-income and middle-income groups. His research model is based on territorial analysis, which interprets his findings into concepts of defensible, identifiable, and controlled space. The territorial model provides a framework for organizing complex behavioral data into a form that is useful to local planners and urban designers. His ability to translate behavioral data into meaningful categories makes it possible to apply the results to the redesign of neighborhood parks and play areas.

Observational methodologies utilize translation and interpretation to relate culture to behavior, and behavior to activity areas and patterns. These methodologies are basic to any study of environment, behavior, and design and will continue to be refined and augmented. The advances reviewed in these examples suggest that the developments are in the introduction of theory which guides the use of observation or mapping, and in the application and utilization of behavioral data.



## Phenomenological Methodologies

The phenomenological methodologies are distinguished from the cognitive and observational methodologies by their contextualism and attention to experience and symbol. The object of study is not separated from the act of perceiving and an attempt is made to keep the phenomena whole (Richardson, 1984b). These studies are characterized by a focus on place and "how place grows out of experience and how it, in turn, symbolizes that experience" (Richardson, 1984b, p. 65). Seamon (1980b), in his discussion of a phenomenological geography, asks a number of questions that have become the basis of research within this area: "What, for example, is the nature of human dwelling on the lifeworld? What experiential meanings do places have for people? How do different people experience nature and the physical environment? In what ways do people notice or fail to notice their geographical world?" (Seamon, 1980b, p. 150; see also Chap. 1 in this volume).

The full impact of this philosophical position has not yet been felt in the environment, behavior, and design field; however, an increasing number of researchers are experimenting with this approach. The studies range from the contrast of place and placelessness (Relph, 1976), to urban readings of a place (Violich, 1983) and analyses of places as urban settings or stages for "place ballet" (Richardson 1980, Seamon 1980b). The application of the phenomenological approach is tied to the study place through the use of environmental experience groups (Seamon, 1980a) and utilizes Heidegger's phenomenological method (Seamon, 1984b and this volume). Place is studied through the researcher's experience of it, although a variety of techniques are employed to bring the researcher closer to the "essence" or "existential reality" of the research subject.

The importance of this approach and its appeal to environmental design is that the phenomenological methodology includes intuitive and experiential data in research design and analysis, and accommodates a transactional world view. Phenomenological approaches validate the designer's "natural" feel for the place as part of the research endeavor; however, there is concern among some researchers that the methods of phenomenology might be adopted without a full understanding of their rigorous application or limitations. Phenomenological methodologies set out to correct the overly positivist position of contemporary social science through the critique of the idea that objects can be analyzed separately from the person who is doing the analyzing or that an object can be perceived without the involvement of the perceiver. In the area of qualitative methodologies this position is relevant because of the almost total reliance on the researcher as the data collection instrument.

Seamon's contribution to the application of phenomenology to environment–behavior research has evolved from his background in social geography (Seamon, 1980a; see Chap. 1 in this volume). His work is often philosophical and

conceptual, identifying the contributions of phenomenology to environmental psychology (1982) and exploring the epistemological implications of this approach (1984b). A recent article applies Heidegger's notion of "dwelling" to an interpretation of Fathy's *Architecture for the Poor* (Seamon 1984a). In his analysis, "*dwelling*—the process through which people make their place of existence a home" (Seamon, 1984a, p. 43) is explored and the case of Gourna presented as a successfully designed example.

Another example of the application of the phenomenological methodology encompasses the current works of Richardson (1974, 1980, 1982), an anthropologist who has been exploring the meaning of the *plaza* and the market in Cartago, Costa Rica. By combining place-centered ethnography, observation, casual conversation, and archival research, Richardson has developed complex cultural categories which express the dimensions of the Costa Rican cultural world which are captured and encoded in the environment, and experienced in that place. Richardson (1980) suggests that the definition of any situation is based on (a) the preliminary definition, (b) the behavior that occurs in that situation, and (c) the image or images of the place. In his interpretation of two religious environments, the Southern Baptist church and the Catholic *iglesia*, he demonstrates that detailed, experiential observation can capture the difference of the "essence" of a place, as well as fundamental aspects of values, beliefs, and culture (Richardson, 1984a).

The phenomenological methodology adds an experiential dimension to qualitative research which incorporates emotional and personal data into the study of place. The importance of this approach is its resolution of the objective–subjective dichotomy which plagues social science, through the integration of data perceived by and experienced in the body of the researcher. Phenomenological approaches offer an alternative to researchers who are concerned about the "artificiality" or "inauthenticity" of positivist and object-oriented methods.

