

# Design/Build in Context

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## INTRODUCTION

In an editorial for *Progressive Architecture* in 1970, Forrest Wilson wrote,

Counter culture, options, alternatives, change — call it what you will — an increasing number of architects, planners, designers, teachers, artists, are searching for dimensions of their professions outside of what they feel are the narrow limits imposed by an increasingly restrictive society.'

Although the popular perception of culture at the time would seem to indicate just the opposite, the "increasingly restrictive" society Wilson describes seems to have referred to the perceived straight-jacket of architectural production as during the twentieth century the values of architecture had come to be seen as coincident with the values of business. The last twenty years have only served to amplify the conditions Wilson alluded to -- the hyper-commodification of architecture and the capitulation of the profession and education to that end -- and to demonstrate the profession's imperviousness to such resistance. Despite relentless efforts, stylistic post-modernism never was able to address fundamental issues of production and economic determinism and consequently became consumed by the forces it sought to counter. A pattern of cyclical recessions has raised questions about conventional practice and the traditional patronage system supporting architecture, sending another generation of architects and designers to "search outside" for alternative models for practice. Finally, having just resurfaced after a long exile, environmentalism is encouraging a re-evaluation of the means and ends of both reformism and regionalism in architecture on a substantive rather than stylistic level.

The "searching outside" for new possibilities on the part of architects is connected to the long history of reformism in the profession of architecture. Many motivated to search outside of conventional practice twenty five years ago have continued the search through a form of practice known as "design/build." Despite the AIA's ban (repealed in a 1978) on combining the two, design/builders propose that the

practice of architecture can be about the art of making buildings, not merely making information for others to make buildings. As a critical practice, the design/build process attempts to negotiate the still unresolved conflicts inherited from Modernism: the relationships between design and building, between hand craft and industrial production, and between the building and its environment.

If design/build practice is to be understood as the challenge to the profession and education it is, rather than only a counter-culture phenomenon, the activity and its motivations have to be defined and placed in context. Unlike many architectural movements, the term "design/build" has no necessary formal implications. There is no design/build "style." As commonly used, the term often refers to a type of interdisciplinary practice that provides both design and construction services in-house in the interest of economic efficiency; this might more accurately be called design/build/develop. Much of the American mass-market "home-building" industry can be described this way. This form of design/build/develop activity changes the triangular relationship among contractor, architect, and client from one of autonomous participants to a relationship where the architect is often the employee of the builder/developer and the client little more than an abstraction. The motivation of design/build/develop is to standardize the product, minimize variables and, not inconsequentially, maximize profits.

The motivation of design/build, in contrast, is a desire to offer a critique of, or an alternative to, traditional professional practice by focusing less on economic efficiency than on trying to bring both design and construction into greater confluence. In this way, the same creative energies and intentions inform the concept and the way it eventually is realized, extending design thinking into the material world of construction. This also necessarily involves adjusting the conventional roles played in the process of designing and building. The standard contractual dance among architect, client, contractor, and subs, involves prescribing and proscribing certain channels of communication. Many of those actually making the building, therefore, have little opportunity to participate in or even apprehend the nature of the

