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The Daedalean Risk

Daédalus is remembered as the first to venture to fly. Fitting his son, Icarus, and himself with wings constructed of feathers attached by twine, wax, and glue to a light frame of wood, Daedalus and Icarus set out from Crete. What is often forgotten is that Daedalus, in legend at least, was also the first important architect, having designed the extraordinary labyrinth and temple complex for his patron, King Minos. It was Minos's pleasure and delight with Daedalus's architectural service that prompted Minos to hold Daedalus captive on the island of Crete, which was the reason Daedalus and Icarus risked escape with the artful wings.

This book deals with architecture as professional practice, as business, as occupation, and as a set of convictions about how buildings ought to look and function. Architecture in all of these respects is governed by structures of risk that accompany opposing conditions of various sorts. Risk is always conceived to be a situation fraught with hazards, but I use the concept of the structure of risk in a more specific way as well. The premise is that particular conditions contain an implicit contradiction that sets into motion processes that unfold to reveal the full implications of the initial contradiction while at the same time they create a resolution that in turn poses a new set of opposing conditions. The process develops inexorably in terms of its own logic.

The resolution of the predicament in which Daedalus found himself has a comprehensible and logical outcome: it clarified and decisively resolved the initial conflict, yet at the same time created a new problematic situation. Daedalus successfully escaped, but Icarus plunged into the ocean when the wax on his wings melted. To give another example from mythology, what

led to Apollo's grievous loss of Daphne was that though he loved her, he was the God of the Sun and she a nymph of the cold-running waters. The very act of catching Daphne changed her, through Apollo's warmth, into a laurel bush. Thus any predicament governed by a structure of risk contains within it a contradiction that establishes a dynamic of transformation, and the resolution of the predicament both clarifies the original contradiction and establishes a new predicament. This literary principle of mythology serves as both metaphor and theoretical premise for this sociological study of architecture.

Specific ways in which the structure of risk operates are discussed throughout the book. A variety of forms of risk structure are inherent in architecture. These relate to the dilemmas that so prominently confront contemporary practitioners: the dependence on commissions, a poor distinction between architecture and building (and thus among architects and engineers, developers, contractors), the lack of congruence between those to whom the architect is ethically responsible (for example, the residents of a housing project) and those to whom the architect is accountable (the city agency commissioning it), the constraints imposed on design practice by the increasing size and complexity of architectural offices, the lag between plans and their fully realized built form. Another important dilemma is that architecture provides services that are not vital to people's health and welfare in the same sense that the professional services of physicians, or even lawyers and dentists, are. Many of these dilemmas result from the fact that much of the building field is controlled not by architects but by engineers, developers, and building contractors—at least in sheer numbers of buildings.[1] Economic fluctuations also create distinctive dilemmas for architecture. An economic crisis, as this investigation will show, while it creates general conditions of vulnerability, also makes it apparent which features of firms make them most vulnerable and their survival less likely than that of other firms.

Terms Defined

Built Form

Architecture as building has been of particular interest to the social sciences. The various ways in which buildings influence people's daily lives and attitudes has been an important topic for theory and research, contributing to social science knowledge

and having practical significance for architecture and planning. For example, William H. Whyte's (1980) investigation of how people use urban spaces, such as plazas and congested sidewalks, leads to some interesting conclusions about the order and rhythm exhibited by aggregates of people who seem to be merely disorganized crowds. Such conclusions are of sociological interest. Whyte's studies also have potential for application in the design of plazas and sidewalks for planners and architects concerned with the social values and utility of the built environment. In his 1967 study of Levittown, Gans finds that the shared driveways that planners had designed to encourage friendliness, in fact have the opposite effect when they become the battleground for disputes among neighbors' children. And Sommer's (1969) studies of bars, mental hospitals, and schools illustrate how the arrangement of physical space can encourage people to participate in sociable activities or hasten their withdrawal.

In contrast to the social science tradition that considers the effects of architecture on behavior is the tradition of historical scholarship that deals with the social and cultural significance of buildings. G. Wright (1981) and Hayden (1981) show how domestic architecture has reinforced cultural values concerning women's subordinate position in our society by the spatial design and location of houses. The broad links between cultural values and architecture have been made by a number of architectural historians, including Wayne Andrews (1947), James Marston Fitch (1947), John Burchard and Albert Bush-Brown (1961), and Lewis Mumford (1931, 1938).