## Comparative Historical Methodologies

The inclusion of comparative historical methodologies in this chapter is more of a reminder than a complete exploration of this approach and its methodological implications. Both comparative and historical research in the environment, behavior, and design field has been very popular and frequently applied to topics in vernacular architecture, house form and function, and cultural landscape analysis. Some mention of the qualitative aspects of this methodology are included here because of the interpretive and holistic attributes of this type of research design and analysis.

Comparative historical research studies attempt to locate a particular type of built form within its cultural, historical, and political context. The emphasis is on the contextual evolution of the structure and function of the designed form



in order to explicate how the form reflects social, political, and cultural ideals and norms. The methods rely on the availability of documents which describe the built environment of the past as well as records which relate the social and political climate to that period. This approach derives from the study of social history and shares both the strengths of an ethnohistorical perspective and the limitations imposed by scarce documentation. The cultural meaning of the artifact is highlighted in these studies based on the underlying assumption that "the best points of entry in an attempt to penetrate an alien culture can be those where it seems to be most opaque. When you realize that you are not getting something—a joke, a proverb, a ceremony—that is particularly meaningful to the natives you can see where to grasp a foreign system of meaning in order to unravel it" (Darton, 1984, p. 78).

The works of Hayden (1981, 1984), King (1980), Lawrence (1982), Margolies (1976), and Wright (1980, 1981) each explore an aspect of cross-cultural house design. Hayden (1981, 1984) and Wright (1980, 1981) are concerned with the sociopolitical and cultural meaning of domestic architecture in the United States, and particularly the design of the suburban, single family dwelling. Their research is a feminist critique of the "American dream" which isolates women in their "domestic factories" and symbolically encodes cultural attitudes toward women's work in the design and separation of the suburban home. The method relies on archival, comparative research and content analysis of the results. The interpretation and explication of the data utilize contextual analyses of the political and cultural climate, however, as well as interpretive studies or architectural intention in the execution of designs.

Lawrence (1982), Margolies (1976), and King (1980, 1984) combine cross-cultural and historical analysis to interpret changes in the use of domestic space over time. Lawrence's study employs a structural analysis of space in order to determine the influence of cultural factors upon the meaning and use of domestic space in England and Australia. He compares the evolution of the kitchen in these two cultures in terms of its function, design, and position within the overall house structure. He concludes that the difference in the location and meaning of kitchen derive from their original location with respect to the house and the tasks that were initially performed in this section of the house. Further he argues that contemporary meanings are dependent on the historical context.

Margolies (1976) does not interpret the meaning of the peasant farmhouse in Venezuela, but examines the evolution and continuity of the farmhouse as evidence of the degree of social change which has occurred in the countryside. The uniformity of design, and persistance of form, building materials, and structural detailing, suggests that the farmhouse embodies many of the core cultural attributes of Venezuelan peasant societies. Contemporary, popular architecture in Venezuela found in the cities and increasingly in the rural areas is beginning to change in response to urbanization and modernization. These changes can be

interpreted with what Gasparini and Margolies (1984) have called the "historical-anthropological focus" which analyzes the function of popular architecture in terms of its cultural significance. King (1980) utilizes these same principles employing an analysis of time, space, and culture in order to understand the development of the vacation home.

It is difficult to draw a line between comparative historical approaches and ethnographic approaches to historical materials; in both cases the historical data are treated within the cultural context as the historical events were observed and recorded by the author. The best materials, therefore, are diaries, letters, and reported accounts of events which can be placed in their specific historical context. Darton (1984) has been the most successful in applying this "ethnographic" reading of history.

## Ethnographic Methodologies

Two senior researchers, Amos Rapoport (1969, 1976, 1977, 1982) and Irwin Altman (Altman & Chemers, 1980; Altman, Rapoport, & Wohlwill, 1980) have provided the framework for the use of ethnographic methodologies in environment, behavior, and design research. Important applications of this cross-cultural framework include the cultural interpretation of vernacular architecture (Lawrence, 1983; Mazumdar & Mazumdar, 1984), cultural studies of specialized housing strategies of tribal and nomadic societies (Bernus & Centlivres-Demont, 1982; Centlivres-Demont, 1982; Prussin, 1984), cultural analyses of self-help housing (Hardie, 1983; Low, 1987), house form and settlement pattern (Hardie, 1980; Lobo, 1983), and the concepts of "supportive design" (Rapoport, 1983a), and "culturally appropriate design" (Low, 1985).

