SOME SHIFTS IN BUILDING DESIGN AND THEIR IMPLICATIONS FOR DESIGN PRACTICES AND MANAGEMENT

David S. Haviland

American building is changing. While much contemporary emphasis is placed on economic recessions and their effects, these exemplify and mask some underlying structural changes in the ways in which building projects are conceived, justified, designed, and delivered. This paper reviews five current shifts in American building, examines the impact of these shifts on some of our most widely understood ideas about design practice, and draws implications for the management of design.
FIVE KEY SHIFTS

Change is constant. Some changes, however, have broad or deep implications. This paper looks at five specific changes in American building practice which are creating substantial pressures on design, designers, and design management.

Construction is More Frequently Reconstruction

As we move toward the next century, the majority of domestic American building activity is being directed to reconstructing existing facilities — refitting, renovating, rehabilitating, and reusing existing buildings and places to keep them vital and productive.

A fraction of U.S. nonresidential construction, building improvements, maintenance, and repair has been growing steadily, reaching over $110 billion and approximately one half of the 1991 U.S. nonresidential construction market.\textsuperscript{1} According to a special 1986 Census Bureau study of nonresidential improvements and upkeep, reconstruction is especially prevalent — as much as 75 to 80 percent of total construction activity — in the institutional facilities sector that has long been a mainstay of architectural practice.\textsuperscript{2} While these figures may be influenced by recession, it is safe to say that reconstruction has become and will remain a very substantial share of American building.

A shift to reconstruction influences a number of design and building practices. First, much reconstruction is, in fact, "refitting" a building's exterior cladding, interior partitioning, caseworks, mechanical and electrical subsystems. It has become necessary or at least desirable to refit buildings to accommodate changes in work and building uses as well as changes in technology and the marketplace. Continuous refitting has become a way of life in shopping facilities, restaurants, hotels, offices, and a variety of other buildings. As a result of the emphasis on refitting, we are seeing a growing division between building fit-up and shell (structure, roof, and civil services) subsystems, intensive innovation in some fit-up systems (as an example, workstations and personal environments), a tendency to defer building fit-up until the last moment to respond to changes in needs, to take advantage of innovation and the growing influence of interior and services designers.\textsuperscript{3}

Reconstruction projects tend to be smaller than new construction projects. They are technically complicated, involve existing conditions, and are often pursued as programs of work (for example, as broad scale re-imaging, asbestos removal, accessibility for the disabled, or lighting retrofit programs). By their nature these projects are intimately involved with building users and occupants, involve complicated logistics, and require broad management skills. Often these projects are conceived and executed within larger facilities management programs.

Design is Communally Negotiated by Several Powerful Stakeholders

Design has become an important aspect of American culture. There is ample evidence to suggest that individuals, organizations, and communities care about design.\textsuperscript{4} At the same time resources and environmental concerns have heightened concerns about building. As a result, we have seen the emergence of four sets of powerful stakeholders: owners, financiers, occupants, and the citizenry at large. Each demands a seat at the table and each is prepared to exert muscle.

The growth of the strong owner as a key force in contemporary building has been well documented.\textsuperscript{5} Project owners are now more prepared than ever to assert themselves as the primary
beneficiaries of the design and building process. Increasingly, institutional owners are viewing facilities as portfolio assets which embody both costs and benefits and which must be managed strategically. The shift to reconstruction has placed even smaller owners in the constant (re)building business, and they are developing or accessing the expertise to gain value for their investments in this activity.

Following the well-documented excesses of the 1980s, the owner of the 1990s is expected to be extremely careful in making the decision to build and be much more committed to retaining and managing the resulting facilities. These owners may have substantial facilities management expertise; dictate the terms of engagement for design professionals; set high expectations for design services; and assume a partner's role in design and construction. These owners may be as sophisticated as the professionals and contractors they engage, and even more knowledgeable on matters of special interest. Likewise, these owners may establish their own discipline for advancing the work and use their muscle to resolve differences and problems.

