

ARCHITECTURAL RESEARCH METHODS

SECOND EDITION

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Chapter 4

What's Your Purpose? From Theory Building to Design Application

4.1 INTRODUCTION

Having explored the complementary and interwoven relationship between research and design in Chapter 2, we now consider the challenge of turning a general topic or interest area into an actual research “design.” (By design here we mean the conceptual framework of research strategy and tactics that comprise the rationale for pursuing the answers to a researcher’s targeted research questions.) This is a multi-step and highly iterative process, which will be outlined in the course of the next two chapters. In this chapter, we argue that the first step in this process necessarily entails a thoughtful consideration of the multiple layers of *purpose* underlying any research study. These purposes have to do with *both* the contextual backdrop of the study *and* the goals of the research itself. The contextual purposes answer questions such as: What motivates this research? Who is the audience? What are the anticipated impacts, or contributions, of the outcomes of the research? Paired with these contextual questions are questions related to the theoretical purposes for the research. Is it to create new theory? Or does it expand an existing theory either by refining it or applying it to new venues? And if the project is to culminate in a design, how does that relate to the use of theory? It should be clear that both sets of questions can be and are linked in a variety of ways (see Figure 4.1).

In this chapter, we address contextual and research purposes and conclude with a section on application (various ways research purposes are operationalized in research approaches). Chapter 5 will address research questions more explicitly, and how literature review plays an important role in determining these questions.

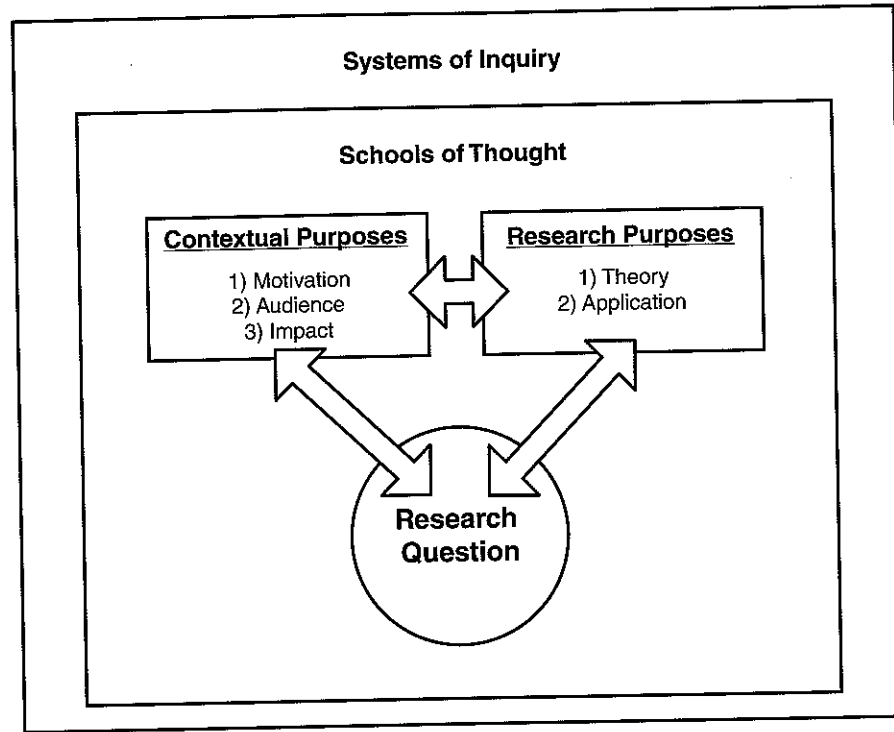


Figure 4.1 The research questions of a study are intimately related to external factors motivating the study (contextual purposes) as well as the theoretical framework and hoped-for applications (research purposes) of the study. Both domains are in turn framed by the researcher's commitment to a school of thought and a system of inquiry. Diagram courtesy of Linda Groat.

4.2 CONTEXTUAL PURPOSES

A considerable body of literature on research procedures would suggest that the first step in designing a study is to conceptualize a general area of interest into a research question, or set of research questions. (Again, the formulation of research questions is the topic of Chapter 5.) But turning a general interest or topic area into the research question (or questions) that will eventually frame the entire research project entails a careful consideration of one's purpose. In other words, in order to transform a general topic into a successful research project, one must attend to first principles and ask: *why am I doing this research?* As Newman et al., the authors of an insightful chapter on research methods, explain:

The research question alone will not produce links to methods unless the question is thought through seriously, as well as iteratively, and becomes reflective of purpose. In other words, . . . the research question is necessary but not sufficient to determine methodology. By considering the question and purpose iteratively, one can get to a design or set of designs that more clearly reflect the *intent* [our emphasis] of the question.¹

A further advantage of clarifying one's purposes at the outset of the research design process is that the legitimacy and eventual impact of research are likely to be strengthened by the conceptual consistency between (1) the stated research purposes, (2) the research question(s), and (3) methodological design. As Newman et al. put it: "Strong consistency grounds the research findings and helps ensure that audiences have confidence in the findings and implications of the research studies."² This is true whether the audience includes fellow students, faculty colleagues, clients, design or policy decision makers, or the general public.

Serious consideration of the various contextual purposes of any research project will inevitably entail a set of interconnected questions. Among the most important questions are: (1) What is the motivation for this research? (2) Who is the audience for the study? and (3) What is the potential or intended impact of this research once it is completed?

In the following chapter subsections, we examine in detail how these foundational questions begin to frame and define the context of a research project. And although we will discuss these questions in sequence, we assume that in practice it will be necessary to cycle back and forth between these questions. So, for example, answering question 2 may result in rethinking the answer to question 1, and possibly lead to a reconsideration of the scope and nature of the original topic area.

4.2.1 What Are the Motivations for This Research?

To begin, the answer to the question "what is the purpose of this research project?" will necessarily be influenced by the context in which the study is being conducted. For instance, a student in either a research studio or research methods course may well be asked to conduct an individual study or group research project. Or, in the context of a professional practice, a designer may be responsible for pursuing a research question entailed in some aspect of a specific design project, and/or at the behest of a client. All of these circumstances define some sort of *practical* mandate that dictates or constrains the topic or scope of the research.

However, some researchers may be situated in contexts where it is possible, perhaps encouraged, to pursue a topic of strong *personal interest*. For many students in either research master's or doctoral programs, this may well be the case. And many, perhaps most, academic faculty are deeply motivated to pursue areas of inquiry that are of significant personal interest, often supported by either university or external funding. Similarly, depending on the particular nature of some design firms, an increasing number of professionals maintain research units within or in association with their design firms. Often, these endeavors enable the practitioners to pursue research that will enhance the knowledge base for specific building types, lead to product patents, or identify innovative uses of emerging technologies.

In other words, the reason(s) for taking on any given research project may be either highly personal or very practical. In many cases, however, the purposes of a particular study may incorporate both personal and practical concerns, either in equal measure or perhaps with more emphasis on one versus the other.³

4.2.2 Who Is the Audience?

Although the identity of the study's eventual audience may be implicitly suggested by the personal and/or practical reasons for undertaking the research project, it is nevertheless important to clarify explicitly who might be expected to be interested in or influenced by the proposed study (see Figure 4.2).

At one extreme, at least initially, some researchers envision an audience of one—themselves. For instance, a student may decide to take on an independent study project on a topic of great personal interest, such as tracing the morphological development of a small town in the Pyrenees that she visited during a semester abroad. However, if the student sees the benefit of working with a faculty advisor and/or receiving academic credit, then there is at least an audience of two. And if the research project is done in the context of a larger class, then the class as a whole is also an audience with respect to class discussions or project presentations.

Taking this situation a bit more broadly, an additional number of faculty and students may be invited as an audience for the class presentations. So, although the student may have initiated the project as a personal quest, the concept for the project might well be expanded. In this case, the student may need to consider how the morphological analyses might be influenced by and contribute to an understanding of the larger set of class projects. If the student's project is the only morphological analysis within the class, the student may want to clarify the benefits of such analyses in general, beyond the specifics of the particular town studied. If, however, everyone in the class is researching the morphologies of different sites and towns,

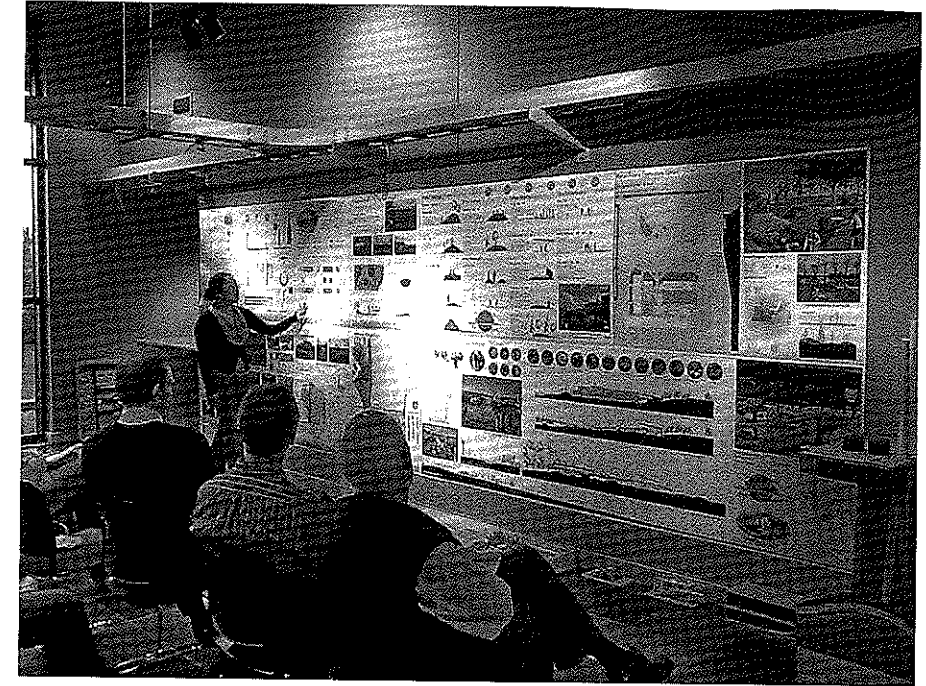


Figure 4.2 Any research, whether it culminates in a written work or a design presentation, must take into consideration the intended audience. The project shown here, “Children’s health and built environment: Regreening the grounds of an elementary school,” is described in the next chapter (Box 5.4). Photograph courtesy of David Wang.

then the student may want to focus on the similarities and differences of her analysis in relation to the entire set of sites.