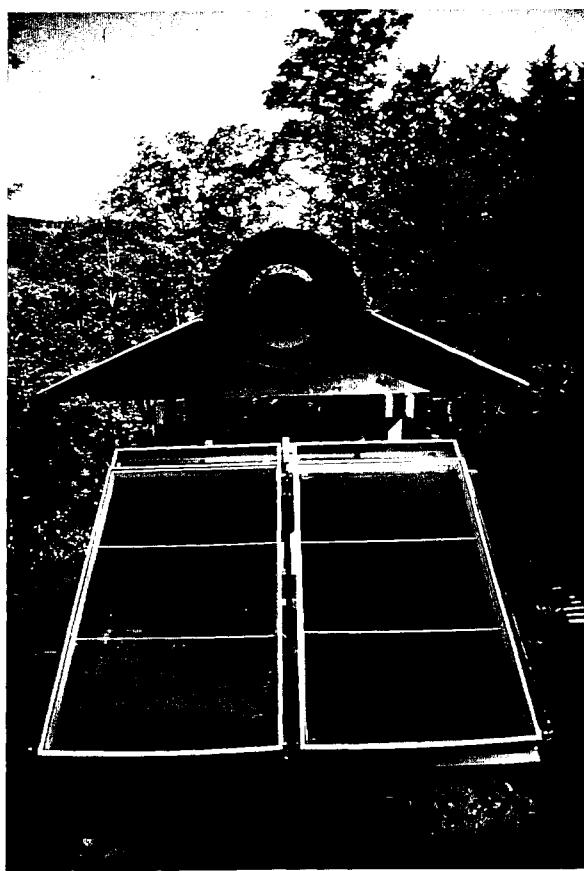


Fig. 1: Solar shower built by Yestermorrow students; Summer, 1994, Steve Badanes studio.

whole project. The architect is responsible for providing a service; the contractor, for providing the building. Design/build proposes that the architect and contractor, working closely with the client, share the responsibility of providing the building. The intent is collaborative rather than adversarial. The motto of Yestermorrow, the design/build school in Vermont founded in 1980 by John Connell, reads "integrating the architect and the builder, in the client."

As their catalogue states, "the best built environment is dependent on the joint involvement and close cooperation of designers, builders' and owners."<sup>2</sup> The alternative offered by design/build practice not only brings the architect into the building process, but empowers the builders and the client to contribute to an on-going process of designing and building.

### ARCHITECT AND BUILDER

Ironically, this intentional desire to unify all of those roles undermines centuries of efforts to divide them. Despite the popular myth of the architect/master builder of the Middle Ages, there already existed a split between the architect as conceiver and the architect as maker. The term *architectus* referred to the master builder who had learned architecture by building, while the term *mechanicus* referred to the conceiver, who had learned architecture through study in astronomy, theology, and the liberal arts.<sup>3</sup> The *architectus*

could be seen as the hands of the *mechanicus*, the implementor of his theories in built form.<sup>4</sup> Although the meaning of these terms is contrary to contemporary usage, the two roles establish the familiar problematic relationship between architect and builder and imply a necessary subservience of the hand to the head. Design/build seeks to remedy not merely this historical split between the roles of designer and builder, but the implied hierarchizing of the two roles. Emphasizing the importance of both types of architectural knowledge, Vasari wrote about Alberti, (in his view the perfect architect of the 15th century): "When theory and practice coincide then nothing could be more fruitful, since artistic skills are enhanced and perfected by learning and the advice and writings of knowledgeable artists carry more weight and are more efficacious than the words or work of those who (whatever the quality of their results) are merely practical men."<sup>5</sup>

The question of which is the primary knowledge base of architecture, theory or practical experience has remained one of the central dilemmas of architectural practice and education.<sup>6</sup> During the 19th century, France and England exemplified this dilemma in the education of architects. France, where architects were educated through the Ecole des Beaux Art, considered theory primary; England, where education tended to rely on apprenticeships, considered practical knowledge primary. The United States at first followed the English model, as it had in the previous century, considering architecture a trade rather than one of the learned professions.<sup>7</sup> American architecture of the eighteenth century had been characterized by a reliance on pattern books written expressly for the owner/craftsman who found himself "in the remote parts of the Country where little or no assistance for Design can be procured."<sup>8</sup>

The pattern books were popular and contained details,

B O O K  
•  
A R C H I T E C T U R E  
C O N T A I N I N G  
D E S I G N S  
O F  
B U I L D I N G S  
A N D  
O R N A M E N T S .

By JAMES GIBBS

LONDON  
Printed M DCCXXVIII

Fig. 2: Title page from James Gibbs's "Book of Architecture" first published in 1728.

elements, and entire buildings which could be "executed by any Workman who understands Lines..."<sup>9</sup> Over the course of the century, however, American education abandoned its craft-based tradition and turned toward the Ecole model as the path to professional legitimacy. Consequently, the values of apprenticeship, i.e. construction and craft, were marginalized within a curriculum that emphasized delineation, history, geometry, and engineering principles. The knowledge gained from making buildings thus came to be seen as tangential to the professional definition of the architect.

