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The Discipline of Architecture



University of Minnesota Press Minneapolis • London

4 The Form and Structure of Architectural Knowledge: From Practice to Discipline

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from: Piotrowski & Robinson, eds.
The Discipline of Architecture (2001)

In the United States, the field of architecture is in the process of evolving from what has been a practice, informed by other disciplines, into a discipline with its own body of knowledge.¹ Since the nineteenth century, its locus of education has changed from the architecture firm to the higher education institution. Its instructional practices have shifted from a predominantly apprenticeship system to a system of classroom-based teaching supplemented by apprenticeship. The role of architectural instructors is changing from master architect, whose knowledge and theory of making buildings is personally held, implicit, practical, and integrated, and who instructs by demonstration, to that of professor who imparts explicit, specialized knowledges, using explanations based in architectural theory and science. The role of the student has changed from learning one synthetic approach from a knowledgeable individual to learning to synthesize a variety of knowledges from different perspectives and disciplines. Architectural theory is changing from prescription based in historical precedent to critical analysis and explanation deriving in part from the scientific model (Lang 1987). In the process, the discipline seems to have become fractured by the increasingly diverse knowledges it borrows from engineering, art, history, and the social sciences. Additionally, because the majority of the education of architects now takes place within the academy and is also the locus of most of the development of new architectural knowledge, there is a need to define the position of disciplinary within architecture.

This chapter examines architecture as a cultural construct that has come into being through unconscious historical processes but nevertheless now can be subjected to critical appraisal and reconstruction. Instead of analyzing the subfield of sociocultural studies within architecture, I use the sociocultural perspective to critique the field of architecture. Architecture is understood to be an emerging discipline that involves professional practice, research, and teaching. The character and effects of its products—disciplinary knowledge, the forms of disciplinary practices, architectural artifacts—are the responsibility of those within the field. Academics, researchers, and professional practitioners are thus jointly responsible to society and to each other.

Disciplinary of Architecture

Although the title of this book suggests that the discipline of architecture already exists, and the existence of departments of architecture in universities implies its existence, there is also evidence to suggest that it has a somewhat contingent status relative to other disciplines. Architecture's place in academe in the United States was established in the nineteenth century by the architectural profession as a way to formalize architectural training and grant it expert status. Yet the diversity of its knowledge base has inhibited the development of demarcating boundaries and a unified vision of the field. Architecture's identity is fluid or solid depending on the perspective from which it is viewed. Forces that suggest the discipline is established are (1) the anticipated transformation of architectural education from a predominantly undergraduate degree in the 1960s to a predominantly graduate degree in the near future; (2) the approximately \$20 million that supports scholarship and research in North American departments and colleges of architecture;² (3) the presence of journals and other venues that support publication of scholarship and research;³ and (4) the presence of organizations that foster research and scholarship.⁴

The countervailing forces that may suggest a contingent status for architecture⁵ in comparison to many other clearly defined disciplines (such as physics or philosophy) are (1) architecture departments are located in inconsistent institutional settings (in institutes of technology,

schools of art, professional schools, liberal arts colleges, and within the university in such diverse units as liberal arts, arts and sciences, and design), attesting to the lack of clarity about the essential nature of the field; (2) while faculty generally agree on which subjects need to be taught in architecture departments, they do not agree about the names and organization of these subfields;⁶ (3) architectural theory as presently accepted does not incorporate all of the subfields (e.g., computer-aided design, sociocultural factors, acoustic design); (4) while scholarly journals exist, the vast majority of practicing architects read professional journals that regularly publish results of research but primarily feature photographs of built architecture rather than analysis of the buildings; (5) federal agencies that fund research do not specifically designate architecture as a funding category (for example, the National Endowment for the Arts' Design Arts program funds architecture as a design field but not as a technical field, and the National Science Foundation funds architecture through various designations, none of them called architecture); and (6) authors of scholarly work on architecture tend to refer to texts outside the field rather than within, suggesting a lack of confidence in the body of architectural scholarship (see chapter references in this book).

Why does this lack of clarity about the discipline matter? Philippe Boudon, for example, feels that architecture is by nature not a discipline but a set of disciplines, and he proposes that a different subdiscipline called *architecturology* (like *musicology*) be established to study the field (1992). But architecture's particular focus on built product, compared to engineering or real estate, requires a synthesis of fundamentally different kinds of knowledges that leads toward unity. Rather than being defined by particular research methodologies as many other fields (e.g., engineering is based on mathematics and laboratory science), architecture is defined by its synthetic practices of representation and design. The need to address the many perspectives of the building requires the ability to layer divergent and sometimes apparently contradictory requirements so that their relationships can be understood and the design choices may be developed. The representation of knowledges to the designer in spatial forms enhances the designer's ability to synthesize knowledge from different fields. The possibility of design integration implies the existence of as-of-yet unarticulated "architectural" ques-

tions that if named and described could explicitly frame the identity of the field, link the fractured subject areas, and lead to improved architectural products.