Turning to financiers, we have always understood that those who supply capital for design and construction are key actors. Emerging from the easy money and ready incentives of the 1980s, American building is relearning this lesson. Reacting to overstimulation and overbuilding, traditional sources of debt and equity capital are now absorbing losses rather than making capital available. Pressured by a recessionary economy and structural problems, American businesses and institutions are not in a position to provide substantial internal financing. Competition for capital is severe and many otherwise qualified projects lie in wait. Moreover, all indications point to an era of very carefully considered and highly conservative facilities financing.

While owner and financier influences have been felt for some time, now we also see the rising influence of the public — as building users and as citizens at large. Fueled by growing societal interest in human capital and productivity as well as more specific concerns for occupational health and safety, building occupants and users are demanding seats at the table of project planning and design. The Americans with Disabilities Act, now being implemented, further raises the ante. As citizens at large, the public is increasingly heard in community zoning, planning, and design review processes.

Within this arena of new and often competing stakeholders, design becomes a broadly discussed and negotiated activity. Project plans are described and debated in planning and zoning hearings, in complex financial negotiations, community forums, and in the media. As localities become even more strapped for cash, new projects are seen as resources for community development. Owners and designers are required to make accommodations and compromises to secure approvals — often in the glare of public meetings or in the heat of bargaining sessions in hearing rooms, cloakrooms, and corridors.

**Design and Construction are Proceeding as Parallel Enterprises**

One of the consequences of protracted negotiation among powerful stakeholders is an extended and often difficult "birth" process for many projects. Months and even years are consumed in making plans, gaining organizational buy-ins, testing feasibility, securing buildable sites, committing capital, and navigating all this through the shoals of community land use and design review.

When finally the factors are assembled and approved, most owners are under great pressure to move their projects to completion as quickly as possible. The motivations for speedy action are many: owners may wish to take advantage of agreements among the stakeholders before they disintegrate.
### Responsibilities of owners and consultants

1. Conceptual design, full documents and details
2. Developed design; installation details left to vendors
3. Scope design and documents
4. Performance requirements only
5. Conceptual design and details

### Responsibilities of contractors and vendors

![Diagram](attachment:image)

**FIGURE 1.** Options for allocating design responsibility. (Adapted from *Faster building for commerce*, London: National Economic Office, 1988.)

owners may desire to reduce further interim financing costs, take advantage of market conditions in the construction industry, or simply gain the intended advantages of new or reconstructed facilities as soon as possible.
The design team may be carefully designed for success in this negotiation process. The owner may assemble combinations of firms with the array of talents needed to move the project to realization. This assembly process may add power to the project team in the form of a signature designer, a high-powered market or financial consultant, a firm with local political clout, a construction manager, or others with special skills. Design itself may be separated into concept and detail stages, with responsibility for the latter deferred and perhaps even shifted to other designers, vendors, purchasers, tenants, or even the owner himself.

In these circumstances, construction may begin before design is fully developed. This usually takes the form of overlapped or "fast-track" design and construction. In order to limit their financial risk, many owners seek guaranteed maximum price contracts from contractors or construction managers based on partially developed design and documents. Design may be divided into packages whose content and timing may follow market and procurement logic rather than design logic. Once packaging and scheduling decisions are made, design necessarily marches to its tune. Architects and engineers may produce dozens or even hundreds of sets of contract documents. A project or construction manager may be added to coordinate design and construction activities and to enforce schedules and budgets.

**Substantial Design Responsibility is Shifting to Vendors**

The twin pressures to get an early construction start and to defer building fit-up to a later date are not only spreading out the design process but also re-allocating design responsibility from project architects and engineers to suppliers and contractors.