The current interest in design/build as an alternate form of practice on the part of students, the media, et.al., suggests that theory and practice today are not successfully coinciding; as Vasari puts it, rather, the "merely practical" seems to have been eclipsed by an overemphasis on theory.<sup>10</sup> Design/build studios at various universities, as well as extracurricular efforts such as Yestermorrow's, are still seen largely as supplements to a fundamentally theory-based education where rather than knowledge about building being acquired by building, knowledge about building is acquired by studying about building." Knowledge gained by building, the "how" of architecture has therefore been demoted, if not completely marginalized.

The professional internship derives from a recognition that a theory based education has certain limits. The internship itself, however, is not directed toward field experience, so to speak, but rather toward the application of the same abstract design skills and abilities learned in the academy. Students who look to the internship as the time to learn "how things go together" find that budget and expedience often conspire to limit their access to the construction process. More than that, however, the segregation of the profession from the activities of building are in fact systemic, part of a corporate culture which defines itself as a service. By definition, the internship is dedicated to the dissemination of the "how" of serving the client, rather than the "how" of building the building.

As design/build practice involves a rethinking of the linear relationship between designing and building, so it inevitably calls into question the relationship between the media of the design world and the construction world.<sup>11</sup> In conventional practice, drawings, models, and specifications offer as complete a description as possible of the intended object in an attempt to decrease variables and increase predictability in the production of the contract documents. These efforts can be seen as serving the interests of production efficiency and contractual obligations but not necessarily those of the work in progress. A design/build practice questions the relationship between documents and built form as well as the relationship of the architect to the process of making each. In his book, "The Reflective Practitioner" Donald Schon describes the act of designing as a "reflective conversation with the situation."<sup>12</sup> But even his discussion is limited to the design world. "A designer makes things," he writes, "sometimes he makes the final product; more often

he makes a representation — a plan, program, or image, of an artifact to be constructed by others."<sup>13</sup>

The consequences of how, if at all, this "reflective conversation" continues into the process of building in traditional practice is not raised by Schon, although it seems a logical next step when considering the design/build process. The architect/craftsperson may be modeled on a pre-industrial mode of practice, yet must still operate in the context of industrialized and professional specialization. But the ability to "reflect in action" is critical as the action is occurring in real time on the construction site where abstract ideas meet rules of thumb. This reflecting occurs not only on the level of the material of making, but also through the experience of the site. The give and take between model and drawing at the desk can then be broadened through design/build to include the real object in a larger "conversation with the situation." Reflecting *in situ*, so to speak, should allow characteristics not easily translated into the design world to inform the work, to allow a more interactive process.

## HAND AND MACHINE

Design/build as a form of practice has focused primarily on the problematic relationship between architect and builder, searching for a consonance between these two roles to broaden the activities of both design and building. But in that process, design/build also questions the means of architecture, revisiting another of the unresolved dilemmas of the last century, the relationship between craft and industrial production. The nineteenth century produced an architectural profession divided between the traditional view of architecture, with its obligation to historical styles, and the demands of an increasingly industrialized society. Industrialization had brought a diversity of building types which needed more complex services from the building professions, furthering the divide between architect and builder. Because of new structural techniques, new materials, and new questions about style and appropriateness, more than ever before the means of building had become a problem for architecture. As Pevsner has pointed out, it was the engineers, leading the way in the exploration of materials, who were able to abandon "the styles" leaving the architects to question whether architecture was the one constant in a changing world, or a participant in those changes."

Industrialization allowed a previously unknown scale, and freed building from the immediate constraints of locality. Steel and concrete, for example, do not necessarily arise from the indigenous resources of a place; in this sense, they are not vernacular materials. For the first time, architecture had become portable, undermining building's traditional relationship to its region. This freedom to chose a way of making architecture based on factors other than local conditions was both paralyzing and invigorating to the nineteenth century architect. Consequently the machine, as a synecdoche for industrial production in architecture, was viewed

either as a threat or as a liberator.