Historical Background

With the apparent exception of ancient Greece,⁷ until the eighteenth century, Western architects were trained through an apprentice system. The founding of the Académie Royale d'Architecture in 1671 in France marks the beginning of formal education as the way to convey architectural knowledge (Pérez-Gómez 1983). At that time, formal architectural education supplemented apprenticeship, with a formal curriculum consisting of lectures in mathematical subjects (Pérez-Gómez 1983). In nineteenth-century France, apprenticeship still dominated, although architecture was taught in two academic contexts. At the École Polytechnique, the subjects remained mathematics and drawing, and apprenticeship was oriented to construction science, whereas at the École des Beaux-Arts, the main site of education was the master architect's studio, his place of business, with lectures given at the school on mathematics, drawing, history, and theory (Pérez-Gómez 1983; Broadbent 1995). The contrast between the approach of the École Polytechnique and the École des Beaux-Arts is reflected today in a perceived contradiction between the scientific approach deriving from engineering expressed as architectural technology, and the artistic approach based on an aesthetic understanding expressed as architectural style.

The establishment of architectural schools in universities in the United States during the late nineteenth and early twentieth centuries, and the establishment in Weimar of the Bauhaus school at the beginning of the twentieth century, led to a change in the locus of education from the office studio to the school. The original Bauhaus curriculum in Germany gave students a grounding in the crafts and formal theory. When the Bauhaus moved to Dessau, Hannes Meyer, who succeeded Walter Gropius, developed a two-part curriculum consisting of theory (which included economics, psychology, and sociology) and practical building (which included various technical subjects) (Broadbent 1995). What emerged from these changes is now common practice: apprenticeship is an activity that follows education.

As Bauhaus ideas about architectural instruction spread and replaced the École des Beaux-Arts approach, academic architectural training began to overshadow apprenticeship. But it was only in the 1980s, some two hundred years after the establishment of the first architectural schools, that access to the profession by apprenticeship was eliminated as an avenue to the profession by almost every one of the fifty states (AIA 1994), which now require a professional degree to take the licensing examination. The professional education of the architect now includes instruction in technology (civil and mechanical engineering), history and theory (art history, philosophy, design methods, and social science), communication (studio art and drawing, and computer-aided design), and urban design or planning.

Despite these changes, contemporary educational practices still reflect the master-apprentice relationship in the way the faculty is organized and teaching is done. Some architectural schools in the United States, following the approach taken at the Bauhaus and brought to the United States by Gropius and Ludwig Mies van der Rohe (Saint 1983), are still run by a "master" architect who is also engaged in the practice of architecture. In this system, academics are often perceived to play a role similar to that of consultants in an architectural office, important but not central, while the practicing architects or "studio masters" are accorded more prestige.⁸ As the importance of scholarship and research has grown in many academic institutions, however, the balance of power in professional schools has begun to shift toward the tenured full-time academic faculty, leading some schools to pursue various avenues for tenuring architects whose primary responsibility is to their practice.

The tension between scholars and practitioners that results from the changing power relations is aggravated by the forms of architectural instruction. In most architecture schools, instruction is divided between the studio classroom, where design case studies are taught, and the lecture classroom, which houses the university-style subject-based instruction. In extreme cases, this has led to a kind of dichotomy between the "master architects" who "teach real architecture" in the studio setting and the academics who teach the knowledge base that informs the discipline. One consequence has been divergent calls for increased emphasis on research and advanced education (Rapoport 1987), for a reduced

emphasis on design in the education of the architect (Gutman 1987), or for eliminating higher education as a requirement for practice (Cuff 1987).

Architectural Knowledges: Engaging the Tacit and the Explicit

These contradictory suggestions for education correspond to two different conceptions of architectural knowledge: (1) the intellectual or explicit knowledge disseminated primarily in academia, and (2) the knowing embedded in the process of making architecture that is essential to design, what Polanyi calls tacit knowledge that is learned by doing and that cannot be critical ([1958] 1962, 264), a conception of knowledge as a way of doing something. Although many architectural scholars and practitioners regard these two forms as competing, the difficult challenge facing the field is how to engage and validate both forms of knowledge.

Among the myriad definitions of knowledge in the *Oxford English Dictionary* (1971) is a section that includes two parts: “the fact or condition of knowing,” and “the object of knowing; that which is known or made known.” To know both the condition and the object requires both tacit and explicit knowledge. Unlike many other disciplines, architecture’s use of apprenticeship and studio teaching to transmit knowledge has primarily emphasized not so much the *conscious* acquisition of (explicit) knowledges as the *unconscious* acquisition (the apprenticeship and studio are, to use Basil Bernstein’s term, *contextualized learning*, the doing of design but *recontextualized* from the field [1975, 30]). This method of teaching raises important questions about the nature of architecture as an academic discipline.

Even today it could be argued that a large portion of architectural knowledge is tacit; students learn from observation rather than by being told. The traditional studio instructor, the master architect, holds architectural knowledge in his person and teaches primarily by example and by coaching (Schön 1987). For example, the student may propose three alternative ways to lay out a building entry. An experienced designer can immediately see from looking at the drawings that one is too small and another is in the wrong place. Verbalizing *why* this is so — thus providing an explicit statement of “truth” — is far more complicated

than simply being able to recognize this “truth.” The awareness of how many people may enter the building, how much space it would take for them to walk past each other into the building, how big an entry needs to be, and where it should be located to symbolically communicate a dignified arrival — these ideas are not simple to explain or justify. Being tacit and contextualized rather than explicit and decontextualized, such knowledge is typically held unconsciously and articulated graphically without a verbal or mathematical description and thus is coded in a way not readily apprehended by outsiders to the field. Because architectural expertise is not evident to those outside the field, some educators believe that the tacit knowledge must be put into an explicit form that can be grasped by students and recognized by the public as valid expertise.