The development of a cross-cultural framework in environment–behavior research, however, has not dramatically increased the number of studies which employ ethnography as a methodology and participant observation as the predominant field method. Ethnography, the process or product of describing a culture, has been seen as an unwieldly and time-consuming methodology, appropriate for anthropologists who can afford to spend a year in the field. Participant observation, the field method that is most often associated with ethnography, is difficult to use in situations where there is not enough time to establish adequate rapport, or where participant roles are unavailable to the researcher. Recent advances in applied anthropology (Chambers, 1985), however, have redefined the limits of ethnography to include approaches which are appropriate and useful to environment–behavior problems (Low 1981a; Perin, 1977), and environmental design researchers offer summer courses on intercultural communication which include ethnographic materials and techniques (Stea, 1985).

Ethnographic methodologies in environmental design research utilize three styles of research design and analysis: (a) classical ethnographic studies of environments that provide clues to behavior–environment-design problems (Burkhart, 1981; Merry, 1981; Perin 1977), (b) studies of the ritual and social structural meaning of space (Bourdieu, 1973; Gilmore, 1977; Goodfriend, 1984; Moore, 1981; Paul, 1976; Saile, 1977) and (c) interpretive studies of landscape meaning and taste culture (Ducan 1976; Duncan & Duncan, 1984). All three kinds of analysis rely on ethnographic fieldwork and anthropological concepts of symbol, social structure, social organization, and ritual. Some of the findings are only indirectly applicable to environmental design issues; their significance lies in the fact that these studies suggest that ethnography, as a traditional qualitative methodology, has applications for environmental design research that are not being fully utilized.



A classical ethnography describes a culture through a detailed analysis of a local community where the ethnographer lives and participates in daily life. Through the experience of living in the community, interviewing residents, observing public behavior, events, and ceremonies, and ultimately learning how to behave appropriately as a community member, the ethnographer constructs an image of local values, beliefs, norms, and world view that makes up community culture. This image, the ethnographic description, is part science and part interpretation in that the data are based on both the researcher's experience and systematic verification. Ethnographers often report that their greatest insights into culture come from their own efforts to "be a native" (Agar, 1980b). These breakthroughs into the rules governing culturally appropriate behavior are then checked through repeated observation, interviewing, and the emergence and revision of analytic categories (Glaser & Strauss, 1967). Agar (1985) describes the ethnographic process of analysis as a series of attempts at fitting strips of social action into schemata which explain and give meaning to that action. The importance of such a methodology is that total immersion brings the reward of an understanding of the internal logic of a cultural system, and that the system itself is seen as whole and complete. The difference between the phenomenological and ethnographic approaches is both philosophical and methodological; for the ethnographer the goal is replicable understanding of another culture, rather than a reflection of self in a cultural setting.

For environment–behavior research this means that the researcher often has the ability to accurately predict local response to design and planning proposals, and can judge more complex alternatives through this systematic cultural understanding. Partial interpretations, such as those derived from surveys and questionnaires, sometimes gloss over important distinctions for a particular cultural group. Although the method is time-consuming, it yields a thorough, integrated, and culturally coherent interpretation of environment–behavior events. Ethnographers who have produced important findings for environmental design issues are Merry (1981) who explored the different ways people in a high-crime environment think and talk about danger in a multiethnic, high-rise urban

neighborhood; Burkhart (1981) who evaluated the planning and design objectives of Columbia, Maryland, in terms of racial and class integration; and Perin (1977) who analyzed the meaning of land-use controls in Philadelphia and Houston.

Ethnographic methodologies also are employed in analyses of the ritual and symbolic meaning of space. Studies of the meaning encoded in the design and symbolic order of a house (Bourdieu, 1973), in the rituals of making a house (Saile, 1977), in the temple and public architecture of religious institutions (Moore, 1981; Paul, 1976), and in the social organization of urban form (Gilmore, 1977; Goodfriend, 1984) apply ethnographic interpretations of local culture to specific theoretical and symbolic issues. The development of concepts of sacred space and sacred places (Fernandez, 1984; Hester, 1985) and structuralist analyses of the spatial expression of ritual process (Amiel, 1986; Doxtater, 1984, 1985) also employ ethnographic methods of data gathering, but are more concerned with the application of anthropological theory to the study of spatial arrangements of built form. Duncan (1976) and Duncan and Duncan (1984) broaden this cultural interpretation to demonstrate how residential landscapes communicate social status and position in the social world. Their research presents an ethnographic methodology which links social identity and taste culture with behavior in the landscape and the social structural dimensions of spatial arrangements. These analyses illustrate how the built environment and spatial relations reflect and influence culture, and reiterate that cultural-spatial analysis is an untapped source of social and cultural data for environmental design.