Many examples of research in architectural practice may also have relatively small audiences. Often, the architect is expected by the client to conduct one or several episodes of research to resolve practical problems for a specific project. In the early years of Groat’s career, the design of a 2,000-worker campus for a major corporation entailed several discrete segments of research, including simulation of the curtain wall system in earthquake conditions due to the presence on the site of a fault line; materials research for the application of long-lasting color to the aluminum cladding; and user research involving full-scale office mock-ups for development of a new purpose-built furniture system. Although the actual design of the building was widely disseminated in the architectural press, the research components of the project were proprietary and disclosed only to the client representatives.⁴

Ed Shriver, principal at Strada Architects in Pittsburgh, reports a good example of research in a practice context that began with a focused audience (the client) and resulted in a larger audience.⁵ Initially commissioned by a major tenant to design commercial space in the city, Shriver developed lot maps of the commercial establishments in the blocks surrounding the site of the project. These patterns stirred his interest to index them to various sorts of rental, traffic, and demographic data to see if relationships could be discerned that might be of use to commercial tenants in more general terms. Shriver's interest resulted in a subsequent (2011) AIA Upjohn Applied Research Grant, as he teamed with architectural researchers from Carnegie-Mellon University to further study how a variety of data could inform commercial patterns in several urban locations in the Pittsburgh area.⁶

At the other end of the spectrum, many notable research studies are undertaken with the intention of addressing the interests of multiple and/or large audiences. This was certainly the case when Oscar Newman conducted his classic study of the relationship between crime and the formal configuration of low-income public housing projects prevalent at the time.⁷ As a result of his research, Newman and his team were able to demonstrate that less crime occurred in mid-rise housing projects than in high-rise housing. Details of the methodological aspects of this research are presented in Chapter 8, but for now the important point concerns the broad and multiple audiences addressed by Newman's work. Because there were already major concerns among policy makers, law enforcement agencies, and the public about the suitability of the high-rise typology for low-income populations, Newman's research was funded by a grant from the U.S. Department of Justice. After three years of study, the resulting book was widely disseminated to planners and urban policy makers. In addition, the study was also of much interest to architects, especially so since a number of notable architects of the time had designed public housing projects. As a consequence, excerpts of Newman's study were also published in one of the premier architectural journals at the time; for this publication, the coverage included discussion of specific design features that would reinforce residents' capacity to notice and mitigate criminal activity.⁸

Most research studies, however, are likely to address audiences of a more intermediate scope and complexity. In an academic setting, students in research master's or doctoral programs, as well as faculty, are likely to pursue research that addresses a relatively focused scope. In other words, the typical audiences for such academy-based research include some combination of specialty area audiences through peer-reviewed journals or conferences, discipline-wide audiences, and sometimes interdisciplinary audiences.

Research is occasionally published in professional architectural or other design magazines, but more commonly is segregated into a research awards issue. One

example of a research study that addressed both academic and professional audiences was Groat's study of contextual design principles. The purpose of the research was to elucidate laypeople's conceptualization of contextual compatibility through their responses to architectural exemplars representing several distinct contextual design strategies theorized at the time. A discussion of the compositional design qualities preferred by laypeople was initially published in a special issue on context and change in one of the professional magazines,⁹ and, subsequently, articles that focused on methodological and theoretical issues of environmental cognition were published in scholarly venues.¹⁰

4.2.3 What Is the Potential or Likely Impact of This Research?

Finally, the third dimension of contextual purposes in research is its imagined impact. One way to put the issue of impact in direct terms for each researcher is to pose the question: What do I hope to accomplish by doing this research? And more particularly: Will my audience(s) come to think differently about the topic of my research? Or will people be more inclined to take action regarding a particular situation? Perhaps with respect to a design process, or designed environment? As the next chapter addresses, the likely outcomes of a proposed research design should be envisioned from the very beginning. It is one factor affecting the research framework itself. We now turn our attention to this framework.

BOX 4.1

Contextual Purposes: Motivation, Audience, Impact

Topic: My dissertation examines questions of space and social meaning in two significant post-1968 European modes of architectural practice: the work of Belgian architect-writer Lucien Kroll and Swiss-French architect-theorist Bernard Tschumi.^a The research draws connections between the spatial writings of French sociologist Henri Lefebvre and the design work of Kroll and Tschumi as they relate to politics of space, agency, and everyday life. The study investigates two seminal works: Lucien Kroll's *La Maison Médicalé (La Mémé)*; Figure 4.3) in Woluwe-Saint-Lambert,

^a Kush Patel, *Practicing Lefebvre: How Ideas of Social Space Are Realized in the Works of Lucien Kroll and Bernard Tschumi*, PhD dissertation, University of Michigan, Ann Arbor, 2013.

(Continued)



Figure 4.3 La Maison Médicale (La Mémé) in Woluwe-Saint-Lambert, Brussels: Lucien Kroll designed the exterior as a framework such that students could create and change their own façade by choosing among its various finishes, sizes, and removable panels. Image (and text) courtesy of Kush Patel, PhD student, University of Michigan Taubman College of Architecture and Urban Planning.

Brussels, and Bernard Tschumi's Parc de la Villette in Paris, and evaluates their respective approaches to engaging wider social meanings against Lefebvre's spatial framework. Through literary analysis, the dissertation brings to light the social issues at stake in each of the two projects under study. Through fieldwork and qualitative study, the research offers an empirical basis to a broad philosophical discourse on social space.

Motivation: Despite the ebb and flow of different ideologies, for many academics and practitioners of architecture, the concept of space and its relationship with society has remained fundamental to the development of architectural knowledge. This is because space and its social meaning is an enduring construct around which the knowledge of architecture is formed and advanced. Hence I have been motivated to examine the

limits and potentials of architectural frameworks that engage social and political dimensions of space. I am interested in investigating architectural approaches to producing spatial conditions that speak to diverse social meanings.

Audience: The primary audience of my research is my interdisciplinary dissertation committee, comprising members from specialty areas within the discipline, namely, architectural design, environment-behavior studies, and architecture history and theory, as well as members specializing in urban planning theory and continental philosophy. My larger aim is to reach a wider audience of socially conscious and civic-minded design theorists and practitioners. By discussing the social story integral to each case study, I hope to provide an alternative reading of leading works of architecture in ways that help outline the material limits and potentials of social and political mindedness. This, I expect, will speak to the intellectual interests of both academics and designers.

Impact: For the discipline and practice of architecture, my research will offer a way to reconsider the social dimensions of space by addressing questions of voice and agency, and going beyond the commonly held view of space as a formally designed object. Additionally, by reintroducing social and political meanings of space into the processes and products of architectural work, my research will provide a rethinking of the boundaries of socially motivated design thinking and practice. Throughout, one of the goals of this dissertation is to develop Lefebvre's critical theory of space in directions that are useful for architecture.

4.3 CATEGORIES OF THEORY

As shown in Figure 4.1, the second category of purposes concerns those that are inherent or intended in the nature of the research itself. In these terms, we can identify a spectrum of goals—from those that are concerned with a contribution to theory building to those that emphasize application in specific contexts. Although these purposes may loosely correspond to the potential impact of the study for various audiences as discussed earlier, the intent here is to highlight how the goals of application and/or theory serve as threads that are woven through the research design of the entire research project. In this section, we address aspects of theory that affect developing a research design. In the next section, we address matters of application. Taken together, theory and application can serve as the starting points as well as the ending points of research. For example, a researcher may frame the goal of his/her study as a way to test how a particular theory may serve to explain a particular environmental phenomenon under investigation. The theory in question

might have to do with environmental cognition, principles of urban centers as heat islands, or the role of a particular social theory in the design strategies of particular architects. Alternatively, a researcher may choose to focus primarily on the identification and significance of particular environmental qualities and features as they might be applied to specific designed contexts.

The word *theory* comes from the Greek *theoria*, which means to behold, to contemplate, from a removed distance. This term is then contrasted with the Greek *praxis*, which has more to do with action or activity. There is, then, a contrast between the contemplative quality of *theoria*, in which we stand apart from the object we are contemplating, and *praxis*, in which we are engaged actively with the object. Implicit in this contrast is the fact that *theoria*/contemplation is something that precedes *praxis*/action, in the sense that the former informs the latter. Because we have *theoria*, we know how to *praxis*. But this leads to the further observation that *theoria* and *praxis* are not simply sequential to each other; instead, they relate cyclically. Out of our *praxis* informed by *theoria*, we gain new insights for subsequent *theoria*; so the process is ongoing.

It should be clear that *theoria/praxis* relate intimately to the contextual purposes just addressed. For instance, if the intended audience is largely academics, *theoria* can possibly be both the beginning and ending points of a research design (we provide examples in the next section). In this instance, *theoria* is likely to be systematic, approaching the level of philosophical discourse, while the *praxis* aspect might be in the form of recommendations at the conclusion. But if the intended outcome is a physical building, use of *theoria* is likely to be episodic, with care taken to select the correct theoretical venue in which to situate justifications for design action (*praxis*). Or research can be undertaken for specific applications in concrete venues; the firm Carpmann Grant Associates, for example, applies wayfinding theory to physical design in case-specific venues, as we note later in this chapter.

We begin our consideration of theory by simply referring to the common definition of the word found in the Merriam-Webster Dictionary:

1. The analysis of a set of facts in their relation to one another.
2. Abstract thought: speculation.
3. The general or abstract principles of a body of facts, a science, or an art (for example: music theory).
4. a) A belief, policy, or procedure proposed or followed as the basis of action; an ideal or hypothetical set of facts, principles, or circumstances.
5. Plausible or scientifically acceptable general principle or body of principles offered to explain phenomena.

6. a) A hypothesis assumed for the sake of argument or investigation; b) an unproved assumption: conjecture; c) body of theorems presenting a concise systematic view of a subject.

This definition is helpful because its various shades of meaning can be grouped under three general headings for our purposes, as shown in Figure 4.4.

These columns are not hermetically sealed one from the other (i.e., there are overlaps in what they mean), but they offer a useful heuristic for comprehending theory. By explanatory theory we generally mean not only theories that emphasize prediction or causality, but also theories that illuminate the role of social processes and interpretation (see Chapter 3). Normative theory, as its name implies, are theories that explain and describe conventional actions based upon a “norm”; examples are given later in this chapter. Polemical theory is an enormously relevant body of theory in motivating subjective affirmations of architectural design; hence, we term it here design-polemical theory. As the Merriam-Webster definition says, these theories are inherently abstract and speculative. But if they do their job, they produce what rhetoricians Chaim Perelman and L. Olbrechts-Tyteca call “the adherence of minds”¹¹; again, examples are provided later. Finally, the definitions under the columns in Figure 4.4 are broad descriptions of theory that apply to all three shades of meaning. We now summarize these types of theory.

Explanatory Theory	Normative Theory	Design-Polemical Theory
(5) Plausible or scientifically acceptable general principle or body of principles offered to explain phenomena [we expand this definition in this chapter]	(4) A belief, policy, or procedure proposed or followed as the basis of action; an ideal or hypothetical set of facts, principles, or circumstances	(2) Abstract thought: speculation
(1) The analysis of a set of facts in their relation to one another		
(3) The general or abstract principles of a body of facts, a science, or an art (for example: music theory)		
(6) a) A hypothesis assumed for the sake of argument or investigation; b) an unproved assumption, conjecture; c) body of theorems presenting a concise systematic view of a subject		

Figure 4.4 Merriam-Webster (numbered) definitions of “theory” arranged under three headings. The definitions below the columns apply to theory in all three of the columns.

4.3.1 Explanatory Theory

Of our three categories, this term probably is the most expansive. After all, all theories explain and describe their object. Here we use the term *explanatory* to broaden the term beyond positivism and/or postpositivism. (For clarity on this matter, refer to our thoughts about the spectrum of possible systems of inquiry in Chapter 3.)