Today it is insufficient to simply assert expertise. Expertise must be backed up by a clearly defined, visible, usually linguistically described, coherent body of knowledge. Lacking this, the profession of architecture has found itself at a disadvantage relative to other fields and with questionable status as a profession, which has led to the development of explicitly *architectural* research (that is, research about architecture, conceived by people in architecture). But the result of the documentation and development of explicit knowledge is an increased emphasis on language as an inherent part of the architectural discipline. Whereas before, the architect was simply trusted to know about building, and his tacit knowledge, embedded in action and transferred through drawings, could result in a building, today’s building process requires more. In addition to drawings and other legal documents such as specifications, the architect must provide verbal evidence and justification for decisions in such forms as research studies, planning documents, cost-benefit analysis, and environmental impact analysis.

The existing structure of the knowledge and of theory within architecture, however, does not easily incorporate these new forms of explicit knowledge. Because traditional knowledge was personally held, the architect’s expertise, based on trust, needed no justification. Therefore, theories were largely, in Lang’s terms, “procedural” (1987) and informal; they described how to make architecture and addressed questions of “form.” Because the architect’s job was to make built forms, architectural theories focused primarily on the desired physical charac-

ter of architectural form and space (attributes of styles, arrangement of spaces), secondarily on the best way to create it (geometric systems, construction techniques), and thirdly on the objectives that the form was to meet (articulated within the field as Vitruvius's trinity of firmness, commodity, and delight). Following this formula, the traditional canon consists of buildings that demonstrate innovations in form and space, typically described as architectural styles.

The new knowledge requires theory that is, in Lang's terminology, "substantive." Whether in the area of technology, of history, of social science, or of formal interpretation, the focus of substantive theory is not limited to the form of the architecture but includes as well the ability of that form to achieve specific ends. Whereas procedural theory describes *how* to make architecture, substantive theory explains *why* architecture should be made a certain way. Evaluations of whether and why or why not a form achieves given ends demand not merely the traditional, self-referential procedural theory, which has its authority in historical architectural precedent, but also criteria drawn from outside the traditional discipline, such as how much energy is lost or gained by the use of certain materials, how a building will affect wind patterns or traffic flow, whether a building is perceived to have the appropriate character or to be beautiful, and whether the building supports the desired social agenda.

Procedural architectural theory has a peculiar character. While, like substantive theory, it is written down, it follows the old paradigm of architecture as an art object that only accepts as valid architectural knowledge that which addresses architectural form and space. Conventional architectural theory thereby cannot easily incorporate the discipline's considerable research knowledge that has been developed during the last twenty-five years in such areas as building materials, lighting, thermal design, historic preservation, and sociocultural studies but defines the new substantive knowledge as "outside" the domain of architecture (see Figure 4.1).⁹ Perhaps because the resistance of current theory to the authority of explanation is not well understood, ironically, many people who are involved in developing the new knowledge insist on the old definition of architectural knowledge that locates their work as outside the architectural mainstream. Although this may not significantly affect the work of the individual researcher, it severely limits the ability

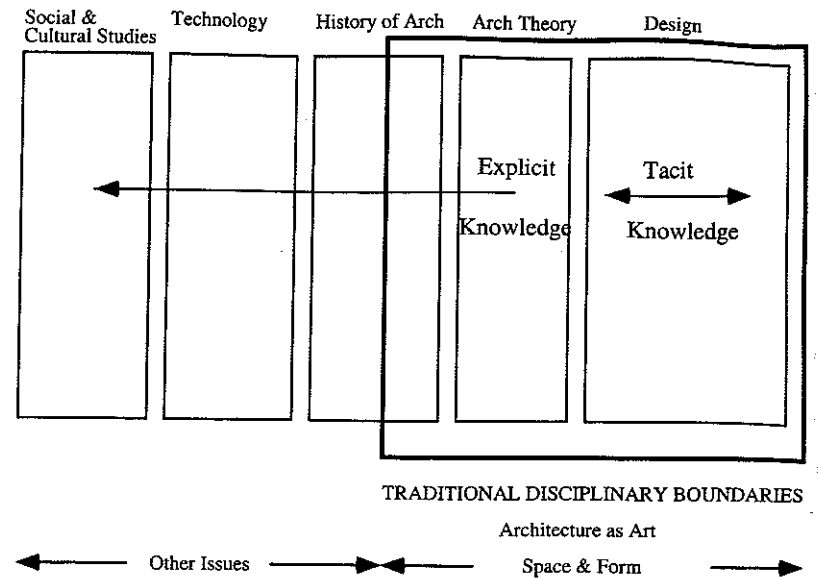


Figure 4.1. The traditional boundary that limits architectural theory to the making of form and space locates most research-based architectural knowledge outside the boundary of the field.

of students and practitioners to understand the discipline of architecture as a coherent body of knowledge. As a result, they do not engage with research findings in a meaningful way and rarely apply them in practice.