And finally there are a host of investigations, including Gans's (1962) *Urban Villagers,* Jacobs's (1961) account of the nature of community in large cities, and White's (1980) book on the lives of Jewish immigrants in London's East End, that demonstrate how buildings and neighborhoods are used and modified in ways consistent with the cultural and class values of particular groups rather than with the intentions of planners and architects.

Although the principal concerns of this book focus on architecture as profession, practice, business, and conviction, architecture as building cannot be ignored since the prominence of firm practice rests on the evaluation of its projects, and the convictions of architects are more or less consistent with what is—or will be—built.

Architecture as Profession

The special meaning we attach to professional work relates to the wider division of labor in society, which has, as E. C. Hughes (1958:70) describes, moral significance. The "peculiar ambiguities with respect to what is seen as honorable, respectable, clean and prestige-giving as against what is less honorable or respectable, and which is mean and dirty" is what accounts for the differences with which various occupations (and the people in them) are viewed. In this moral sense—in the terms that Hughes defines professional work—architecture has the envied status of a profession. According to a general sociological definition of a professionalized occupation, architecture is grouped with a variety of other occupations with high standing, such as medicine, law, college teaching, the ministry, and engineering. The basis of the distinction between professions and occupations hinges on a number of characteristics.

One of these is the special expertise that professionals acquire through rigorous and long training that leads to certification or licensure. Architecture has been less successful than most other established professions in this regard. There are two observations worth making. First, as Cullen (1983) has demonstrated, architecture ranks relatively low compared with other professional occupations with respect to both educational requirements and percentage of practitioners who are licensed. The second observation, which in part can account for the first, is that architects have never agreed about the profession's core or specialized domain. The artistic and ideological foundations of the field justify architects' claim that they possess ecumenical proficiencies and knowledge. Vitruvius's position, that architects must acquire broad training and diverse skills, has not changed in its essence very much in two thousand years: "Let him be educated, skillful with the pencil, instructed in geometry, know much history, have followed the philosophers with attention, understand music, have some knowledge of medicine, know the opinion of the jurists, and be acquainted with astronomy and theory of the heavens" (quoted by MacDonald 1977).

Although the details of training and career obviously have a different cast today compared with Roman times, the eclectic and interdisciplinary features of architecture persist. Authors Henrik Ibsen and Ayn Rand, among others, have keenly seized on the point that architects' claim to exceptionally broad knowl-

edge sustains a myth of the romantic hero with boundless vision and sagacity. In fact the profession continues to resist a definition of its boundaries and internal specialization. This is not so surprising, perhaps, considering that architecture in some measure is art, which is itself greedy in its jurisdictional demands, and in some measure it is applied science, which, unlike basic science, proceeds from the assumption of the interrelatedness of problems and solutions. Architecture stakes a claim to other competencies as well. MacKinnon (1965), an astute observer of the field, notes:

> If an architect's designs are to give delight the architect must be an artist; if they are to be technologically sound and efficiently planned he must also be something of a scientist, at least an applied scientist or engineer. Yet clearly if one has any knowledge of architects and their practice, one realizes that it does not suffice that an architect be at one and the same time artist and scientist if he is to be highly creative in the practice of the profession. He must also to some extent be businessman, lawyer, advertiser, author-journalist, educator and psychologist. (P. 274.)

The professionalism movement in architecture has been based in part on the premise that interdisciplinary eclecticism is a major obstacle to the possibility of the profession's securing an exclusive mandate with respect to its preempted and preeminent activity: design. Starting perhaps in 1567 when Philibert distinguished the architect from the builder, the professionalism movement has attempted to give architecture a narrow and distinctive definition as a design field (although at times it has been contradictory in these objectives). (The details of this historical account are summarized in Jordy 1976; Kostof 1977; Jenkins 1961.) The internal divisions within the profession that are generated by forces for specialization on the one hand and eclecticism on the other have continuing significance for the profession and for practice. This is quite different from the situation that exists for most other established professions, which have marked an exclusive domain for themselves and within that domain have defined a variety of discernable specialties.