As for positivist outlooks, here is a simple example. Consider a piece of framing lumber, say, a 2" × 8" Douglas fir joist, very typically used to build floors in residential construction in the United States. We know so much about the behavior of this material that we are confident that a 2" × 8" in Boston and its 2" × 8" counterpart in Los Angeles will behave in the same way, other factors being equal. If loaded in the same fashion, the resulting behaviors in both cases will be statistically indistinguishable. Many materials used to construct houses depend on this kind of theoretical knowledge, for instance, the U-value of wall insulation, the dependability of coatings on electrical wiring, the bearing strength of concrete foundations. We do not want any significant variations in how these materials will perform. Now, theories explaining and describing the behavior of these materials relate more comfortably to certain kinds of research strategies, experimental research being the most obvious (see Chapter 9).

There was a time when "research" was mostly limited to discovery of theories that explain a phenomenon so thoroughly that its behavior can be predicted without significant variance (hence the definition in the first column in Figure 4.4: "plausible or scientifically acceptable general principle or body of principles offered to explain phenomena"). The outlook assuming that all phenomena can be described and explained this way is called positivism. But as noted in previous chapters, research scholarship has become much more inclusive across the spectrum of systems of inquiry.

For instance, in our treatment of history research (Chapter 6), we cite Professor Matthew Cohen's tactic of combining archival data with minute measurements of the San Lorenzo Basilica in Florence to yield a novel explanation of the structure's medieval proportional system; this is an important departure from the received view that San Lorenzo is an exemplar of *Renaissance* proportions. Cohen's is very much an explanatory theory of the formal characteristics of an artifact, namely Brunelleschi's San Lorenzo.¹² (Actually, Cohen's method leads him to propose an alternative attribution for the architect of San Lorenzo, as we explain in Chapter 6; see Box 6.4.)

Finally, consider Herbert Gans's *The Levittowners*, which is an iconic example of *in situ* descriptions and explanations of the life of a particular culture, or cultural

BOX 4.2

"Reconfiguring the User": Framing a New Explanatory Theory

How do designers process information about users? To answer the question, Isil Oygur^a embedded herself in two architectural firms, two industrial design firms, and two interaction design firms (i.e., web site designers). In each, she conducted ethnographic research in how designers interacted with their target users. Oygur drew from three existing theoretical frameworks:

1. Karin Knorr-Cetina's book *Epistemic Cultures*,^b which posits that knowledge construction in cultural contexts depends on machineries of knowledge production.
2. The literature in constructivist learning theory posits that everything we learn is an interpretation of our own experience and prior knowledge in some way. This understanding helped further explain the dynamics of knowledge production.
3. Oygur also referenced Susan Leigh Star and James R. Griesemer's theory of *boundary objects*.^c Boundary objects are conceptual frameworks that fall in between disciplinary domains; they are "malleable" enough to accommodate the epistemic frame of each domain while staying integral to their own essential theoretical makeup. An architectural plan, for example, can be a boundary object: it is understandable to both designer and user, but in different ways.

Here is what Oygur found (see Figure 4.5). User input provided to designers ranges from "given" (e.g., the program document) to "constructed information" (e.g., information from the user that requires interpretation, such as a range of color preferences); from "concrete" (e.g., strictly specified, such as four-year-old kids' attention spans) to "abstract" based on the nature of user information (e.g., personas classified according to Internet usage patterns). As the diagram shows, Oygur mapped these types of input

^a Isil Oygur, *Reconfiguring the User: How Designers Process User Information*, PhD dissertation, Washington State University, May, 2012.

^b Karin Knorr-Cetina, *Epistemic Cultures: How the Sciences Make Knowledge* (Harvard University Press, 1999).

^c Susan Leigh Star and James R. Griesemer, "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907–39," *Social Studies of Science* 19(3) (August 1989): 387–420.

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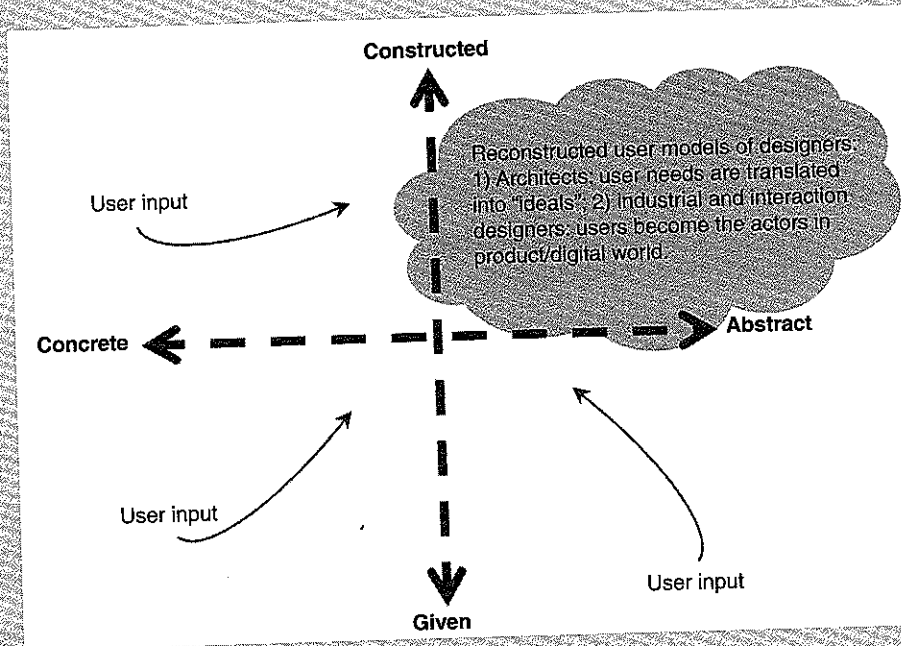


Figure 4.5 Diagram of Isil Oygur's theory of how designers (architects, industrial designers, interaction designers) "reconfigure" the user. Diagram by David Wang as directed by Isil Oygur, based on data collected for her dissertation.

on two axes. She found that no matter what kind of user input comes in, designers tend to "reconstruct user models," and all reconstructed user models fall within the *Abstract/Constructed* quadrant. Architects reconstruct user models that are characterized by "ideals," which are abstractions of "user flow" and "preferred imagery" (e.g., what forms and materials the design should be expressed by). In contrast, industrial designers and interaction designers reconstruct users as a medium central to the proper functioning of the design solution and experience. In all cases, the reconfiguration of the user into an *Abstract/Constructed* phenomenon defines the user knowledge production in design.

context.¹³ Gans embedded himself in Levittown for two years, partaking of the life of the town as one of the residents, albeit journaling his observations and thoughts constantly. The resulting account in his book *The Levittowners* is a description of the multilayered social-cultural interactions of that particular context. Now, we

might say that this kind of *theoria* is predictive in that it stirs confidence that if we were to return to this kind of Levittown (what might be called a "suburban" setting, although today's suburbs are a great deal more varied than Gans's Levittown), we would find the kinds of interactions that Gans found, everything else being equal. But this is not really as germane an "outcome" as the satisfaction of the pure explanation (and description) of what Gans found in that significant artifact of post-World War II America.

4.3.2 Normative Theory

We return to our 2" x 8" Douglas fir example, but now focus our attention on floor joist framing (or wall framing for that matter). In the United States, we space our floor joists and wall studs at one per every 16 inches. This practice is so standard that floor boards and wall boards are fabricated in 4 feet by 8 feet sheets, so that a board's edges exactly match the joist and stud spacings for ease of nailing. Now, if we were to build a house with floor joists spaced 17 inches apart, would the floor collapse? No, it would not. How about spacing them at 18 inches apart? The floor will be "bouncier" but probably still not collapse. How about at spacing joists at 24 inches apart? Well, this is not recommended. But we don't recommend spacing them at 17 inches either, because much more material will be wasted in having to cut the standard-sized floor and wall boards designed to fit 16-inch spacings. And the building inspector will not approve our work if the joists are not spaced at 16 inches. All of this is based on a *culturally accepted* practice of spacing floor joists.

The point here is that we are dealing with a very different kind of theory, one that falls more under the definition of theory in the second column of Figure 4.4: "a belief, policy, or procedure proposed or followed as the basis of action; an ideal or hypothetical set of facts, principles, or circumstances." The theory that describes and explains the praxis of laying joist and stud spacings at 16 inches is a *normative* theory in this sense. The word *norm* or *normal* is embedded in this term, because normative theory describes and explains practices that are so normally accepted that they have become conventional. In fact, one trait of conventionalized practices is that we are not aware they have a theoretical dimension at all; they are simply the ways things are done. And yet embedded in conventional actions are many theoretically assumed factors. Normative theories do not claim strict prediction; for example, if floor joists are spaced 17 inches apart, normative theory says nothing about the floor collapsing. But it does say that extra effort and expense will result, because everybody else involved in building houses—manufacturers, suppliers, builders, regulators—are all working within the conventional practice of 16-inch spacings for floor joists.

Normative theories inform much of what is done in architectural offices. For example, reference to established architectural typologies often sets the pace for design projects (see Figure 4.6).¹⁴ The American Institute of Architects recently established an online resource of “Best Practices” that represent “the collective wisdom of AIA members and related professionals.”¹⁵ The web site links to a wide variety of specific cases that amount to “a compendium of relevant knowledge gained from experience.” Practitioners can look to them as exemplars to guide practice. For instance, under the heading of “Sustainability,” one best practice is *Energy Design Guidelines for High Performance Schools*.¹⁶ The expectation is that these guidelines set a normative standard for the design of these schools.

The extent to which normative theory complements and intersects with explanatory theory is significant for the development of architectural research. As design theorist Ken Friedman puts it: “Because design knowledge grows in part from practice, design knowledge and design research overlap; the practice of design is one foundation of design knowledge.”¹⁷ In other words, many normative theories that are now embedded in architectural practice may be derived from earlier advances in explanatory theory; and conversely, the evolution of normative theories in different contexts or circumstances may prompt reexamination of explanatory theories.