As suggested in Figure 1, the dividing line between owner or consultant design on the one hand and contractor or vendor design on the other may occur at a number of different places. A common ingredient in all of these is substantial allocation of design responsibility to organizations who are essentially vendors:

- Even where both conceptual and detailed design are accomplished by a licensed design professional (the first option), the American approach to building shifts a good deal of detailed component and assembly design to manufacturers, suppliers, and specialist trade contractors through the mechanisms of required shop drawings, samples, and product submissions.

- The three middle options move substantial design responsibility to contractors and suppliers. These may introduce considerable ambiguity into the procurement process as contractors commit to cost and time on incomplete design information. There may be considerable difference of opinion as to the intent of "scope" or "performance" documents.

- The final option results in full delegation of design to a vendor — a manufacturer, a design/build entity, or an organization that provides facilities on a build-operate-transfer basis. Design/build contracting is on the increase in the United Kingdom and appears to be so in the U.S. This approach provides an owner with early construction cost and time commitments and with single-point responsibility for design and construction. The designer works within an organization committed to and involved with building. These organizations can develop the design and communications disciplines necessary for effective fast-track building; they can also institutionalize and apply learning curves from one project to the next. Design/build companies may further integrate vertically by offering...
site selection and land acquisition services, financing, and even ongoing facilities manage-
ment services. Some are prepared to own and operate these facilities, transferring them to
the owner after amortizing their capital investments and earning agreed-upon operating
fees.

There are, of course, reasons for allocating design responsibility to vendors. These companies
understand their products in detail. This has become especially so with building fit-up systems
where there has been a good deal of innovation. It is difficult for design professionals to keep up
and, in competitive bidding situations, it may be difficult for them to gain access to these vendors
during design. This situation continues through construction where vendors typically have no
contractual access to the project designers or, for that matter, to each other as they attempt to
resolve interface problems involving their products.

Design is Becoming Disintegrated Even as it Becomes More Pervasive

It has always been convenient to view building design as a coherent and bounded activity that
starts at a specific moment — traditionally after the owner has completed a brief, established a
schedule and budget, and selected a designer — and ends with occupancy of the building. As
convenient as this view of design may be, it is no longer entirely appropriate.

As suggested here, design often "begins" deep within a program of ongoing strategic planning
and facilities management. It is nurtured and given shape in complex negotiations among pow-
erful stakeholders, only some of whom may be design professionals or have construction expertise.
It is hardened in the crucible of financial and regulatory review. It may be apportioned among
partners on a design team, divided among design professionals and others who may be vendors,
or assigned to vertically-integrated organizations which may also provide land acquisition,
financing, construction, and facilities management expertise. Moreover, design may continue
long into a building's life. Fit-up design may not occur until users or tenants are identified.
Similarly, design decisions may be deferred as long as possible to accommodate rapidly develop-
ing technologies. The process of refitting a facility to meet changes in need as well as new
strategic opportunities continues through its lifetime.

The net result of these forces is that even as design becomes important and pervasive, it also
becomes fragmented and disintegrated.

PRESSURE ON SOME OF OUR CENTRAL IDEAS ABOUT PRACTICE

These shifts in building practice are placing substantial pressure on some of our most clearly
understood and widely cherished ideas of architectural practice, ideas that have served as
cornerstones for both practice and teaching about practice.12 This section examines pressures on
five such ideas — design as something done principally by professionally-based designers; the
architecture firm as the principal venue for design; the project as the building block of practice;
design as a process that can be regulated by standard forms of agreement; and the professional
standard of reasonable care — and extract implications for contemporary design management.

Design as Something Done Principally by Profession-Based Designers

Even as design has become more important and pervasive, it is done increasingly by people and
groups which are not based in the design professions. Owners, occupants, financiers, regulators,
and the citizenry at large have substantial roles in establishing design parameters and negotiating design concepts while manufacturers, suppliers, fabricators, and installers are increasingly responsible for design details and interfaces. As reconstructing and refitting existing buildings becomes more prominent, design development and documentation may shift to interior designers and mechanical contractors.