The written body of knowledge that has existed alongside the body of tacit architectural knowledge beginning with Vitruvius in about 100 A.D. was initially limited in scope and served as kind of an optional reference point. Within the modern period, written knowledge has increased almost logarithmically and has taken on a great complexity, incorporating building regulations and codes, including writings on history, art, and engineering, urban design, human behavior, design methods, and theory of architectural form. Accordingly, architecture has borders with as many as twenty-one different disciplines and fields (see Figure 4.2). The knowledge base is broad, and fractured because each subdiscipline exists without reference to the others.¹⁰ Additionally, the explicit knowledges of the subdisciplines are learned in classes largely independent of the tacit knowledge that is learned in the studio, although some faculty are experimenting with more integration.

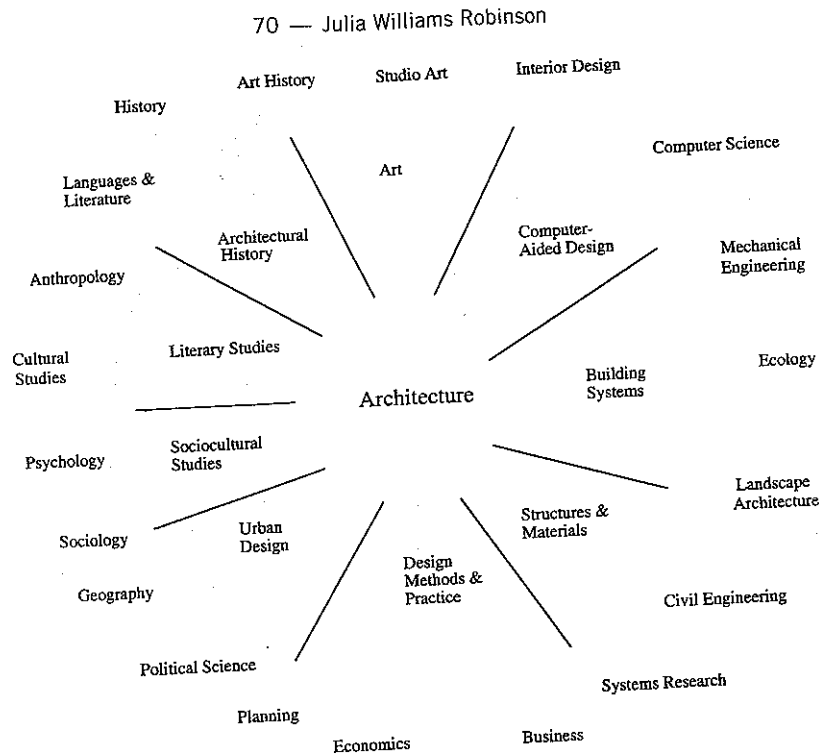


Figure 4.2. The relationship of architecture to other fields and disciplines.

This distinction between tacit design knowledge and the explicit knowledges of the subdisciplines has been assumed to follow the fracture between the scientific approach derived from engineering and the intention-based traditional approach (Pérez-Gómez 1983). The mathematical descriptions of the engineers, while considered useful to know, have been viewed as outside the realm of architectural knowledge. The threat of this disjuncture was not sufficient to challenge the traditional paradigm. But beginning in the 1960s, another fracture emerged that threatens the paradigm: the fracture between the tacit knowledge based in the individual architect, who is assumed to be an expert, and the research, which is concerned with actualization and therefore necessarily involves social issues. But surprisingly, the nature of this second disjuncture has been framed in terms of the old fracture, as the problem of objectivism and the scientific model (Pérez-Gómez 1983), not as the failure of the field to fully incorporate social and political issues (for instance, ecology, diversity).

The traditional explicit procedural knowledge and individually held tacit knowledge are concerned with the relation between the self, the intention, the act, and the generation of the artifact's form. In contrast, the emerging body of substantive explicit knowledge takes a social constructivist approach in addressing the process of making the artifact and analyzing the effects of the completed artifact in the physical and social world.

The new research challenges the traditional paradigm because the concept of architecture as form and space is insufficient to frame the study of the actual functioning of the created environmental artifact, whether in terms of heat loss, social message, or urban context. Architecture examined within its traditional framework is criticized according to the sets of internal criteria for how it is made. The degree to which space and form serve social or political ends is outside the frame, thus not an "architectural" subject. Framing architecture as a socially constructed cultural object, on the other hand, engages humanistic, artistic, and scientific aspects of the field and therefore is a potentially integrating approach. The adoption of such an approach, however, flies in the face of existing ways of understanding and instructing that focus on objectivized form separate from technical outcomes, economics, the human body, and sociocultural experience.