4.3.3 Design-Polemical Theory

In his book *Creating Architectural Theory*, Jon Lang says, “The normative statements of designers are by, definition, value-full.”¹⁸ This is normative in a slightly different sense than understood as descriptions of conventionalized practices. By normative Lang means to underline the point that designers make “deontological statements which, when applied to practice, can be seen in the designs that result.”¹⁹ The *Stanford Encyclopedia of Philosophy* says: “In contemporary moral philosophy, deontology is one of those kinds of normative theories regarding which choices are morally required, forbidden, or permitted. In other words, deontology falls within the domain of moral theories that guide and assess our choices of what we ought to do (deontic theories).”²⁰ Lang’s usage of the term aligns with this definition; designers are guided in their actions by “value-full” convictions of how a design problem should be (or ought to be) addressed or solved. These value-full convictions stem from a range of cultural variables, including the designers’ attitudes toward society, people, the natural environment, technology, and also the design professions themselves.²¹ Together, these variables inform an “ought to” attitude on the part of the designer (i.e., design

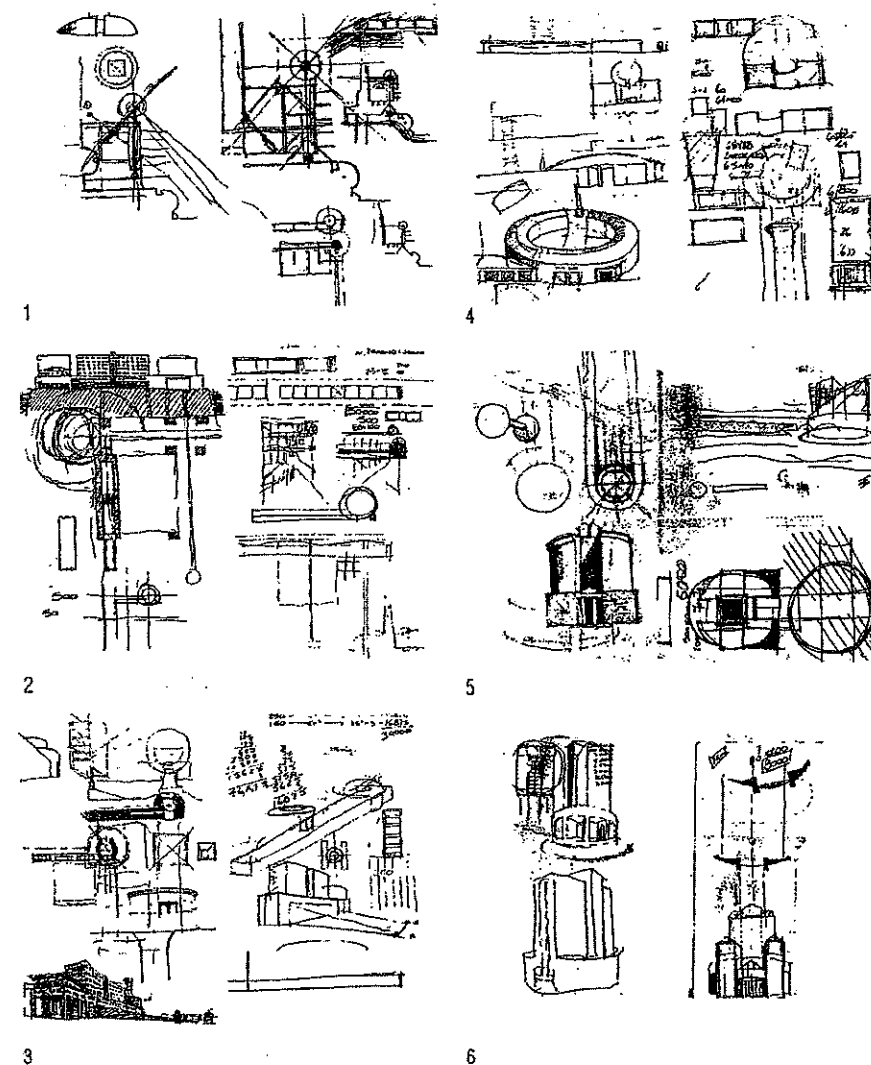


Figure 4.6 Progress sketches from the third of three design teams Peter G. Rowe studied in situ as the teams generated their design solutions. Here, the drawing sought to resolve the tension between a desire to conform to Burnham’s Chicago master plan and a programmatic wish to extend the project into the lake. Rowe found that much of what architects do is informed by normative guidelines and practices: references to precedent, references to established typologies, and working out conflicting themes by iterative sketching. From Peter Rowe, *Design Thinking* (Cambridge, MA: MIT Press, 1987), 23.

ought to be this or that). Lang gives two examples from Frank Lloyd Wright's tenets for good house design:

First: To reduce the number of necessary parts of the house and the separate rooms to a minimum, and make all come together as enclosed space—so divided that light, air and vista permeate the whole with a sense of unity. . . . Ninth: Eliminate the decorator . . .²²

It is not difficult to detect a moralizing tone in Wright's statements. This "ought to" posture is a very common tendency in design thinking; indeed, Lang cites Ulrich Conrad's *Programs and Manifestoes on 20th-Century Architecture* as a compendium of examples of deontological positions vis-à-vis design.

All told, the deontological tendency fits the definition in the third column of Figure 4.4: "abstract thought: speculation." This is not to denigrate this kind of theorizing; it only underlines the difference between this kind of theory compared to explanatory theories and normative theories. The persuasive force of theories in the first two columns comes from their general applicability and, in the case of column two, their widely accepted utility. The persuasive force of deontological theories, in contrast, resides in polemics, that is, in a designer's ability first to express a conviction for his/her own designs, but ultimately in the adherence to the designer's point of view by a large audience. We address the tactics of polemics for design in Chapter 11.

An interesting dynamic exists between normative theories, as defined in the second column of Figure 4.4, with normative-deontological theories as defined by Lang. Example: When Wang was in architecture school at the University of Pennsylvania, the architect Norman Foster came to teach a guest studio. At the end of the project assignment, all of the student designs more or less looked like Norman Foster projects. The point is that some leading designers—their ideas—*create* norms for a wide population of designers, norms that at the outset were not conventional ways of doing things (*à la* column 2). Indeed, the distinction is precisely in the fact that the ideas are new. In Wright's case, at a time when *conventional* design practice was of residential rooms walled off from one another, Wright promoted an "ought to" of open and fluid spaces, exemplified in the Prairie Houses of the first decade of the 20th century. Wright's views did not immediately influence residential design in the United States for a variety of reasons (some of which were personal to Wright's life at the time), but Wright's "ought to" ideas, particularly of fluid spaces, had important bearing on the development of the International Style in Europe.

At one level, the potential significance of design-polemical theory resides in its ability to persuade its audience, ultimately to influence design conduct on an extended scale. As previously noted, Wright was enormously influential. Foster

continues to be as of this writing, although arguably, he is probably not of the stature of Wright in terms of overall influence. "Ought to" design-polemical theories that have influenced large communities of practitioners and large bodies of work are quite important in what constitutes architectural history. Indeed, in his book on architectural theory, Paul-Alan Johnson observes that "what is called [architectural] theory has more to do with certain arguments and ideas aimed at persuading others to particular beliefs and values."²³

In the broader context of architectural research, design-polemical theory can work in tandem with both normative and explanatory theory, and all three types of theory can inform and be informed by each other. First, researchers working with explanatory theory can seek to understand the large cultural ideas that in turn shape design-polemical theory. Similarly, in the research domain, Abraham Kaplan notes that "[t]he works of the mind are all of one piece," in that the development of the research enterprise is affected by "the thought of the period on matters of religion, politics, art and whatever."²⁴ Put another way, even those working in explanatory theories participate in the same cultural percolations that drive design-polemical theories.

Second, recall again that our dictionary definition of theory includes "abstract thought/speculation" as part of its domain; again, this characterizes design-polemical theorizing. But our view is that the "ought to" element of design-polemical speculation should be informed by as much explanatory (perhaps even normative) theoretical backing as possible. Moreover, the importance of speculation in research is also foundational to the discussion of abductive reasoning in inquiry by Peirce, March, and subsequent authors (see Chapter 2).

Third, designers themselves can become more practiced in researching the factors shaping the contemporary zeitgeist. There is much in the literature indicating that creative design does not arise *de novo*, but rather as a result of sustained exposure to design education.²⁵ This includes awareness of cultural trends, and how to harness them for expression in design as something to be cultivated.

Finally, using design-polemical theory as an opportunity for developing new explanatory theory remains a potentially significant research trajectory that is too often overlooked. As already discussed, many notable design-polemical positions have become so influential in practice that they are eventually accepted as normative theory. Although many scholars may debate the logic or theoretical import of design-polemical theories current at the moment, there are fewer in-depth inquiries into the strengths and weaknesses of such theories as they are manifested in built form and/or in lived experience. But such inquiries have the potential for producing new explanatory theory that could inform future developments in normative and design-polemical theory. This is not only a missed opportunity for aspiring

researchers, but too often a weak link in the development of a more holistic and robust research tradition for the design fields.

One recent example of research that examines the impact of design-polemical theory as it is manifested in notable architectural projects is Kush Patel's study described in Box 4.1. Patel examines—both theoretically and empirically—how Bernard Tschumi's and Lucien Kroll's individual interpretations of Lefebvre's concept of social space result in very different qualities of lived spatial experience. In a slightly different vein, the predictive accuracy of a widely discussed design-polemical theory was tested out in a study by Groat and Canter. In this case, the authors took on Charles Jencks's contention that Postmodern buildings (intended to express meanings more accessible to the public) would be distinctly more appreciated by nonarchitects than Modernist buildings. The authors found that although a few Postmodern buildings were genuinely appreciated by nonarchitects, there was no clear-cut preference or appreciation for the Postmodern style.²⁶

All of this is to say that the design-polemicalism that often characterizes architectural design decisions could be harnessed to achieve more clarity of social meaning if architects were more knowledgeable about how the general public, as well as culturally distinct constituencies, experience the many dimensions of lived space. Indeed, a reason for this book is to suggest various ways for obtaining this knowledge.

BOX 4.3

OMA's "Bigness": A Design-Polemical Theory

OMA's theory of "Bigness"^a exemplifies design-polemical theory. Rem Koolhaas posits that we live in such a diverse, multicultural, and cybernetically powerful global reality that architecture simply limited to localized physical sites is no longer adequate as an expression for the times. Instead, design must somehow respond to the Bigness of a global culture enabled by the instant and limitless connectivity of the Internet.

^a Rem Koolhaas/OMA, "Bigness, or the Problem of Large" [1994]. In Harry Francis Mallgrave and Christina Contandriopoulos (eds.), *Architectural Theory, Volume II: An Anthology from 1871–2005* (Malden, MA: Blackwell, 2008), 566–568.

This is why Koolhaas's buildings tend not to relate very obviously to their immediate physical surroundings: Consider the Seattle Public Library, or the CCTV Tower in Beijing (Figure 4.7). These edifices are "world buildings" in the sense that they can "fit" or not "fit" into any localized site. They are responding to larger—BIGGER—cultural realities than the limitations of a city block. (Refer to Box 12.2 for challenges that arose in community involvement vis-à-vis this project.) It is instructive to place this OMA theory, which accommodates the technology of the computer (cybertechnology), with theories at the dawn of the 20th century, which sought to accommodate the machine. Coming to mind is Wright's "Art and Craft of

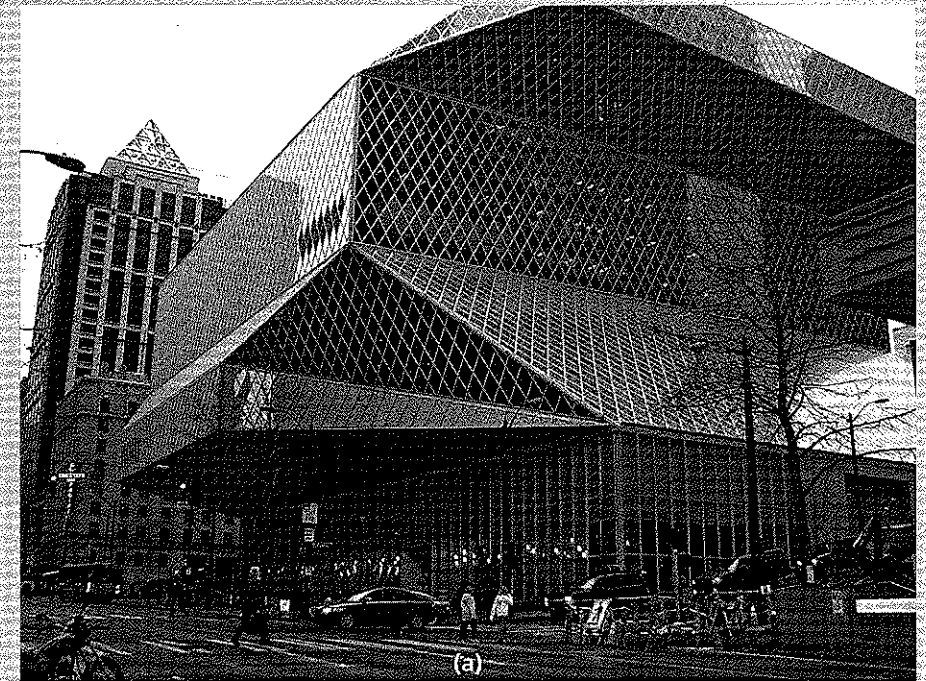


Figure 4.7 Rem Koolhaas OMA: Seattle Public Library (a), CCTV Tower, Beijing (b). OMA's theory of "Bigness" conceives of a global cyber-contextual siting of buildings rather than simply responding to localized physical sites. This results in buildings that are essentially interchangeable with regard to locale: the form in (a) can be in Beijing, and vice versa. Photographs courtesy of David Wang.