In these circumstances, design management spans the entire facilities cycle and involves coordinating and reconciling many diverse and competing issues, organizations, and ways of operating. Responsibility may inure to people with general management skills who know little about buildings. Emphasis shifts to the role of information systems as mechanisms for "tying together" a diverse and diffuse planning, design, construction, and facilities management process.

Similarly, design management involves adjudicating among many diverse and competing positions and values. While this is hardly new, architects and engineers can no longer assume that their values, long considered to be central to building, will prevail. In fact, those responsible for design may not feel the traditional professional's responsibility for the larger good.

Ultimately this phenomenon raises questions of identity for the design professions themselves. Should they expand their boundaries to be more inclusive of people actually doing what they have staked out as their work? How long can they do this without losing their rights to exist as professions apart from the laity? Or without losing the identity that binds a group of like-minded people together in common enterprise? The current struggles in some states to demarcate architecture and engineering and nationally to define a profession of interior design can be cited as skirmishes in this larger war.

The Architecture Firm as the Principal Venue for Design

As design and design responsibility spreads, it follows that the independent private architecture, engineering, or combined A/E practice is no longer the only place where design is done.

Many such practices, of course, have "repositioned" themselves by offering a broader range of design services, especially those that can be considered as predesign and post-construction. Others have "partnered" with construction companies, transformed themselves into design/build entities, opened software development subsidiaries, or made similar moves to meet the marketplace.

Other steps are being taken by firms and organizations outside of professional practice. General contractors are transforming themselves into project or construction managers. Design/build enterprises are growing in influence. Owners are establishing substantial facilities design, construction, and management organizations, or, in some cases, "outsourcing" these services to private firms under long-term vendor agreements.

On the global scale, we are seeing the emergence of "giants" who have the capacity to design, construct, finance, and even sometimes manage the resulting facilities. As an example, a Japanese "big five" contractor in 1990 received building contract awards between $8.7 and $11.9 billion, employed between 9,900 and 14,900 staff, did 35% to 55% of its business on a design/build basis, and spent between $55 and $100 million on research and development. As the single European market comes into place, already large design and construction firms in Europe are both growing (through acquisition of smaller and even mid-size companies) and vertically integrating in order to become major actors on an enlarged playing field.
These new and important design venues raise important issues for design management. An increasing fraction of designers are not in traditional agency relationships with project owners and, in fact, may not have access to them at all. Designers find themselves working in firm and organizational cultures that are not of their making. Design managers find themselves interacting with a larger set of corporate values, objectives, and operating styles. On the other hand, larger and more vertically-integrated organizations offer the possibility of closer collaboration between designers and those who plan and manage buildings on the one hand and those who construct them on the other. Converting this opportunity into reality presents yet another challenge to design management.

The Project as the Building Block of Design Practice

Our tendency is to consider the individual project as the building block of practice. We see excellence as achievable on a project-by-project basis and practice as a body of projects. Increasingly, however, design organizations find themselves conceiving, executing, and managing "programs" of projects.

Program and project management share many common ingredients, but they are not the same. The programmatic imperative brings a larger set of issues and probably a wider range of actors to the table. Program and project goals are interactive and reciprocal: programs parametrize their projects and, at the same time, a program is implemented one project at a time. These two sets of goals and structures exist within a third — those of the design organization, unit, or firm — requiring attention and adjudication at three levels.

For independent design firms, providing program services shifts the focus from acquiring projects — traditionally the grist of the marketing mill — to acquiring and especially retaining clients. Client management becomes a discernible objective and a set of skills; those who provide project services become the keys to maintaining and retaining clients. These firms may seek long-term agreements to provide program services, perhaps from institutions and corporations who are "outsourcing" these services, thus blurring the distinctions between designer and client, vendor and purchaser.

At the level of daily project activity, we are not well prepared to manage large numbers of small, complicated projects. Most of our design and construction project management theory and guidance is based originally on study and experimentation in "large systems" such as the space program and major defense projects. Only now are there efforts to look more carefully at small projects and design practices that are founded on the basis of doing lots of small projects all the time.