The Discipline of Architecture: Embodying an Out-of-Body Experience

Although constructed architecture is understood by people who inhabit it as a result of a bodily experience, the building that is being designed cannot be actually inhabited. This potential building must be at the same time (1) envisioned as a completed artifact that can be inhabited, and (2) understood as sets of virtual buildings each with different issues and requirements. Because the built environment must stand up, breathe, stay dry, warm, or cool, and serve a series of purposes that entail not just furniture and equipment but psychological ambiance and patterns of activities, the designer is perforce taking different points of view of the artifact depending on the question being addressed. In the design of a city hall, for example, one important perspective involves the user needs: the symbolism of the exterior for the public as an approachable building, the communication of the dignity of the overall function, the

requirement of a pleasant and efficient working environment for the city staff, the need for materials that can easily be maintained by the janitorial staff. Another viewpoint is the building as a technological organism: the building can be seen in terms of materials and structure, heating, cooling, and ventilation systems, embedded energy and energy use, and lighting—the character of daylight and artificial light across the day and through the seasons. Yet a third view is the building as an art object, in the play of geometry, the textures, colors, and patterns of the materials, the massing. A fourth view encompasses the building as it fits into the city: its physical appearance relative to the surroundings, the traffic patterns it generates for pedestrians and vehicles, its placement relative to other related buildings. The designer proposes solutions and evaluates them from these and various other perspectives. The building being designed is in a constant state of flux even as the designer seeks to fix it in a single form. The discipline of architecture revolves around the various issues that the built artifact must address and around the means of envisioning and critiquing possible formal propositions through use of representational media.

As mentioned earlier, the discipline of architecture is configured by subfields¹¹ that have not been definitively described but can be listed as technology (the engineering of structure and material relative to issues of gravity, light, air, moisture, and heat), history and theory (dealing with historical developments, social issues, style, design methods, philosophical issues, urban context), and architectural practice (economics, business practices, regulations, law). In regard to the definition of the discipline, though the boundaries of architecture are unclear, the sub-disciplines retain a segregation and integrity defined by the boundaries of their discipline of origin. Integration of the subfields is expected to occur in the process of design, hence design (which answers the question “what ought architecture to be?”) is the center of the discipline.

Learning to design involves acquiring knowledge as experience that informs decision making. The transformation of knowledge into experience is a process of embodiment. As mentioned before, to take into account the many different considerations that affect the building design, the designer cannot rely on conscious decision making but must come to know intuitively which choices will be better. The door drawn

on the plan must “look” too big or too small without the designer having to measure it. The wall material must “feel” cold or warm without the U-factor being looked up. But the intuition must be held loosely so that it can continually evolve in response to better knowledge. Developing this intuitive ability to make formal decisions based on sound information (tacit knowledge) is the essential goal of present architectural education.

It is paradoxical, however, that the architectural way of thinking has been taught as primarily abstract decision making, what I would call an out-of-body understanding of architecture. Especially in the design studio, despite the hands-on process of generating design proposals, the students often learned to apply abstract formal organizing principles (rules for manipulating geometry, ways of ordering spaces, techniques for putting materials together, systems for light and air, techniques for analyzing site and climate, rules of thumb for location of rooms) without being encouraged to link the principles to existing research or to their own daily experiences. In other words, *the construction of the formal product has been frequently understood in isolation from its effects*. As these rules and principles are repeatedly applied by students, they no longer require conscious thought to use, but the patterns they imply become the basis for developing design alternatives, conventional and innovative.

By almost exclusively emphasizing the geometric and technical formal criteria involved in making the artifact without stressing a parallel empathy with the way it will be experienced, the discipline has repressed the designer's personal knowledge, cultural experience, and ability to imagine actual use of the designed spaces. Ironically, as the students attempted to integrate their different knowledges using the formal design process, their decision-making criteria remained disembodied from daily life, generating the out-of-body designs (designs that look good but are not experienced as good places) that permeate the profession, rather than designs that create desired experiences. Additionally, until recently, there has been no systematic attempt to bring to the architectural design studio the experience of others than the instructor or the student (e.g., people who inhabit the building or clean the building, people who experience the building in unique ways because of physical

differences). Even today, the views of these constituencies are not consistently brought to bear on design either by direct feedback or by research on technical issues or issues of diverse sociocultural perspectives. This disembodiment of architecture has profound consequences that are only beginning to be amended.

The focus on formal issues without reference to their impact on society results from seeing the “truth” of architectural formal relationships as having a validity irrespective of, or more important than, its actual performance as a utilitarian object. Despite the widely mimicked statement that “form follows function,” generally architects have conceived of function as an abstraction that exists in the designer’s mind, about which the client needs to be educated.

In the studio experience and in the acclaimed work of the profession, typically, the documentation of the actual effect of the final architecture (practical or symbolic) is not considered as integral to its design, nor is the personal cultural experience of the designer addressed as a biased but important source of information. The need to assess a constructed artifact in comparison with its design intentions is obvious, as is the need to determine how the artifact performs over time, and how people’s uses of it and views of it change. Furthermore it is critical to know how the designer’s perception compares to that of others. Architecture that affects us most deeply often does so because of individuals’ sensitive understanding of what is important to them and to others. At the same time, as personal perceptions may be exclusively one’s own and not shared, the designer’s insight must be tempered by a humility to listen to the views of others in the form of personal interaction or reference to written research documentation. Without a critical perspective developed by questioning the effects of architecture and the degree of shared perspective, any evaluation emphasizes formal questions separate from lived experience and is politically naive. Excluding these factors perpetuates the practice of an architecture that avoids confronting the social and cultural issues of the day. As long as architects are only formalists, they do not have to be critical of their clients. When buildings are judged on purely formal terms, the degree to which they consume energy, empower a destructive group, socially stigmatize a population, or in some other way serve an undesirable social goal can be ignored. Furthermore, in ignoring this aspect of architecture, architects

disempower themselves, for it is precisely the politics that architecture aids or hinders that make it a powerful medium.