## Discourse Analysis

The concept of discourse has emerged on the intellectual scene from literary analysis and philosophy as a critical methodology for understanding knowledge and knowledge creation. Discourse analysis considers the object of study, the text, the context, and the interpretation as one continuous domain. Richardson uses the analogy of language to explain a discourse model of culture.

> Like language, discourse is made up of words and so partakes of the ideational, symbol quality of language. Unlike language, however, discourse exists in social experience. In discourse, there is always a speaker and an audience. I speak to you, and you to me. Furthermore, when we speak to one another, we are speaking about something; there is a topic to our talking. Indeed, to speak is to create an object of conversation. Thus, discourse includes both social experience, the reciprocal acts of speaking and being spoken to, and the emergent product of that speaking, the object of conversation. (Richardson, 1984b, p. 63–64)

The use of discourse analysis in environment–behavior studies has been limited to critiques of current theories and methodologies. The few studies which employ this new methodology have criticized the use of the terms such as "environment" or "dwelling" as knowledge domains (Kemeny, 1984; Teymur, 1982), and have reformulated the relationship of context and behavior into a model of social action (Duncan, 1985). Literary analysis of the landscape, previously mentioned in this chapter, also derives from this critical tradition. The importance of discourse analysis is that it reorients the researcher; the object of study is not abstracted from its meaning context but emerges from the interconnections of the historical, cultural, social, and physical setting of the research. The research design and methods are not clearly defined yet, but empirical research applications, such as Duncan's (1985) work in Kandy, Sri Lanka, utilize both ethnographic field methods and archival ethnohistorical research to achieve a complete "reading" of a cultural setting.



One application of discourse analysis has been the redefinition of environment–behavior studies as an "environmental discourse" (Teymur, 1982). This discourse includes discourses in architecture, planning, ecology, industrial design, social sciences, and everyday life. Teymur identifies the epistemological structure of environmental discourse as a "subject–object" couple which is produced by a set of "mechanisms" which characterize the relations of the object–subject as well as the relations of the environmental discourse with other discourses. His analysis suggests that the claims of "scientificity" for environmental discourse are questionable when the focus of research is described as a series of related objects, structures, and mechanisms; in this sense, the discourse analysis critiques the logic of considering environment–behavior study as a scientific domain rather than a system of meanings and relationships.

Kemeny (1984) also is concerned with the critique of accepted definitions which identify housing research as "equally as scientific" or as researchable as other academic fields. His discourse analysis of the concept of "dwelling" and the definition of "household" suggests that the definition of these research categories is embedded in our assumptions about social life and cultural norms. Household distinctions and dwelling types are social constructions created for various statistical purposes and may not reflect any particular "real world" counterparts. He concludes that housing research is "essentially a social process similar to research in any other discipline or science" (1984, p. 162) and that "scientific research is essentially a social process during which a view of reality is built up, through the manufacture of data, the assembling of concepts, the argumentation of a thesis, and the attempts to push statements towards more fact-like status" (1984, p. 162). His solution, similar to Teymur's, is that the researcher should exercise a degree of reflexivity in order to be more aware of forces which influence the development of concepts and their research field (Kemeny, 1982).

Duncan applies discourse analysis indirectly in his discussion of social texts. He argues that there are three types of texts: "written texts composed of official documents which structure action, oral texts which shape to a large degree the popular consciousness of individuals, and landscape texts which

represent the transformations of the former two into the medium of the concrete" (1985, p. 15). The landscape, thus, can be interpreted or "read" as a repository of symbols of order and social relationships. In a sense, the landscape, and its interaction with the written and oral materials, are a discourse on the symbolic system which relates the individual and the social structure.

Discourse analysis is still a developing methodology and the impact of its methods and form of analysis cannot be adequately evaluated. The intent is to reconceive the categories and processes that define environment, behavior, and design research. If the methodology becomes more popular it could revolutionize the conceptual system and the frame of reference for environment–behavior research.