Clearly the relationship of architecture to the machine was, and is, more than a formal or aesthetic problem. The efforts of both the Arts and Crafts movement and later the Bauhaus were inextricably tied to the social and economic consequences of industrialization. For William Morris and his followers the way in which buildings and furnishings were made could not be divorced from their social milieu. The goal of the Arts and Crafts was an integrated and designed environment where the clients were "homemakers" in the most literal sense by learning basic crafts themselves.

Machine-made objects, in spite of their greater availability and affordability, were inherently contaminated by a sort of architectural original sin. Machine production, it was felt, compromised the object by obliterating the signs of its making and therefore devalued the efforts of the craftsman. Materials were to be undisguised, and their natural characteristics celebrated. Viewing industrial production itself as a threat to local traditions, the Arts and Crafts movement stressed that architecture and design should be based on the vernacular principles.<sup>17</sup>

William Morris had asked, "What business have we with art at all, unless all can share it?..."<sup>18</sup> He seemed unable or unwilling, however, to acknowledge the contradiction inherent in his statement. As long as production of the artistic environment was slow and its objects rare, all would not be able to share it. If the common person were to share in the spiritual benefits of the Arts and Crafts environment, either craftsman and machine would need to enter a new partnership, or society would have to produce more artists. In the 1850's, Morris could conceivably still have a "choice" regarding his participation with industrialization, although one choice was inordinately weighted with socio-economic consequences diametrically opposed to his goals.<sup>19</sup> His desire to make amateur craftspeople of ordinary citizens indicates that his preference was for society to make more artists rather than enter into a Faustian partnership with industry.

A half-century later, many of the same reformist impulses



Fig. 3: Arts and Crafts interior, published in "The Craftsman," December 1905

figured in the formulation of the Modernist agenda, stated by Walter Gropius in describing the principles of the Bauhaus.<sup>19</sup> In the desire for honesty, simplicity, and accessibility, Gropius seems to be echoing many of the earlier principles of the Arts and Crafts movement. Like Morris, he intended to dissolve the boundaries between the so-called fine and useful arts, yet the role of the machine in producing these new environments and in changing the society which would inhabit them remained the fundamental difference between the two positions. Despite their differences on means, Gropius and Morris shared certain progressive ends regarding the material world as well as society. By "re-forming" things in the world, such as dwelling places and their furnishings, these architect/reformers would change society. Inherent in the program of each group was the firm belief in a confluence of the architect, builder and client and in the possibility that society as a whole could be either redeemed or destroyed by the choices made about its environment.

Design/build shares the Arts and Crafts beliefs in the integrity of the object, the craft of making, and the dignity of the craftsman, but it also shares the contradictions those beliefs carry in the context of the late twentieth century. On the surface, these values are almost unassailable; who can argue against well-made, honest objects produced by skilled and unexploited workers? The protracted change over the course of the twentieth century, sensed by Morris and seized upon by Gropius, from an economy dominated by expensive materials and relatively cheap labor to one dominated by expensive labor and relatively cheap materials has tightly circumscribed the realization of these values. The average worker today is no more in a position to patronize craft and eschew the machine-made than the worker of the nineteenth century. Perhaps more significant, this mythic average worker may wonder why one would want to, considering what the machine has made possible. As Morris warned, however, the benefits of industrialization are not without their costs. The other master value of the reformers, the conviction that society itself could be redeemed through the realization of these material changes, has come to be seen as utopian and perhaps even as arrogance on the part of designers.