Paradigms and Politics

Even as the student demographics in architecture have greatly changed, the practice and education of architects continues to be dominated by upper-middle-class males of European extraction who design buildings and determine paradigms. The admission to the profession of new groups starting in the 1960s and 1970s (women, members of ethnic and racial minorities, people from working-class backgrounds, as well as people primarily involved in research, theory, and teaching) caused the traditional approaches to be questioned.¹² Although the “apolitical” traditional architectural knowledge continues to provide answers to the issues it has defined for itself and holds the highest scholarly prestige, its framework simply doesn’t permit asking basic compelling questions about architectural content (for example, whom architecture serves and how well it does so). If architects are to face the changes in both their own demographics and our increasingly diversified society, excluding socio-cultural and political issues from architecture seems to be inadvisable if not impossible.

A critical factor in erasing the sociocultural and political from architecture has been the societal role played by architects. Because in the past the backgrounds of the client and the architect were virtually the same and they therefore shared a value system and worldview, those educated within the field have found it difficult to fully appreciate the degree to which the design of buildings is affected by the relation of architect to client. Those in a society who have the resources to pay for architectural services and to build fundamentally influence the field of architecture. In different historical periods, the introduction of democracy, capitalism, and socialism altered the nature of architectural practice and architectural knowledge because the architectural client changed. Similarly, the emergence of the consumer society has further affected the relation between the client and the consumer or user, challenging existing practices and knowledge. The architect can no longer take for granted that his or her own perspective or that of the paying client can adequately represent the needs of the building’s day-to-day users.

The challenges inherent in the design of buildings for people who are unlike either the client or the architect first became fully apparent in the 1960s when the failure of the Pruitt-Igoe housing project in St. Louis, manifested in its destruction, revealed the limitations of relying exclusively on the client and architect to represent the requirements of the building user. The critical questions that Pruitt-Igoe raised about the discipline of architecture could have served to expand its boundaries to include the social, economic, and political issue of understanding the needs of the poor. Instead, the discipline's boundaries remain the same, with such problems defined as outside its primary domain, since they go beyond issues of the professionally defined product: form and space.

Historically, in professional practice, many architects retained their position by servicing powerful clients and accepting their values. When the powerful ignored, misunderstood, or repressed the needs of others in the society, the views of the less powerful did not play a role in the definition of architectural knowledge or practice. Insofar as the traditional perspective is followed, it excludes the powerless, or the "other," and has proved unable to effectively encompass social justice, the politics of diversity, or the politics of empowerment, and these issues remain outside the purview of architecture. Because the views of others, the outsiders, differ, they appear to threaten the existing norms. Involving the user, the ordinary citizen, the public, not only would require more time and energy but would demand substantial changes to existing practices and necessitate difficult challenges to the client's ideas. Including perspectives other than that of the client therefore comes to be seen as "political" in its negative sense and (to the powerful) is usefully defined as outside the boundaries of the profession. By focusing exclusively on form and space, the designer can serve the client without having to question conflicts of interest that may exist.

Clearly a culturally critical position is needed. The inclusion in the field of different kinds of people than are now present, who are not part of mainstream practice, offers one potential source of new cultural visions based on different cultural perspectives than dominate the field at present. This can also be accomplished by using research on attitudes, desires, and habits of groups, as Herman Hertzberger has done relative

to such buildings as De Drie Hoven, Home for the Elderly in Amsterdam. Although another approach, participatory design, is not yet a mainstream practice, a number of architects involve community clients and users in projects either typically or occasionally.¹³

The accepted traditional paradigm creates fundamental problems within the discipline; nevertheless, without another to replace it, the various contradictions simply coexist. In Margaret Archer's view, every culture has within it ideas that do not fall within the existing paradigm, and the strength of the paradigm derives from its ability to coexist with these ideas in the light of competing paradigms (1988). While contradictory ideas require a new paradigm, complementary ideas are potentially accommodated within the existing one. Certain key questions in architecture may not have been reconciled precisely because they have been understood to be competing and contradictory to the existing paradigm. Even though the traditional paradigm in architecture is not capable of addressing these apparent contradictions, its proponents see alternative views as threatening to their apparent validity. In truth, the traditional paradigm has value: it is necessary but not sufficient.

A Proposal for an Integrating Paradigm

Examining architecture as a discipline, studying the character of architectural knowledge, reveals a fundamental dichotomy between the past procedural view of architecture as the making of the artifact and the substantive view that incorporates the effects of architecture as well. This effort reengages the social orientation envisioned by the early modernists but rejects their attitudes of Western superiority, universality, simple causality, personal authority and heroism. Developing a substantive approach to architecture that leads to explicit expertise requires extending the view of architecture as an artistic endeavor to include the sociocultural, political, economic, and ecological ramifications of its procedures and products. To maintain a vision of architecture as an exclusively aesthetic artifact would ignore the effects of a building on fuel use, transportation systems, pollution, and so forth, and deny the validity of the experiences of those who are erased by traditional architectural knowledge (people of non-European extraction, females, handicapped peo-