The attempt to secure an exclusive mandate over the affairs that pertain to a profession requires further clarification, for it is a second main feature of professional work. The claim to carry

out with indisputable superiority difficult work in the interests of others is implicitly an imperialistic claim for such work. As Freidson (1971:22) describes the contention for a mandate, "The profession seeks the exclusive right to perform a particular kind of work, control training for and access to it, and control the right of determining and evaluating the way the work is performed." Success in establishing that mandate leads to a monopoly over services and a market that is controlled by the profession.

Ministry and law and, later, medicine, dentistry, nursing, and teaching were largely successful in what Larson (1977) calls the dual project of professionalization. These fields were able to define a market for professional services and to establish monopolistic control over it. The corollary is that these professions used their clients' dependence as a means of attaining social status and concrete economic and social privileges. Why architecture has been historically unsuccessful in this dual project has been traced by Larson in a more recent essay (1983). Her conclusion is that the success of a variety of other professions—engineers, interior designers, speculative builders—in vying for the same market has undercut the ability of architecture of attaining a monopoly, and hence has reduced the likelihood of achieving the social status and income comparable to those of, say, medicine.

Professionals have clients, and the history of clientage and how it relates to what and how architects design and build is a central topic of many historical analyses (see, for example, Kaye 1960; Andrews 1947; Pevsner 1936). From the nineteenth century on, with the decline of the traditional patronage system, competition for state and private contracts intensified the tension between the definition of the architect whose chief responsibilities were to design and art (and perhaps, it was also hoped, to history) and of the architect whose chief responsibilities were to the client. This tension took several forms. Architecture as art could be defended on traditional grounds, whereas pleasing the client was alleged to mean cutting corners, using cheaper materials, and emphasizing the practical over the sublime. The other side of the argument is that above all architecture is utilitarian; the highest priority is that the building serve the best interests of the client. This split is drawn in several ways, but Jenkins (1961:188) draws attention to one im-

portant component of it when he contrasts the "tact, acumen, and above all, the persuasive polish which is readily associated with the 'professional man'" with "the creative talent." In the decades following World War II the split in architecture had become three-way, with the artist contrasted to the professional and with the two of them contrasted to the architect who designs for users and whose interest is in a more humane environment—not art, not the client, not savings. We will examine the extent to which these three professional models are salient in architecture and the extent to which they figure in practice.

Another putative component of professionalism is the notion of equality among professionals. Having similar backgrounds and having undergone the same training and credentialing, professionals make up communities based on collegiality and trust (see Goode 1957). These contemporary patterns originate from medieval institutions; the promotion to master craftsman put the journeyman on an equal footing with his former teacher. Yet few architectural practices in modern times—the Comasco group and to some extent the Architects Collaborative, and Team X—actually advocate equality, although most unfailingly stress the importance of collegiality. The compromise of equality is due in part to the recognition that although professionals may be equal, artists cannot be. It is also related to the imperatives of organization. The conditions under which there is less inequality and when individuals are likely to exercise voice in matters of importance is examined in chapter 2.

Professionals work long hours, marry late, have few children, and postpone retirement; vocational commitment to a calling is a main component of a professional career. In part this is the case because the initial choice of the field entails a professed zeal and dedication, but also, as Becker et al. (1961) have shown, the process of socialization incurred in training (to say nothing of the role of psychic investment, time, and money) helps to promote identification with the chosen career. Shared symbols and language within the profession and an emphasis on success that is unique to that profession all tend to reinforce high commitment. The fact that professional work takes place in organizational settings, however, matters a great deal, and organizations are more or less successful in sustaining and channeling commitment.

Architecture as Practice

The term *professional practice* is easily taken as an oxymoron, as much so as *bureaucratic art.* But the complexities of project design require organized practice just as the playing of much classical music requires a symphony orchestra. For orchestras economic reality and bureaucratic rationality dictate uncontroversial programs at the cost of innovation and experimentation (Arian 1971). Architectural practice is not so very different.