## THE BUILDING AND ITS ENVIRONMENT

Design/build practice finds itself in the seemingly contradictory position of trying to reconcile what once was considered a progressive goal of mediating the relationship between society and technology with what might seem a regressive goal of restoring architecture to a pre-industrial mode of practice. Both of these reforms, however, can be seen as converging in a re-emerging environmental consciousness in architecture and society. Glen Murcutt's often-quoted remark that air conditioning has meant the death of architecture suggests that the impact of the machine on architecture in the post-industrial era has been felt more in the realm of environmental controls than production.<sup>20</sup> Despite Morris's

wishes, the machine and its successor the computer are unavoidable and, for better or worse, indispensable in the making of architecture. Gropius's dream of standardized components available to all has in fact been realized, although perhaps not in the form the Modernists would have liked. Industrialization, the modernist dream, has made possible the housing developments and affordable consumer products that offer to all the utilitarian environments Gropius described. Yet the consequences of our ability to build anything anywhere and make it habitable through mechanical means are, as was the freedom of industrialization for the nineteenth century, both paralyzing and invigorating. From an environmental standpoint standardization, any sort of "international style" in fact, can be considered ecologically arrogant in that it overrides local specificities and can allow questions of appropriateness in form and construction to be avoided. Of all of the side effects of Modernism, the environmental consequences seem to be the most complex and resistant to solution by architecture alone.

Since the first energy crisis of the early 70's, energy efficiency in architecture has tended to focus more on problems of architectural technologies (e.g. high performance skins, electronic monitoring) than on fundamental architectural principles. The development of "smart building" technologies and components poses difficulties for architecture similar to those of industrialization in that much of the research and design is being done outside of the architect's territory. Environmental controls can be handed over to others and rendered invisible to designers and owners, with the result that energy concerns in building are often treated as attachments to a form derived for other reasons. The icons of energy-conscious architecture of the 1970's, such as solar collectors and Trombe walls, became a stigma in the 1980's when the reality of scarcity became obscured by the illusion of plenty. Those continuing to work toward a less petroleum-dependent architecture were labeled "alternative," with the unfortunate consequence that their work could be relegated to the margins of architecture. Now, with the rise of the more comprehensive and complex concept of sustainability, "solar architecture" seems to be a narrowly mechanistic definition of environmental architecture. Sustainable architecture, in contrast, considers the full range of consequences of building, including the manufacture and transportation of its components, its consumption of energy, its form and siting, and, finally, its ability to contribute to rather than to destroy its environment over time. As Murcutt's comment suggests, the default to technological solutions in building and dwelling has masked the experience of the physical reality of place and, in the process, actually changed that reality. Air-conditioning not only reduces the window from an articulated mediator of light, air, and privacy to a facade element, but degrades the environment outside the privileged interior.

The ability of design/build practice to address the full range of scales demanded by the concept of sustainability is limited by the very issues it has chosen to engage. There is



Fig. 4: cover from Progressive Architecture.

an unavoidable irony in the fact that most design/build production has been in single-family houses in automobile-dependent locations. Living off the grid and on the land is an individual choice about which the larger system remains indifferent. The still experimental nature of the much design/build work, however, suggests that older neighborhoods or denser contexts might be less receptive. The scale shift necessary to address density, infrastructure, multiple building types, almost by definition demands a specialized and standardized building process.

## CONCLUSIONS

While the manifestations of design/build's engagement with these issues are novel and in many cases provocative works of architecture, the issues themselves are rooted in architecture's historic and continuing problematic relationship to its context. For design/build, however, the location of this engagement will always circumscribe the success. In other words, the inherent problem of design/build practice, as for the Arts and Crafts movement, is that this mode of practice may be very successful at what it does, but what it does, and can do, is inevitably limited by what it is. The nature of the practice limits design/build to certain scales and situations as its success depends on an almost neo-medieval

process of making. Ironically, design/build's organizational relative, design/build/develop, has been particularly successful in speculative architecture, arguably the dominant form of building currently, by entering into rather than stepping outside of the laws of mass production and economy. This inherent problem carries risks for design/build's ability if not to change the system it opposes than at least to suggest by demonstration. One is the narrowing of the social agenda not only of the early reformers like Morris and Gropius, but of the reformist spirit of the sixties from concern for society as a whole to concern for the enlightenment and empowerment of one individual client at a time. The belief that reform must begin with the individual, as active client/patrons or, if Yestermorrow alumni, as latter-day Gibbsian citizen/craftspeople, suggests that stewardship of the environment may be limited to a certain economic class. Another risk is that posed by a retreat into reactionary romanticism, where the struggle to seek a constructive engagement with the problems of specialization and professionalization, technology and standardization, environmental callousness, is abandoned.