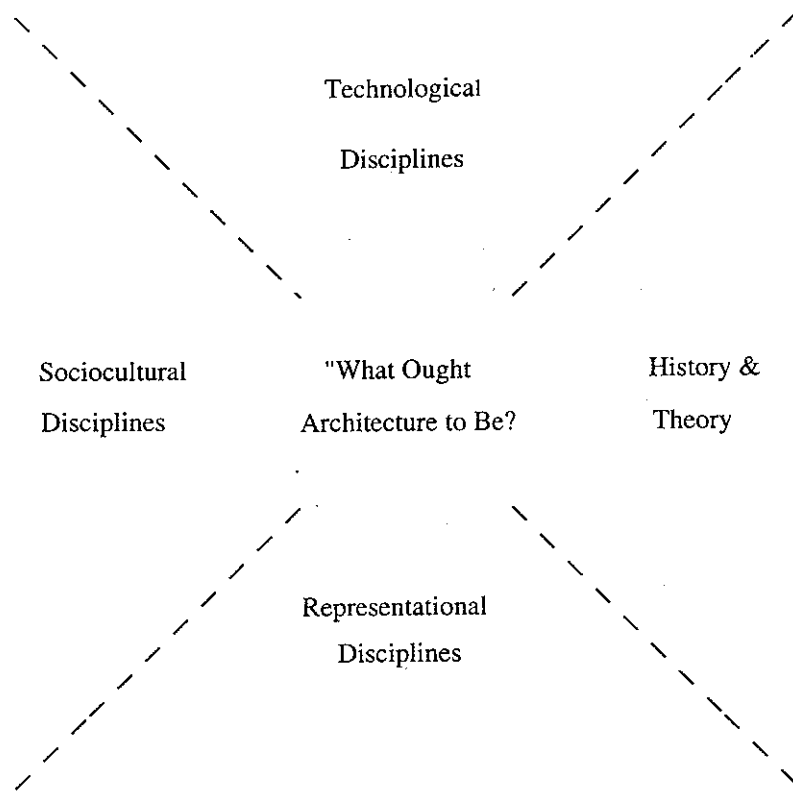


Figure 4.3. The new paradigm of architecture as cultural medium unifies the subfields.

ple, working-class people, etc.), creating an architecture that is increasingly irrelevant to, and alienated from, the world in which it operates.

If architecture as a built setting is taken as the central focus of the field, however, and its effects on the environment are understood to be as much a part of the discipline as its form and space, then all subdisciplines and perspectives can be seen as essential. To envision them as complementary simply requires a paradigm that engages the tacit and the explicit, the scientific and the mythological, the conceptual and the bodily, the formal and the political.

Such an alternative conception of architecture frames architecture as a cultural medium,¹⁴ deriving from the design question "what ought architecture to be?" It encompasses architecture as it is received and as it functions in the physical and social world (see Figure 4.3); it also includes the procedures that define the field (the design-build process,

the attainment of legitimate status). This concept incorporates architecture as art, as technology, as politics, as well as from numerous other perspectives. In an academic context, focusing on a central question ("What ought architecture to be?") rather than on defining boundary conditions (e.g., "It's only architecture if it deals with form and space") frames the discipline so that it is permeable. All of the discipline's present subdisciplines are included, and the possibility exists for including others that also respond to the central question. Moreover, having a single question (or a set of questions; for example, see Leatherbarrow's chapter) also promotes a more integrated understanding of the subdisciplines. Instead of posing contradictory or competing definitions of architecture, it posits that different subfields offer complementary ways to approach a common set of issues.

Furthermore, the cultural approach clarifies the relation between academia and the practicing profession, for it creates complementary roles for the two arenas. Practicing architects respond to the question of what architecture ought to be by creating buildings; academics respond by studying buildings to develop explicit knowledge that guides improved design. The process of education links the two arenas of professional practice and academia. Novice students must learn the explicit knowledge and transform it into the tacit knowledge that allows application, and the experienced professional can learn new explicit knowledges that challenge existing modes of design practice.

To the extent that academics create knowledges that are able to discernibly improve the designed environment or the procedures of the field, the practicing professional will support and value their role. To the extent that the practicing professionals engage with the new knowledge, create better places, and even generate new knowledges themselves, the academics will desire their participation in the educational and scholarly process as important partners.

But the cultural approach also challenges the self-conception of the architect, for authority now resides in the knowledge itself rather than in the person who holds it. If architecture is a cultural artifact, answering the question of what architecture ought to be is no longer the simple prerogative of the architect, but a societal task. Instead the architect becomes responsible for helping develop a process by which answers can be agreed upon. This involves architects (1) participating in research

using accepted scientific practices, (2) engaging in more open and participatory design processes, and (3) taking a greater role in public education and political action.¹⁵ Rather than simply being in the responsive mode, architects will have to become proactive, generating a discussion of issues. Involvement in public education will create opportunities for valuing people with a greater variety of backgrounds. By opening up the ranks of the profession to a diverse group of people, the field will be able to respond to the changes that are taking place.

Professional education must provide the student with the tools for a new form of engagement with the world. Other writers in this book mention the increased importance of teamwork, of interdisciplinary approaches to solving problems, of awareness of social and ecological imperatives, of the local and international context. Also important is the locus of authority. As preparation for the new relation to the client and user, the instructor needs to adopt a less authoritarian role. Authority should lie in the knowledge held rather than in the social position. The instructor needs to acknowledge that students come with a valid knowledge of their culture that requires respect (especially for those of cultures different from the instructor), and that their viewpoint does not need to be replaced by an architectural one, but only supplemented by it.