Design as Contractually Regulated by Standard Forms of Agreement

Building requires collaboration among many different entities who bring their individual talents, motivations, styles, and biases to a temporary multi-organization created to execute a project or a program of projects. Given the complexity and the integrated nature of the work to be done, the American building enterprise has relied on a series of standard forms of agreement to spell out, in contractual terms, a comprehensive pattern of responsibilities, relationships, risks, and rewards among the principal parties to design and construction.
Standard forms of agreement such as those promulgated by The American Institute of Architects and the Engineers Joint Contract Documents Committee traditionally have brought a level of industry-wide conception and negotiation of responsibilities for building in general as well as consistency and currency to individual projects. As they have enjoyed broad use, these forms of agreement and the practices they represent have become an integral part of the processes used to decide disputes, allocate liability, and insure risks accepted by the various parties involved.

The shifts described earlier are producing building procurement processes that are more diverse and more likely to entail a specific allocation of planning, design, and construction responsibilities suited to the project and its circumstances. At the same time, standard forms have had difficulty digesting changes in building practice, for example, projects intended to scope and define projects, the use of alternative dispute resolution mechanisms, new partnering arrangements, and the allocation of design responsibilities among owners, design professionals, and vendors.17

In response, we see a growing use of letters of intent, owner-developed contracts, and other project-specific forms. At the same time, there are efforts to make long-standing standard forms of agreement more flexible and adaptable to project circumstances.18 Both of these tendencies raise important implications for design management.

Those responsible for structuring projects now have the added responsibility of designing specific procurement processes to suit the needs and circumstances of each project or program of projects. In the absence of a useful base of research in this area, these decisions are made largely on the basis of individual experience, bias, and salesmanship efforts by those providing design and construction services.19

In this environment, owners and financiers can be expected to play strong roles in establishing and dictating terms of engagement. At a general level, this can produce agreement forms that do not recognize the complexities of building.20 At the project level, managers spend more time attempting to assess the implications of new language and requirements.

Customizing procurement approaches requires project and design managers to reason through expectations and capabilities among the parties at hand and also to assess the risk/reward consequences of various allocations of responsibility and liability.21 This requires analytical capabilities on the one hand and a complex of interpersonal, negotiation, and communication skills on the other. These capabilities and skills lie quite outside the group of technical skills required to "do" project design and construction.

The Professional Standard of Reasonable Care

Rising owner and public expectations of design coupled with strong marketing by architects and engineers ("just put your project in our capable hands ... there will be no problems") is subtly repositioning design and designers: Design may be seen as commodity and designers as purveyors of that commodity. At the same time, there is a shift of design responsibility to design/builders, contractors, and suppliers — entities that are considered by the buying public and also the courts as vendors.

Traditionally, American law draws a clear distinction between the standards of performance expected of vendors and professionals. As suppliers to a consuming public, vendors are expected to provide products that are fit for their purpose; this is a standard of strict liability (if it leaks...
and it isn’t supposed to, it must be redressed). Assuming that they do not establish contracts that set a higher standard, professionals are expected to perform (only) with reasonable care and skill (if it leaks, did the architect act as a reasonably prudent architect would do in the same community, in the same time frame, and given the same or similar facts and circumstances?). This standard of reasonable care is central to the contemporary definition of a profession; it is one of the key rights accorded to a body of professionals by the laity in recognition of the inexact nature of professional practice and a profession’s obligation to act for the public good.22

Recalling that Anglo-American law reflects and ultimately, through its system of case-by-case decisions and precedents, incorporates principal cultural values and practices, we must assume that the standard of reasonable care will continue to be re-examined and redefined in current terms.23 Given that such standards are evaluated in the crucible of actual experience, designers and design managers assume no little responsibility in developing and maintaining the standards that the courts will ultimately apply to their performance.