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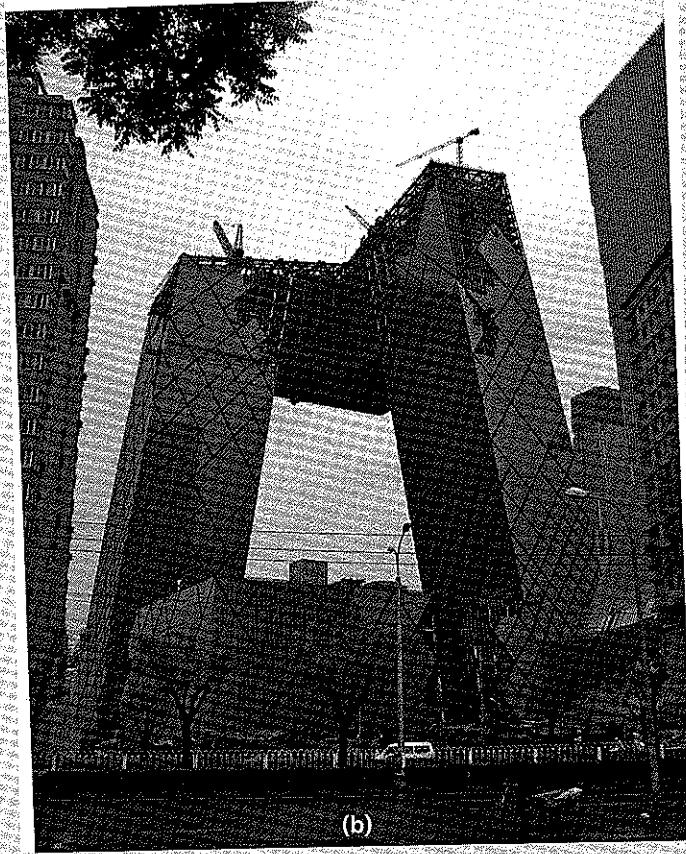


Figure 4.7 (Continued)

the Machine.”^b In this well-known talk given at Hull House in Chicago in 1901, Wright sought to incorporate the aesthetics of the machine into his organic ideas of architectural design. In this speech, Wright sought to justify his theory by appealing to larger democratic ideals: to wit, that the machine enables architectural design to benefit all people rather than just an elite. A century later, architects like Rem Koolhaas, MVRDV, and Greg Lynn, to name a few, seek to incorporate cybertechnologies into their designs by means of polemics.

^b Frank Lloyd Wright, “Art and Craft of the Machine,” in Edgar Kaufman and Ben Raeburn (eds.), *Writings and Buildings* (Cleveland, OH: World, 1960), 55–73.

4.4 MULTIPLE PURPOSES: THEORY BUILDING AND/OR DESIGN APPLICATIONS?

In Chapter 1, we introduced a diagram (Figure 1.7) of the several research strategies (profiled in coming chapters) in relation to an axis of purposes, from theory building to design application. While it is certainly true that a single study can be initiated or result in both theoretical and applicative purposes, it is more often the case that there is a relatively stronger emphasis on one or the other. Whatever the case, a good research design reflects clear articulation of the researcher’s purpose, whether theory and/or application.

In this section, we consider examples of how theory was used (or the extent to which it was used) to align with the purposes of each project. We first consider examples of generating new theory from existing theory; many times this is the case when the audience is comprised of researchers and/or academics. Second, we turn our attention to perhaps the other extreme: applying theory to inform a specific building design in architectural practice. In this case, the practicalities of client demands and budgetary restrictions usually call for more episodic applications of theory. Third, we consider how theory is used in a design consultancy, focusing on targeted theoretical themes applied very specifically to enhance built environments. Here again, the use of theory tends to be selective rather than broad. Finally, we consider another example of theory in service to architectural design at project scale, this time in a student MARCH thesis. In student cases with fewer real-world constraints, theory can be more broadly applied to design decisions, although in a more interpretive manner.

4.4.1 From Theory to New Theory

Isil Oygur’s doctoral research featured in Box 4.2 is an example of building from existing theory to generate new theory. Oygur’s ethnographic research took three theories (epistemic culture, boundary objects, and constructed knowledge; see box) to develop a new theory of how designers “reconfigure” their users into various abstract constructs. None of the existing theories explicitly address design per se. Oygur’s contribution is weaving these threads into her own theory of how users are “reconfigured” in the design process. Research like this draws systematically on theory, and the new theory proposed is itself systematic. Oygur’s immediate audience is her doctoral committee, which is a harbinger of the peer reviewers who will decide on her future submissions to academic journals. All of this is to say that the specific purpose of Oygur’s research is to make a contribution to the research/academic literature; the “application” in this sense is the new theory itself. Put another way, rather than the new *theoria* having immediate *praxis* implications,

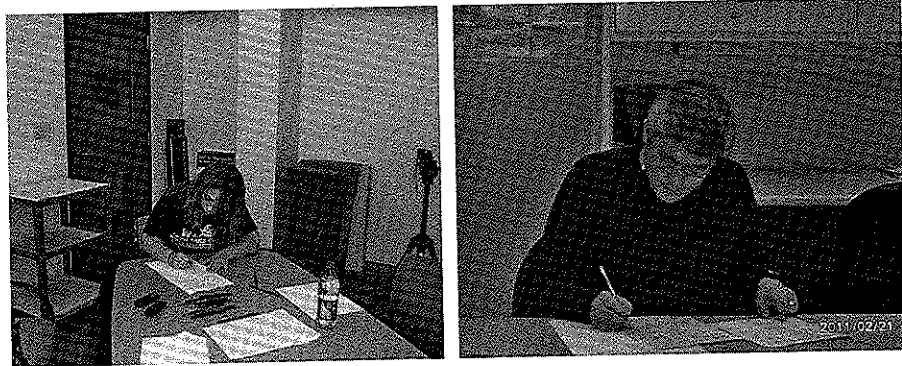
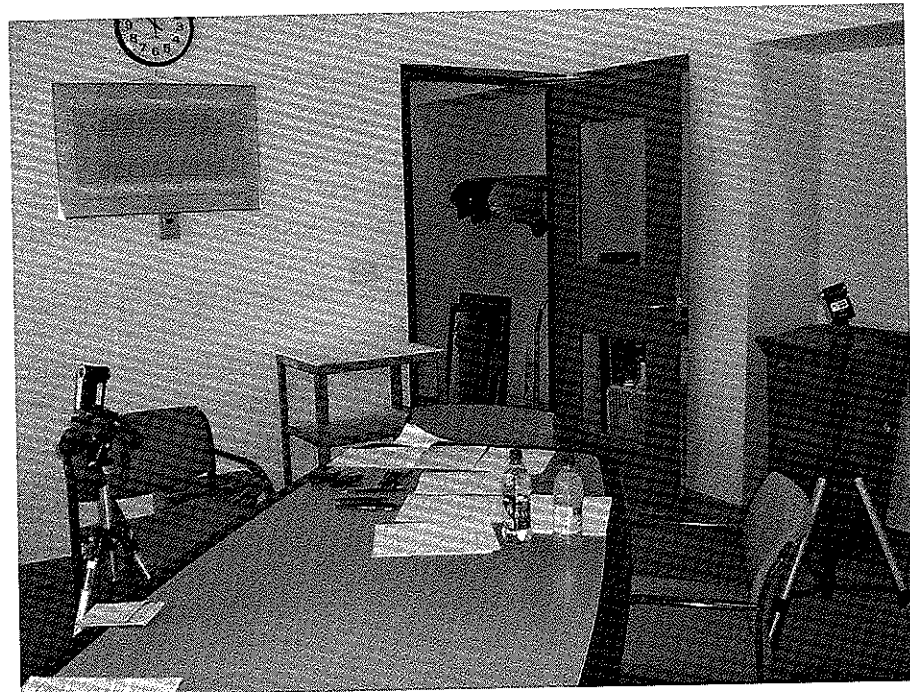


Figure 4.8 Alhusban measured student designers in all five years of the BArch curriculum as they took part in a controlled design exercise (of a beach house). Measurements consisted of photographs, recordings of spoken information, and the drawings, over elapsed time. This information was then charted in LCM maps. The upper image shows the room with the equipment. At lower left is one of the students doing the exercise. Alhusban also measured faculty (at lower right) to compare the difference in quantity of creative leaps. Photographs courtesy of Dr. Ahmad Alhusban, Hashemite University, Jordan.

academic research of this nature often generates issues for future research, implicitly or explicitly, as the new theory is applied to practice. For example, one of Oygur's 18 concluding observations is this: "The existence of an in-house research department (in a design firm) is not a guarantee that the designers will focus more on the users; nor does it guarantee that all designers (in the firm) will construct an identical user."²⁷ This finding not only invites further research to explore its validity; it may also influence practitioners' assessments of how best to gather research data.

Another example of developing new theory from extant theory is Ahmad Alhusban's doctoral dissertation on "the creative leap" in architectural studio education. Alhusban drew from an existing theory (limited commitment mode, LCM),²⁸ but the current literature largely applies LCM to the design of smaller-scale objects, generally in the realm of industrial design. Alhusban adapted it to the design of entire buildings in the schematic design phase by studying architectural students in all five years of a BArch professional program (Figure 4.8). One of Alhusban's findings was that divergent thinking ability—the ability to attend to many different design threads simultaneously—is one measure of the frequency of "creative leaps." Additionally, Alhusban found that increased experience also increases the number of these leaps, hence showing that "creative leaps" are not totally spontaneous out-of-the-blue events.²⁹ (See Chapter 2 on design logics.) Again, in research of this type, the emphasis in the outcome is the new theory that emerges; *praxis* is often stated as a series of recommendations for application. For instance, Alhusban's findings led him to suggest, as a matter of *praxis*, that more experienced teachers teach first-year design studios, so that beginning students can be immediately exposed to the rich variety of creative leaps in seasoned designers.