Practice as Process

In all offices, large and small, architecture is a process, an ongoing set of activities involving tasks that are specialized and at the same time interrelated. The distinction between architecture as an efficacious art and other arts in this regard was made by Wotton (1961:1) in 1624: "As in all other Operative arts, the end must direct the operation." There is a great deal of variation among firms with respect to the way they organize that operation. In some firms work is subdivided into a number of distinct tasks, and each person carries out a different operation; in other firms the operation is consolidated and the process relatively undifferentiated. But Wotton had more to say about the end; it is, he said, simply "to build well." And, he continued, "Well building hath three Conditions: Commoditie, Firmness and Delight" (1961:1). These terms still have wide currency; architects now refer to "habitability," "good engineering," and "visual pleasure."

All practicing architects endorse in principle all three conditions, but there are wide differences among them as to which have priority and how they relate to the mechanics of office practice. For this reason, plus the fact that each new project is a unique case, the practice of architecture appears to be an ad hoc process. The uniqueness of each project, the distinctive qualities of every client, the idiosyncratic character of each award jury, the lack of control over such uncertainties as the conditions and costs of construction, new complexities of building regulation and financing, and the sheer problems of maintaining groups of people who can work well together all contribute to the makeshift character of architectural practice. Yet such practice is not mere improvisation. The negotiations that appear ad hoc and the way in which a firm handles the unique and the uncertain are governed by a structure of constraints and opportunities that reflect its organizational configuration and eco-

nomic character. There are also structures of risk that develop out of internal contradictions and the external demands on firms by their environments. These too are systematic rather than random. The views of architects about how buildings ought to look and to function are also not happenstance but have a meaningful pattern that can be deciphered.

Practice as Organization

Practice can be seen from one perspective as an office consisting of a set of positions occupied by individuals. This refers to distinctive structural arrangements commonly called organizations. Few architecture firms are as large and bureaucratic as many other organizations with which we often deal—banks, hospitals, universities, chain grocery stores—but they share with all organizations a number of important characteristics. Organizations are defined by W. Richard Scott (1981:9) as "social structures created by individuals to support the collaborative pursuit of specific goals." He explains that all organizations, because they confront a number of common problems, share the same generic characteristics: "All must define (and redefine) their objectives; all must induce participants to contribute services; all must control and coordinate these contributions; resources must be garnered from the environment and products or services dispensed; participants must be selected, trained, and replaced; and some sort of working accommodation with the neighbors must be achieved" (p. 9).

What is instrumental for the solution of these various problems is a more or less formalized structure characterized by a division of the organization into subcomponents, the designation of supervisory responsibilities, assignment of tasks, routines for communication and coordination, and a set of technologies. Once established this formalized structure has consequences independent of the intentions of those people who work and collaborate within it. For example, a large organization nearly always has more subdivisions and greater formality than does a small organization of the same type, regardless of the level of skills of the workers and regardless of what sort of organization workers want.

Architects are more concerned with the process of design than with the organizational basis of design, yet by abstracting structural elements from the firm's organization and its activities, it is possible to capture important elements of that pro-

cess and also the larger matrix in which that process takes place. For example, the ways in which joint ventures are negotiated is of no concern in this study, but the fact of having such linkages with other professional firms is of interest, for regardless of the way in which they are negotiated, the joint venture has important consequences for other firm characteristics.

Practice as Business in a Market Economy

Unable to secure a monopolistic control over building, architecture is extremely vulnerable to economic fluctuations. This vulnerability is the source of continual controversy over what professional firms can and cannot do to keep a foothold in the market without jeopardizing professional ethics and integrity. That such market practices as the production of stock plans, investment and mortgage services, and development work generate the controversy they do indicates the economic pressures on the profession, as well as the salience of a design identity (Gutman 1983).

Since the time of ancient Egypt, the architect in precapitalist societies had been associated with the powerful and rich elite (Kostof 1977). This hardly entailed a position of unquestioned security or even one of autonomy, but precapitalist elite sponsorship ensured the legitimization of a uniform aesthetic and typically the recognition of the architect as a design generalist. A particular aesthetic style symbolized the power of the secular ruler or church, thereby giving the architect reflected repute and, except for the Middle Ages when the architect was both designer and craftsman (Gimpel 1961), the architect's task involved most aspects of design, as well as the supervision of its execution, but not the execution itself.