At the societal level, we can expect continuing thrusting and parrying on these questions. In the UK, for example, the growth of design/build contracting has sparked substantial discourse among construction lawyers on standards of professional performance.24 Closer to home, the State Education Department which regulates professional conduct in New York State has recently notified architects and engineers that they may be violating the law by obtaining design details for contractors who fabricate and install structural steel.25

Even as owners demand perfection or certainty, designers are challenged to assert the role and value of professional judgment in their work. For some firms, this suggests the need to reposition their marketing efforts — always difficult in recessionary times — and at the same time to work toward a practice of values which include both service and reflection.26

LOOKING FORWARD

Some of the current changes in building practice are producing shifts in what we design, where design occurs, who is involved, what help we can expect from professional institutions, and the standards by which designers’ performance is to be judged. These shifts are substantial and many of them are structural. Individually and collectively, they create new conditions for design management. They also create new challenges for those who seek to undertake these responsibilities and, especially, for those who seek to educate, train, and support these people in their daily work.

NOTES

1. The Construction outlook for 1991 in Construction Review (1990) places the forecasted 1991 total at $62.8 billion in nonresidential building improvements construction and $35.6 billion in nonresidential buildings maintenance and repairs, all in 1987 dollars. Moreover, the 1990 to 1995 forecast projected a 2% growth in nonresidential reconstruction and a 2% reduction in new nonresidential construction.


3. It is instructive to note that, according to Means square foot costs, R.S. Means Company, Inc., Kingston, MA, 1991 edition, the combined costs of the exterior closure, interior partitioning, mechanical and electrical subsystems for a typical range of nonresidential building types range from 45% to 65% of the total initial construction cost. For multifamily housing and nonresidential housekeeping facilities, this range is from 55%-65%. When you consider that a substantial
proportion of building reconstruction involves upgrading or replacing these subsystems, they account for a dominant segment of the design and construction market.


6. See, for example, Hugh Nourse, Managerial real estate, Englewood Cliffs: Prentice-Hall, 1990. The Times of London, 26 September 1990, reported that 38% of the top 50 companies in the UK had property officers with positions on the board of directors or reporting directly to the chairman. The same article quotes Corporate real estate as indicating that 27% of the property executives in the 350 leading U.S. companies reported directly to the CEO and that 44% held positions as vice presidents or above.

7. Bishop, op. cit., notes that these owners tend to value a completed project over a successful lawsuit and are prepared to use their muscle to resolve disputes and move the work forward. In the U.S. we see growing use of mediation, conciliation, and related alternate dispute resolution techniques in design and construction; see, for example, Quiet revolution brews for settling disputes, Engineering News-Record, August 26, 1991, pp. 21-23.


9. According to a 1990 study reported in Mike E. Miles, Emil E. Malizia, Marc A. Weiss, Gayle L. Berens, and Ginger Travis, Real estate development principles and process, Washington: The Urban Land Institute, 1991, average national impact fees charged by localities ranged from $968 per 1,000 square feet of industrial space to $3,321 per 1,000 square feet of retail space.

10. A careful study of this practice in the UK is reported in Colin Grey and Roger Flanagan, The changing role of specialist and trade contractors, Asoc: The Chartered Institution of Building, 1989. From comparative studies done by Flanagan and his colleagues, it appears that this phenomenon is even more widespread in the U.S. See Roger Flanagan, George Norman, Vernon Ireland, and Richard Ormerod, A fresh look at the U.K. and U.S. building industries, London: Building Employers Confederation, 1986.

11. In surveys of contract forms in use in the UK, the Royal Institute of Chartered Quantity Surveyors reports that design-and-build contracts represented 12.2% of construction contract value in 1989, up from 5.1% in 1984. The RICS indicates that these figures include only contracts involving a quantity surveyor and that they are underestimates. In its August 12, 1991 issue, p. 9, Engineering News-Record noted that design/build contracts account for less than 5% of all construction in the U.S. but owner demand is driving its use upward. ENR's top 400 contractors more than doubled their design/build billings from $18 billion in 1987 to $37 billion in 1990.