BOX 4.4

Architecture and Cultural Capital

Jennifer Chamberlin's dissertation, *The Cultural Reproduction of Architecture: Examining the Roles of Cultural Capital and Organizational Habitus in the Socialization of Architectural Education*, is an example of a study that draws from extant theory to frame new theory.⁴ It is particularly notable because it features three steps in a theoretical line of development.

⁴ Jennifer Chamberlin, *The Cultural Reproduction of Architecture: Examining the Roles of Cultural Capital and Organizational Habitus in the Socialization of Architectural Education*, PhD dissertation, University of Michigan, Ann Arbor, 2010.

(Continued)

The first step takes as primary theory the concept of cultural capital as elaborated by the French sociologist Pierre Bourdieu.^b According to Bourdieu, cultural capital constitutes a significant form of power in any society. It is manifested in a variety of traits: behaviors, experiences, credentials, social networks, and attitudes. Most important, Bourdieu sees cultural capital as being *embodied* in individuals, typically acquired through multiple cultural milieus, and most typically from birth. Whereas economic wealth can be acquired and possessed, those with cultural capital only have to be what they are.

The second step is a development of Bourdieu's theory, as represented by the work of Garry Stevens, a professor of architecture at University of Sydney. As articulated initially in a journal article and subsequently in a book titled *The Favored Circle*, Stevens adapts Bourdieu's argument to the context of architectural education.^c Using archives of existing demographic data from his own university context and a British university, Stevens elucidates how cultural capital may significantly influence the initial acceptance rates of architectural students as well as their eventual success, or lack thereof, in school and the profession. The primary thesis of his research is that architecture, compared to many other professional fields, is relatively *less permeable* to prospective students with lower levels of cultural capital.

Because of the limited scope of the evidence Stevens cites in his research, Chamberlin sought to investigate in greater depth its applicability in the U.S. context. This is the third theoretical step: Chamberlin's development of the extant theory in the literature. To this end, she compared the experience of architectural students at two U.S. universities: one where the overall level of cultural capital of the student population was relatively high, and the other where the level of cultural capital was measured to be lower.

Although the scope of Chamberlin's entire study is too multifaceted to fully summarize in this context, one set of findings, in particular, yielded a potentially significant refinement in the theoretical implications of cultural capital. Through the statistical tactic of K-Means Cluster Analysis, three groups of students were identified based on differences in their levels of cultural capital. One group, cluster #3, clearly emerged as the "high cultural capital" group, but the other two groups of students were not as easily defined (see Figure 4.9). Of these two groups of students, cluster #1 had far higher levels of parental education (compared to cluster #2), approaching the levels for cluster #3. Measures of childhood cultural pursuits, however, suggest that the differences between clusters #1 and #2 were less pronounced. Nevertheless, the overall profile of cluster #2 suggests that these students'

^b Pierre Bourdieu, *Distinction: A Social Critique of Taste* (Cambridge, MA: Harvard University Press, 1984).

^c Garry Stevens, *The Favored Circle: The Social Foundations of Architectural Distinction* (Cambridge, MA: MIT Press, 1998).

exposure to creative arts led to activities entailing more active engagement. The emergence of the cluster #1 group especially was a substantial finding because these students did not fit neatly into the dichotomy of high versus low cultural capital that both Bourdieu and Stevens present.

In sum, Chamberlin's research enabled her to contribute to theory building in interdisciplinary research on the effects of cultural capital in educational settings. The effect of both quantitative and qualitative differences in cultural capital in the experience of architectural education can now be tested in additional architectural settings or in other professional fields. A secondary outcome of Chamberlin's research is the potential of case-specific analyses to suggest institutional improvements in each school's architectural program.

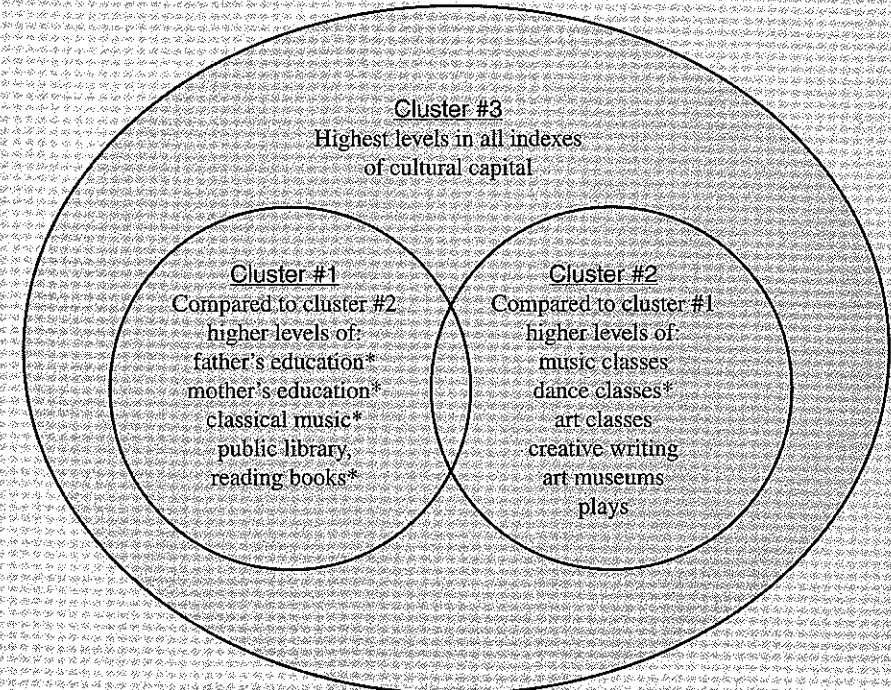


Figure 4.9 Among the three clusters of students, cluster #3 reflects the highest level of cultural capital in all measures. While there is some overlap of measurement levels between clusters #1 and #2, items indicated by asterisks represent significant levels of differences between the two groups at a 95% level of confidence. Diagram courtesy of Jennifer Chamberlin and Linda Groat.

4.4.2 From Theory to a New Building in an Architectural Practice

In contrast to developing new theory from existing theory in an academic venue, the goal of architectural practice is to build buildings. The purpose is quite specific because the audience is quite specific: the client. While iconic architects whose works appear in magazines and history books might claim to substantially realize their architectural theories in their bodies of work, it is more generally the case that architects use design theory in targeted ways to respond to the practical constraints unique to each project and client. This usually means more episodic instances in adapting theory (we elaborated on this point in Chapter 2).

Austin Dickey's Canyon House serves as a good illustration. This project grew in part out of the architect's commitment to the theory of Critical Regionalism. Promoted by the theorist Kenneth Frampton, Critical Regionalism emphasizes designs in keeping with a region's geographical and cultural history, sensitivity to that region's climate and light, and retention of local tactile attributes.³⁰ Faithfulness to these factors in design, Frampton argues, increases the "boundedness" of a locale, what the philosopher Martin Heidegger calls dwelling.³¹ The 10 wooded acres of the Canyon House site are unusually fissured with narrow basalt crevices of up to 20 feet deep, and 5 to 15 feet wide. Dickey saw this as an opportunity to apply a critical regionalist rationale to his design by embodying this site feature in his design response. Dickey's aim was to "translate" the tactile experience of the site's abundant small canyons right into spatial experiences of the morphology of the house. To this end, a "canyon" corridor serves as the organizing element of the entire design, creating distinct sectors not unlike how the basalt crevices define separate portions of the site itself. Originally conceived as a basalt corridor, the corridor-canyon was later changed to concrete masonry units; this is an example of an ideal expression of theory meeting up against practice constraints. But the final product was in keeping with the geographical character of the region; it brought the region's quality of light into the spaces of the house, and the morphology of the house remained tactilely true to the landscape (Figure 4.10).

Those who work in conventional academic research venues might exclude Dickey's project as an example of rigorous research. We do not argue this point essentially, but two points in response are in order. First, the very project of writing a book on *architectural* research methods implies that conventional paradigms of academic research have to be stretched to accommodate what scholars like Nigel Cross have called "designerly" ways of thinking and knowing (again, see Chapter 2).³² Here, our goal is to survey how theory is used to inform a variety of

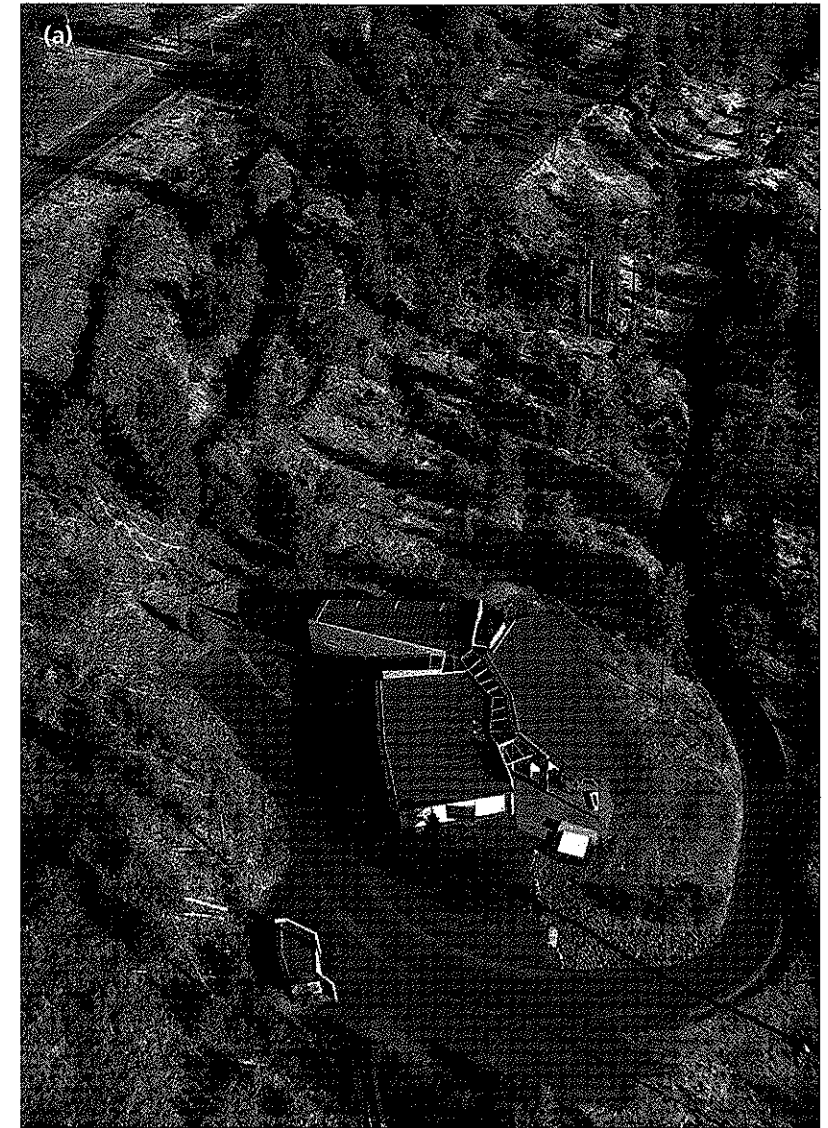


Figure 4.10 The Canyon House. Critical Regionalist theory embodied in architectural design. Photographs courtesy of Austin Dickey, Copeland Architecture & Construction, AIA.