## QUALITATIVE METHODOLOGIES AND THEIR USEFULNESS FOR ENVIRONMENT, BEHAVIOR, AND DESIGN

The qualitative methodologies reviewed vary in terms of their appropriateness for different kinds of problems, scale of study, and degree of researcher involvement (Table 1). Although these determinations are not fixed and may change over time, they provide a preliminary framework for the use of qualitative methodologies in environment, behavior, and design research. The methodologies are evaluated on the scale of the investigation—individual, group, or societal levels; degree of researcher involvement—minimal, moderate, and total; and the kind of problem associated with the methodology—cultural, behavioral, experiential, and definitional. The utility of each methodology is derived from

TABLE 1. Qualitative Methodologies: Research Appropriateness

| Methodology | Scale | Involvement | Research problem |
|---|---|---|---|
| Cognitive | group<br>individual | minimal | cultural rules, ideals, perceptions |
| Observational | individual<br>group | minimal | behavioral, observable actions and activity sites |
| Phenomenological | individual | total | experiential, place, event |
| Historical | societal | minimal | cultural-social variation |
| Ethnographic | group | moderate | cultural motivations, norms, intentions, symbols and meanings |
| Discourse | societal | moderate | definitional, cultural interpretation |



the researchers' need to answer questions at a specific scale, in a time frame which controls the degree of involvement, and within the domain of a particular research problem. The application criteria derive from these same decision variables.

Another way to organize the qualitative methodologies and the previous discussion is to identify the kind of research design, methods or techniques of data collection, and form of analysis most often associated with each methodological approach (Table 2). The methodologies are categorized in terms of design by whether the research evolved from the testing of hypotheses, from observation of phenomena in a particular setting and hypothesis generation, from a general problem orientation, or from an experiential or critical orientation to the research setting. The methods and techniques range from unstructured interviews and observation to linguistically based protocols, and the form of analysis ranges from content analysis of archival materials, to mapping, film viewing, and ethnographic typologies. Advances in research design, method, and analysis are indicated by the **boldface** type.

## METHODOLOGIES FOR THE FUTURE

The qualitative methodologies reviewed are currently at the cutting edge of research in the environment, behavior, and design field. The approaches have been described, discussed, and placed in an applications framework. The future

TABLE 2. Qualitative Methodologies: Research Design, Data Collection Method, and Form of Analysis

| Methodology | Research design | Method of data collection | Analysis |
|---|---|---|---|
| Cognitive | hypothesis testing | **linguistic**, mapping | **taxonomies**, typologies |
| Observational | hypothesis generating or hypothesis testing | observation, filming, **archaeological** feature | pattern identification, **material culture associations** |
| Phenomenological | sequential experience | experiential, comparison | intuitive, **relational** |
| Historical | hypothesis testing | archival documents | content analysis |
| Ethnographic | hypothesis generating or **problem specific** | observation, interviewing, participant observation | typologies, content analysis, **pattern identification** |
| Discourse | **critical** | **reading of "texts"** | content analysis, **dialectic relations** |

of qualitative research will evolve out of these methodologies and through the influence of research methods in related fields. Based on the conclusions of the previous section, however, I believe that there are three discernible directions: (a) integrative methodologies, (b) methods application packages, and (c) new theory which will stimulate the development of new methodologies.

An example of an integrative methodology is ethnoarchaeology which combines ethnographic, observational, and archaeological procedures to address the complex interrelationship of material culture, behavior, and activity areas. This combination allows for more complex interpretations of existing data and suggests new research questions. Other integrative methodologies, such as ethnohistory, structuration analysis, and ethological studies of human behavior, also offer new findings through the application of interdisciplinary approaches.

Methods packages which address the planning and design needs of practitioners is another critical area of qualitative methods development. Practitioners have been hesitant to adopt qualitative research partially because of their lack of faith in "soft" approaches, but also because of the confusion and difficulty of utilizing research designs, methods, and analyses that are process-oriented and undefined. A solution to this underutilization would be the development of qualitative research method packages which address specific problems such as programming or postoccupancy analysis, and which describe and explain the application of each method (Sims, 1978).

Finally, the environment, behavior, and design field needs new theory which will link these three dimensions to time, space, and cultural images. The new theory should draw upon the lessons of reflexive anthropology, the holism of phenomenology, the critique of discourse analysis, and the precision of cognitive studies. The objective is to develop a theory that would treat the complex research subject of environmental design with accuracy, humanism, and holism, and offer both interpretations and solutions.

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