14. A careful analysis of this phenomenon is being prepared for a forthcoming book on global construction by Roger Flanagan, David Haviilada, and Yo Hiramato. The statistics describing the Japanese "big five" companies (Shimizu, Taisho, Kajima, Takezaka, and Obayashi) are provided by Hiramato. For a report on transnational competition in Europe, see Builders take their partners for Europe, The Economist, 14 July 1990.

15. See, for example, Dana Cuff, The origins of excellent buildings, In search of design excellence, Washington, D.C.: The AIA Press, 1989, pp. 77-87. Several of the other papers in this volume address this issue as well. Cuff's case studies, along with a larger framework for considering them, are also presented in her book, Architecture: The story of practice.

16. A review of the writing in Project Management Journal, the conference proceedings of the Project Management Institute and even Construction management and economics reveal a large project focus. Sounding as "another voice" on this issue, James R. Franklin, resident fellow at The American Institute of Architects has sparked a program of workshops and writings on small projects and practices. See, for example, Thinking small, Architecture, July 1990, pp. 107-109 and Current practices in small firm management, Washington, D.C.: The AIA Press, 1990.

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17. Using the AIA documents as examples, the most commonly used form of owner-architect agreement (AIA Document B141) starts with schematic design services and ends with completion of construction; the AIA has found it difficult to get architects to use the more broadly-based designated services approach embodied in Documents B161 and B162. On the other issues noted, the AIA documents incorporate only arbitration as a dispute resolution mechanism. The standard form of joint venture agreement was last revised in 1979. There are no efforts to establish linkages between project designers and specific specialist trade contractors (as is reflected in the "nominated subcontractor" variations in the UK’s Joint Contracts Tribunal forms of agreement).

18. At this writing, the AIA is developing an electronic documents program that should allow more flexible use of its standard forms.

19. As a step in the right direction, see Rashid Mohsini and Colin Davidson, Determinants of performance in the traditional building process, Construction management and economics (forthcoming) and Rashid Mohsini and A.F. Botros, Pascon: An expert system to evaluate alternate project procurement processes, CIB 90, Building economics and construction management, Vol. 2, Design economics/expert systems, Sydney, 1990, pp. 525-537.

20. As an example we can cite the ill-fated model design and construction documents proposed by the National Association of Attorneys-General in 1988. Distribution of these documents was suspended in December 1989 after extensive criticism by both design professionals and contractors. For a summary of the problems with these documents, see Victor O. Schinnerer and Company, Guidelines for improving practice, General Information #51, 1989.


22. Adherence to a standard of reasonable care and the use of "other reasonably prudent architects" as arbiters of that standard in given circumstances can be seen as an example of a profession’s right — and obligation — to develop and enforce its own standards. See Dana Cuff, The architectural profession, in David Haviland (Ed.), op cit.

23. As an example, consider the following comment in a 1978 Minnesota opinion, made after a ringing endorsement of architecture as an "inexact science" and the importance of applying a standard of reasonable care to architects’ performance: "We have re-examined our case law on the subject of professional services and are not persuaded that the time ‘has yet arrived’ for the abrogation of the traditional rule." City of Moundview v. Walijarvi, Supreme Court of Minnesota, 1978, 263 N.W.2d 420 [emphasis supplied].


25. Engineering News-Record, October 14, 1991, p. 10. The “shop drawings” issue was a major aspect of the intense national debate over the American Society of Civil Engineers’ Quality in the constructed project manual issued in November 1990.

26. For a description of such practice, see Donald A. Schön, The reflective practitioner: How professionals think in action, New York: Basic Books, 1983. Schön begins by examining contemporary inditement of the professions by the public, citing the professions’ own positioning as “applied scientists” as a significant contributor to lack of public confidence in their work.

REFERENCES


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AUTobiographical Sketch

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