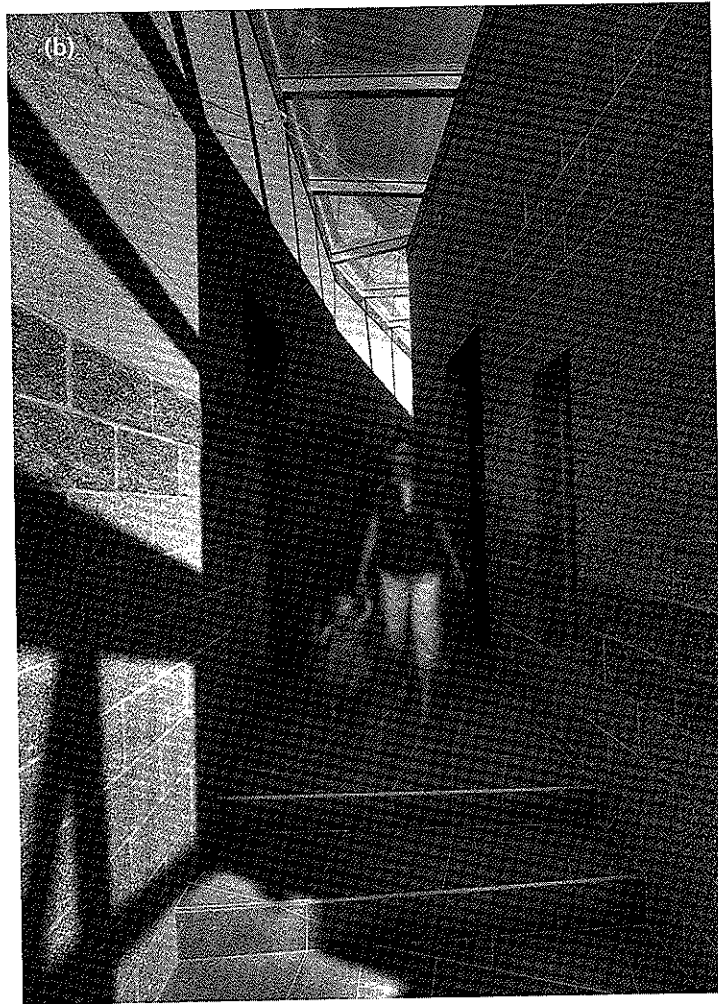


Figure 4.10 (Continued)

different purposes and applications, and we mean to include in this chapter examples of how practitioners get from theory to built form. Second, globally, if not in the United States, serious efforts are being made to comprehend design practice as a form of research. In Chapter 2, we saw this in the Belgian-Scandinavian case, where design- and practice-based doctoral education has been enacted into curricula.³³ Fueling this need is recognition that architectural knowledge is inherently “projective,” which is to say its mode of inquiry involves insight into future

conditions, not just present or past conditions, and bringing those future conditions into fruition.³⁴ This fits with what was mentioned earlier: the deontological nature of practice-based design-polemical theorizing.

BOX 4.5

Theory Influences in the Fernan Ranger Station: A Testimonial (Sam Rodell, Architect, AIA)

What my clients experience as “theory” is pretty basic stuff. People tend to find authors like Christopher Alexander and Sarah Susanka to be revelatory. From there, we might bridge to Michael Benedikt or Louis Kahn; I just see where our discussions lead us. Getting a client engaged at a theoretical level early in a project—not in a condescending or manipulative way, but in a truly earnest search for clarity relevant to them—pays huge dividends over the whole life of the project. I find myself going into the construction phase with huge equity in trust and credibility if I have succeeded in getting my clients enrolled in the world of ideas at the front end.

In this ranger station for the USDA Forest Service (Figure 4.11), the work of Christopher Alexander, Robert Venturi, and Charles Moore served to clarify architectural aspirations that had emerged out of our interviews with the Forest Service staff and their desire to express the character of their culture in a positive way to the public. For example, conversations about making the building welcoming to the public, the public entry easy to locate and use, and making meeting rooms available for community use, including after hours, were directly informed by these patterns from Alexander's *Pattern Language*: Positive Outdoor Space (#106), Main Entrance (#110), Reception Welcomes You (#149), Small Meeting Rooms (#151), and Rooms to Rent (#153). Other patterns referenced for welcoming the public included Wings of Light (#107), Paths and Goals (#120), Short Passages (#131), and Small Services without Red Tape (#81). I also referred to the work of Venturi and Moore to show our clients prominent public projects that actively used symbolic and traditional elements in design. Moore: St. Matthew's Episcopal Church, Pacific Palisades, California; Venturi: Lewis Thomas Laboratory and Gordon Wu Hall, Princeton University. And, of course, the work of these architects influenced me and served to open up the possibilities of overtly “decorative” elements in architecture . . . the cult of Modernism was still very powerful when this project was done, in 1988.

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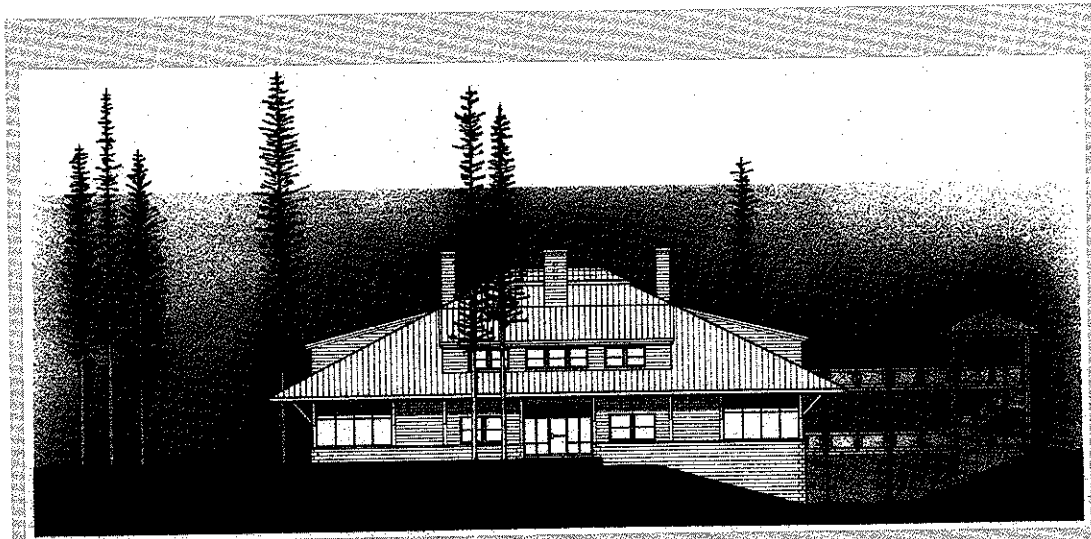


Figure 4.11 Fernan Ranger Station, Coeur d'Alene, Idaho (1988). Photograph courtesy of Sam Rodell, Architect, AIA.

4.4.3 From Theory to Built Environments: Use of Theory in a Design Consultancy

By a design consultancy we mean organizations that offer design services for a wide variety of built environment needs. These needs are specific, rendering the kind of theory each consultancy draws upon to be targeted. One example is Carpman Grant Associates, Wayfinding Consultants (CGA).³⁵ Founded in 1986 by Janet R. Carpman and Myron A. Grant,³⁶ CGA is a good example of theory being used in service of focused environmental needs (see Box 4.6 and Figure 4.12). In CGA's case, the firm has completed hundreds of wayfinding projects (such as sign design, map design, and wayfinding staff training) for over 70 client organizations throughout the United States and Canada, including health care facilities, historic and cultural facilities, educational facilities, office facilities, and government facilities. Carpman and Grant have also innovated key definitions and unique methodologies in developing pragmatic approaches to reducing disorientation in confusing places. These have been summarized in numerous articles, along with two books authored by Carpman and Grant: *Design that Cares: Planning Health Facilities for Patients and Visitors*³⁷ and *Directional Sense: How to Find Your Way Around*.³⁸

Several pioneers laid the foundation for Carpman and Grant's work, specifically for their view that the physical environment significantly influences a range of behaviors and emotions. They therefore use social science theory and methods to discover large and small truths about how human beings interact with physical spaces, improving the quality of built environments for users. Kevin Lynch coined the term *wayfinding* in his seminal *Image of the City*³⁹ and described characteristics, such as nodes and landmarks, that make a place imageable. Romedi Passini, along with Paul Arthur, defined wayfinding behavior, including decision making and decision execution, and explored the connection of wayfinding to architecture.⁴⁰ Jerry Weisman both pointed out architectural aspects of wayfinding (such as views to the exterior; decision points; and features such as artwork, lighting, and color that reinforce signage) and noted the importance of the management of a wayfinding system.⁴¹ Marvin Levine theorized about the orientation of You-Are-Here maps and provided research evidence of its importance in assisting people in finding their way.⁴² Stephen Kaplan and Rachel Kaplan developed useful theory, one aspect of which is how navigating takes up a great deal of "space" in one's head (and requires more effort) when an environment is unfamiliar, but as one learns it, navigation feels easier and is less taxing to the brain.⁴³ John Zeisel conducted applied research, wrote, and taught about the importance of involving users in design, and adapted classic sociological methods, such as observation and interviewing.⁴⁴ Mike Brill created ways to apply people-place theories and methods to solving problems, such as effective workplace design.⁴⁵ He founded and led BOSTI, a problem-solving consulting firm. Richard Saul Wurman wrote about issues of design in relation to information itself: that information design (including signs and maps) can help or hinder the ability of users to understand and make use of it.⁴⁶

BOX 4.6

A New Wayfinding System for the Massachusetts State House

The original Massachusetts State House was completed in 1798 by self-taught architect Charles Bulfinch. Many additions followed, including a rear annex in 1831, and east and west wings in 1914–1917. Perched on 6.7 acres, the State House overlooks the Boston Common in the center of

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Boston; it remains the working seat of state government as well as the most visited tourist destination in Massachusetts.

Two features made wayfinding particularly difficult: the annex and the main building do not connect on some floors; and tightened security as a result of the terrorist attacks of September 11, 2001, resulted in only 3 of the original 21 entrances remaining open, with the main public entrance—leading to key tourist destinations—closed. In addition, a host of contributing factors made wayfinding a challenge, such as little attention to citizens with disabilities and a series of outdated circulation systems.

CGA conducted detailed wayfinding design and operational analyses (including visitor interviews, management interviews, and staff focus groups), prepared a wayfinding plan, and designed new exterior and interior wayfinding signs^a and You-Are-Here maps (see Figure 4.12). Informed by the participation of representatives of the disability community, the project team made recommendations about how wayfinding could be made easier for people with mobility, vision, hearing, and cognitive disabilities. These included designing new signs; removing outdated signs and maps; providing information about accessible entrances, restrooms, and assistive technology; enhancing accessible entrances and drop-off areas; providing tactile maps; and conducting staff training.

Here are some insights to come out of this project:

1. A systematic approach to wayfinding is needed, rather than focusing on signs alone.
2. Attention is needed to both design and operational aspects of a wayfinding system.
3. Ongoing audit/evaluation of a wayfinding system is needed as situations, locations, and priorities change.
4. Involvement of users and managers can and should be part of wayfinding system assessment and planning.
5. Implementation of wayfinding system elements can be phased.
6. The design of a good wayfinding system does not have to compromise either function or aesthetics.
7. Wayfinding ease can be improved even in the most challenging architectural and operational environments.