The ideological distance between houses for the wealthy and Habitat for Humanity reflects the diversity of current design/build activity. As a way of practicing architecture, design/build travels light, so to speak, in that carries very little theoretical baggage. It is perhaps premature to speak of a design/build movement, because a movement implies an explicit and shared theoretical position, an articulated goal, and an institutionalized means to achieve it. Many of the practitioners of design/build share less a theoretical position than the strong desire to make something, and the belief that the act of making things is in itself the taking of a position. That position is the same now as when Forrest Wilson wrote about the counter-culture in 1970, the refusal to collaborate with a system perceived as distanced from craft-based roots of architecture and subservient to the interests of business and industry.

## NOTES

- <sup>1</sup> Forrest Wilson, "Advertisements for a Counter Culture," Editorial, *Progressive Architecture*, July 1970, 70
- <sup>2</sup> Yestermorrow Design/Build School, course catalogue 1994-95
- <sup>3</sup> *The Architect*, ed. Spiro Kostof (New York: Oxford University Press, 1977) 62

<sup>4</sup> Erwin Panofsky, *Gothic Architecture and Scholasticism* (New York: Penguin Books, 1985) 28

<sup>5</sup> Giorgio Vasari, *The Lives of the Artists*, trans. and ed. George Bull (New York: Penguin Books, 1977) 208

<sup>6</sup> This debate is threaded through Alberto Perez-Gomez's *Architecture and the Crisis of Modern Science* (Cambridge, MA: MIT Press, 1988) and appears in anecdotal form in Dana Cuff's *Architecture: the Story of Practice* (Cambridge, MA: MIT Press, 1991)

<sup>7</sup> Kostof, 214

<sup>8</sup> James Gibbs, *Book of Architecture...* (London, 1728) quoted in Hugh Morrison, *Early American Architecture: From the First Colonial Settlements to the National Period* (New York: Oxford University Press, 1952) 288

<sup>9</sup> Ibid, 290

<sup>10</sup> The article "Building to Learn" by Mark Alden Branch in the March 1994 issue of *Progressive Architecture* highlighted Yale's First Year Building Project, The Catholic University of America's more recent studios as well as efforts by Yestermorrow, Ball State, and Steve Badanes's work at various universities. With the exception of the Yale program, begun under Charles Moore's chairmanship in 1966, all of the other programs mentioned are relatively recent.

<sup>11</sup> The placement of design/build studios in an architectural curriculum illustrates that this type of knowledge is still considered a small part of architectural education. Although Yale offers its program in the first year and requires it of all students, most, such as Catholic University's, are offered as optional studios in the upper years.

<sup>12</sup> For an extended discussion of the relationship between design worlds and construction worlds, especially as it relates to electronic media, see William Mitchell, *The Logic of Architecture* (Cambridge, MA: MIT Press, 1990)

<sup>13</sup> Donald A. Schon, *The Reflective Practitioner: How Professionals Think in Action* (USA: Basic Books, 1983) 77

<sup>14</sup> Ibid, 78

<sup>15</sup> Nikolaus Pevsner, *Pioneers of Modern design: from William Morris to Walter Gropius*, 2nd ed. rev. (New York: Penguin Books, 1975) 138

<sup>16</sup> Elizabeth Cummings & Wendy Kaplan, *The Arts and Crafts Movement* (New York: Thames and Hudson, 1991)

<sup>17</sup> Ibid, 167

<sup>18</sup> The evaporation of choice regarding emergent technologies is hardly limited to the distant past. The architecture profession's relationship to the computer has seemed to follow a similar path. That subject, however, will have to wait for another discussion.

<sup>19</sup> *Programs and Manifestoes on Twentieth Century Architecture*, ed. Ulrich Conrads (Cambridge, MA: MIT Press, 1980) 95

<sup>20</sup> From remarks made in a lecture at the Virginia Society of the American Institute of Architects "Virginia Design Forum I: Architecture and Innovation," held in Hot Springs, Virginia, March 1994