Although the focus of architectural education is likely to remain the design studio, the knowledges and research methods presently conveyed in the so-called support courses will be increasingly important. Studio instruction itself will alter to accommodate the already existing change from a problem-solving approach to that of problem exploration, in which the approach to finding answers is as important as the answers themselves. As also advocated in this book, students must also be exposed to a more scholarly approach to design so that they are prepared to engage with the new knowledges, including the ability to prepare and present logical arguments, to analyze precedent, to cite important texts, and to read critically. But more than this, if architects are to fully participate in a knowledge-based field, their training needs to include sufficient awareness of the parameters of research and scholarship that they can appreciate the limits and potential applications of findings, and so that those practicing architects who wish to can participate in the development of knowledge.

At the same time, it must be acknowledged that in studio learning, as in architectural practice, the explicit knowledges are valuable only insofar as they can be integrated with each other and within the design process itself. As discussed earlier, integrated application occurs when the knowledge is so well understood that it is held in the body of the designer and applied in an unconscious or semiconscious way. Studio instruction must continue to promote this applied understanding while developing the students' critical awareness and questioning of the design actions and products.

In defining architecture as a cultural matter, society can more effectively invest in the field of architecture, thereby empowering architects to effect constructive change. By redefining architecture as a discipline that incorporates not just architectural form but its physical and socio-cultural effects, the worlds of academia and practice can become complementary, making architecture the powerful political force it ought to be.

Notes

1. Here, the use of the word *field* or *area* designates the broad arena of architecture including academia and practice, whereas the term *discipline* designates the formalized architectural knowledge base, or knowledges that are produced and disseminated in education, research, and practice.
2. Conservative estimate based on projects reported by key institutions at the Architectural Research Centers annual meeting (Architectural Research Centers Consortium 1993).
3. See, for example, *Journal of Architectural Education*, *Journal of Architectural and Planning Research*, *Proceedings of the Environmental Design Research Association*, *Proceedings of the Association of Collegiate Schools of Architecture*.
4. E.g., the Environmental Design Research Association, the Architectural Research Centers Consortium, and the Association of Computer Aided Designers in America.
5. A powerful argument could be made that these factors simply reflect diversity in the field, but such diversity could also be seen as a lack of clear definition.
6. For example, Jean Wineman's study of doctoral programs ("Comparative Statistics, . . .") shows that the titles of different subject areas are inconsistent. What is History/Theory/Criticism (H/T/C) in one department is History in another and two separate areas called History and Theory in a third. In some departments, the study of design methods is located in H/T/C, in others it is located in its own sub-

ject area, in yet others it is located in Professional Practice. Similarly Environment-Behavior Studies or Sociocultural Factors may be within H/T/C or on its own or not included as a subject.

7. Spiro Kostof notes that Theodorus of Samos, an architect who was instrumental in the construction of the Temple of Athena at Sparta, subsequently ran a private school of architecture in that city (1977a, 16).

8. Bletter (1981, 110–11) notes that before retiring from Columbia in 1933, Dean William A. Boring instituted a system of independent studios headed by “studio masters.”

9. Figure 4.1 derives from a diagram made by Simon Beeson in an unpublished paper that was a draft for his master’s thesis (1994).

10. The general agreement about the knowledge base is formalized in the United States and Europe through the school accreditation process.

11. Some would argue that architecture is not a discipline but a set of disciplines. Although this may be true to a certain extent at present, this chapter takes the view that defining architecture as a discipline makes it more likely that the connections between what are then subdisciplines will increase in the future, and that consequently architecture will become more cohesive and coherent as a field.

12. There is a great deal of critical material, for example, Anthony 1991; Grant 1991; Davis 1993; Frederickson 1993; and Groat and Ahrentzen 1996.

13. For additional examples, see Sanoff 1990.

14. This position has been implied by a variety of authors such as Rapoport (especially 1982) and Lang (1987) but has specifically been proposed relative to rethinking architectural theory and educational practices by Robinson (1990) and Groat (1993a).

15. For elaboration of this point see Gusevich 1995, as well as Sutton, this volume.

5

Architecture Is Its Own Discipline

David Leatherbarrow

If I had to teach a child geography, I should start with the plan of his garden, it seems to me—as Rousseau did—with the space that his pupil Emile can embrace, with the horizon that his own eyes can see; then I should project his curiosity beyond the limit of his vision.

—André Gide, *Pretexts*

For architecture to remain significant in our time, it must redefine its basic subjects. That it is a discipline with its own subject matter can neither be assumed nor taken for granted because nowadays architecture is often seen as a practice that borrows methods and concepts from other fields, whether the natural or the social sciences, engineering, or the fine arts. This appropriation is neither by accident nor by fraudulent intent; for some time now, other professionals, engineers, landscape architects, and planners, have performed some of the skills that had traditionally defined the architect’s role, and have done so reliably. It would be naive and nostalgic to assume that we can return to the way things once were. Does this state of affairs mean that architects should continue to turn to other fields for inspiration?

For what is the architect responsible? For what tasks should students be trained in order that they may act authoritatively in some arena of cultural work? What skills and subjects are particular to this form of practice and to no other? Are there any? If not, if a distinct role cannot be