^a Signs were designed by CGA's environmental graphics design partner, Nicolson Associates, Bloomfield Hills, MI.

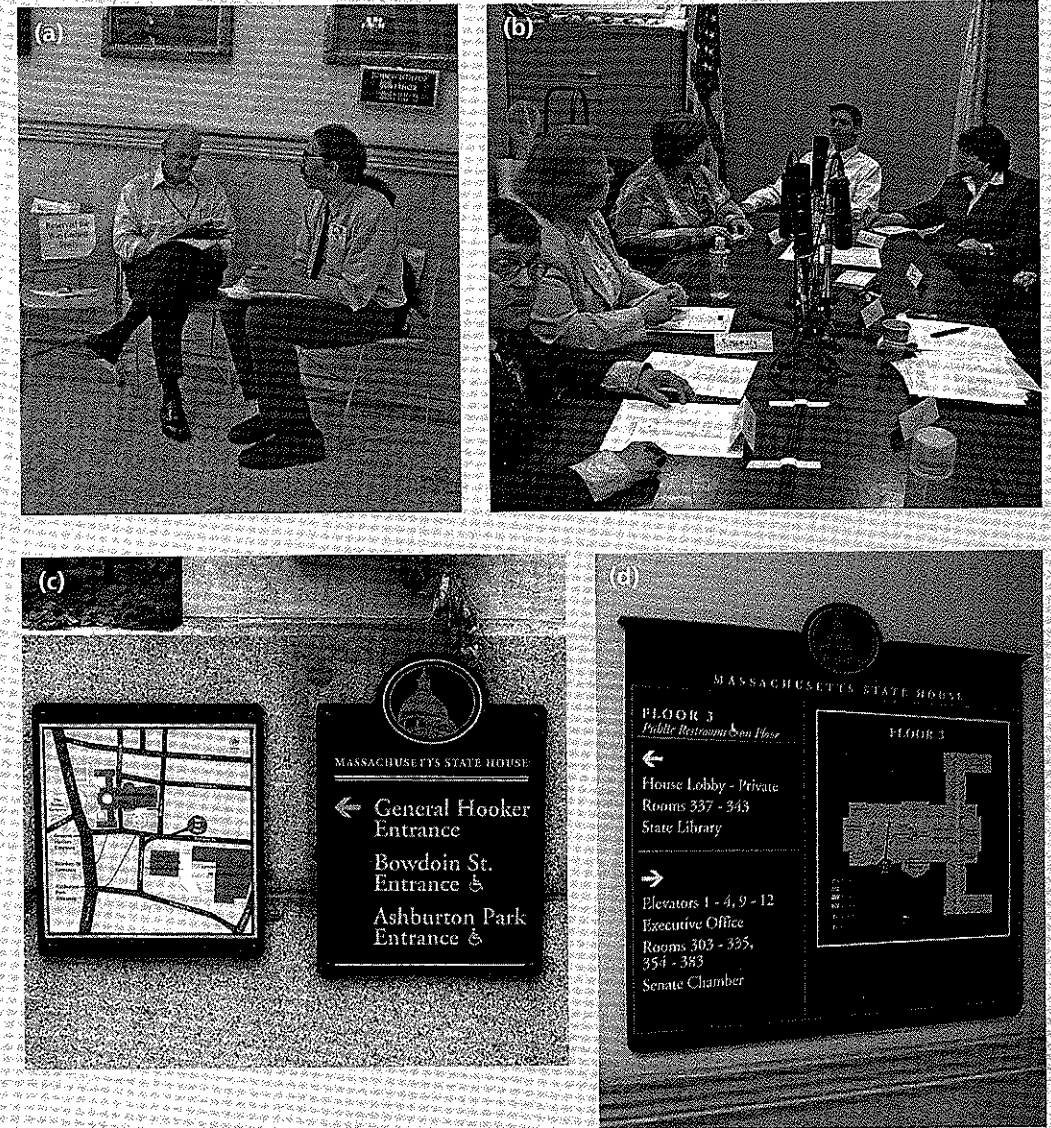


Figure 4.12 Shown here are user interviews and staff focus groups, along with examples of exterior and interior signs and You-Are-Here maps that comprised part of the new wayfinding system. © 2012 Chapman Grant Associates, used with permission of the Massachusetts State House.

Box 4.6 showcases an example of CGA's work at the Massachusetts State House, Boston. Patrick Reed, then Deputy Superintendent for Administration, Bureau of State Office Buildings for the Commonwealth of Massachusetts, had this to say about the outcome: "beyond aesthetics, finally, after many years of confusion, people understand where they're going and can figure out how to get there—no small feat in a building that was notoriously disorienting for the thousands of tourists, legislators, lobbyists, and others who passed through it every day." Carpmen Grant's work illustrates the targeted way theory can be used to enhance users' experiences with environmental design.

4.4.4 From Theory to Design in Architectural Studio Education

We now consider theory in relation to architectural design in the case of an MArch student thesis. Here, theory can once again be applied broadly (if not systematically) to the outcome, which is usually the design of an entire building, or at least a project at this scale if not larger. But ultimately, the transition from theoretical constructs to formal gestures in these cases is necessarily interpretive, rooted in the designer's value-full deontic decisions. We noted earlier that design-polemical theories gain their validity through adherence to the designer's deontological point of view by a large audience. In a student case, that audience is largely his committee, and secondarily his peers.

Eric Williams's MArch thesis sought to situate the design of a winery at the intersection of several key theoretical issues (Figure 4.13). He first drew from Heidegger's *Question Concerning Technology*⁴⁷ to establish the fact (and the consequences) of today's common cultural practice of thoroughly depending on technology to alter nature for human convenience. Heidegger (and Williams) argue that this impoverishes cultural life. Given the fact that we cannot return to a pretechnological culture to overcome this problem, Williams looked to a solution offered by the philosopher Albert Borgmann,⁴⁸ one that accommodates the use of technology in culture so long as it is subservient to "focal practices." Focal practices are activities that emphasize craft over machine production, and the sanctity of cultural practices over commodified technological convenience. Williams then introduces his technical term *terroir*, meaning "taste of the earth." With this term, Williams pivots to winemaking as an opportunity to embody focal practices that necessarily blend "a narrative of climate, soil type, and topography." This becomes the theoretical rationale behind his winery design as an expression of resistance to the blind use of technology for mass production.

Williams chose to use *terroir's* blending of indigenous natural elements as the theoretical key towards elevating a series of functions associated with winemaking into focal practices. This ranges from visitor observation of harvesting ("visitors can see traditional crushing contrasted with mechanical crushing and engage in the focal practice of the harvest"); to participation in winemaking ("visitors will be able to harvest, press, rack, and riddle grapes from the vineyard"); to connoisseurship ("visitors will be able to create their own blends of wine from various varietals. As they meander through the art gallery, they can explore blended examples of craft and commodity technology"); to picnics ("visitors can climb the stairs to the roof garden, pick their produce, and hand it to the chef so that it may be prepared in their meal"); to concerts, which are traditional at this winery throughout the summer months ("This focal practice is architecturalized by the new amphitheater which is carved out of the landscape mimicking the original contour lines").⁴⁹

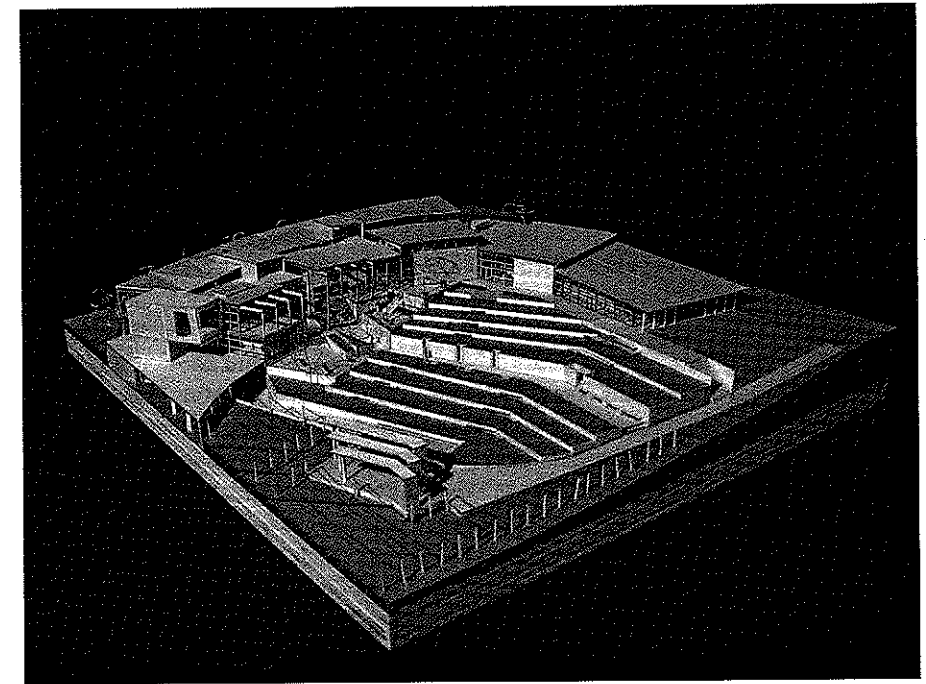


Figure 4.13 MArch thesis project: a winery expressing Albert Borgmann's theory of "focal practices." Image courtesy of Eric Williams.

4.5 CONCLUSION

This chapter has addressed the intricate connections between research purpose, theory building, and design application. We pointed out the distinction between contextual purposes, which tend to be external (considerations of motivation, audience, and anticipated impact), and theoretical purposes, which are internal to the nature of the project (is it to expand a theory? is it to create new theory? or does it use theory to inform a specific design?). It should be clear that the ultimate intended purpose determines the selection of a research design and, further, how theory relates to both. In the next chapter, we add to this mix by considering the framing of research questions, and the role of literature review.

NOTES

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Chapter 5

What's Your Question? Literature Review and Research Design

5.1 INTRODUCTION

Chapter 3 addressed broad conceptual frameworks of research: systems of inquiry and schools of thought. Chapter 4 addressed the contextual and internal (theory and application) purposes of research; these were captured by the diagram in Figure 4.1. This present chapter addresses the specific research question or questions that every research design must have, and how literature review helps to frame these questions. To this end, we expand Figure 4.1 as shown in Figure 5.1.

Figure 5.1 adds two new factors: the literature review box at the upper right of the figure, and the strategies and tactics boxes at the bottom of the figure. This chapter addresses how literature review informs the framing of research questions, which act as pivot points in the development of an eventual research design. All of Part II of this book, beginning with Chapter 6, addresses strategies and tactics of research design.

A note to readers who are *not* intending to embark on a long or extensive research project; on the face of it, this chapter's focus on literature review and the framing of research questions may initially seem to be of limited relevance to your circumstances. Indeed, as we have already acknowledged, for those whose primary purpose is a physical design outcome, research is likely to be of a more episodic nature, specific to questions arising across different phases of the design process. Nevertheless, we would argue that the issues addressed in this chapter concerning how to cultivate one's clarity of thought, purposes, processes, and outcomes are equally relevant—no matter whether you are contemplating a mini-study in the midst of a design project or envisioning a multiphase research enterprise.