In a capitalist economy the imperatives of the market establish and limit the options for client and professional alike. Because firms need clients, commercial objectives become important, if not dominant, in the firm's activities. As Burnham so frankly stated, "My idea is to work up to a big business, to handle big things, deal with big businessmen and to build a big organization, for you can't handle big things unless you have an organization" (quoted in Sullivan 1926:285–286).

One imperative of the market is specialization in the interest of efficiency; another is, as Burnham put it, large size; another is an internal organization that has a more or less bureaucratized structure; and a final one is economy of means. The contradic-

tion is that market imperatives are antithetical to those of elite artistic traditions. Such assertions as Geoffrey Scott's (1914) that architecture must place "beauty over order," Summerson's (1963) admonition for an "aesthetic synthesis," and Moholy-Nagy's (1946) defense of a "perfect balance between feeling and intellect" all attempt to deny the contradiction and provide a justification for a contemporary architecture that asserts aesthetic ends, not merely accommodates an economy of means. For a time it seemed that a solution to the contradiction was impossible; the international style, which fostered monotony and repetition, dominated building design for nearly fifty years. Yet as Banham (1980), Jencks (1981), and others have proclaimed, modernism has been replaced by a proliferation of styles, by novelty, and by competing ideologies. From a socio-economic point of view, this development is not surprising: competition among the units of a market economy—whether between clients or between architectural firms—in the long run will result in diversity as the aim is to capture a special niche—a symbolic monument for the client or a unique stamp for the firm.

The firm's special style, which stands behind the forms of the buildings it designs, is one question. Another, which is not totally unrelated, is the success in designing buildings that meet prevailing quality standards. My findings highlight an unusual conclusion: the structurally perverse firms (I call them eccentric) are highly successful in this regard.

In contrast to the conclusions concerning competition for recognition for design merit, in the competition for economic advantage, there is a structural process whereby some firms are cumulatively advantaged and others cumulatively disadvantaged, leading to a bifurcation of firms and their markets. The success of some firms in securing large corporate commissions can be contrasted with the necessity of other firms to scramble for small commissions. The evidence presented in this analysis suggests strong contrasts between a set of firms that constitute the monopolistic core of architectural services and a set that comprise a more competitive periphery. The extensive literature on economic segmentation of this sort deals exclusively with industrial rather than professional firms, but this study confirms, with certain important modifications, the relevance of economic segmentation in the practice of architecture too.

The basic principle of dual economy theory is that firms in the economic core tend to be large, have high profit margins, internal labor markets (different career ladders), high qualifications for workers, high wage rates, and product diversification. Firms on the periphery tend to be small, have low profit margins, rudimentary internal labor markets, low worker qualifications, low wages, and lack of diversification (Averitt 1968; Edwards 1979; Tolbert, Horan, and Beck 1980; D. M. Gordon 1972; Beck, Horan, and Tolbert 1980). Although this theory posits a somewhat simplified distinction, its virtue is that it focuses attention on an underlying principle that results in observed economic inequalities and thus explains them. The tendency of architecture firms to exhibit core or peripheral characteristics and for them to deal with core or peripheral clients is central for an understanding of their success as businesses and, in an unexpected way, for an explanation of their probability of failure or survival.

Architecture as Conviction

Whatever language is employed—feeling (Langer 1966), codes of meaning (Bonta 1980), intentions (Norberg-Schulz 1963), morality (Scruton 1979), deep structure (Broadbent 1980)—architects can be said to have convictions about how buildings ought to look and function. In *From Bauhaus to Our House,* Tom Wolfe (1981) drew attention, in a somewhat caustic fashion, to architectural ideologies, maintaining that they center on matters of mere fashion and avant-gardism for its own sake. Current styles grow out of rebellion against the bourgeois, he argues, yet they also reflect a profound contempt for the client. His views have some support. Frampton (1980:10) writes, "The vulgarization of architecture and its progressive isolation from society have of late driven the discipline in upon itself. . . . At its most intellectual this tendency reduces architectonic elements to pure syntactical signs that signify nothing outside their own 'structural' operation."

This point of view—that architectural conviction and creation have become highly insular and exclusory of societal needs—can be contrasted with an alternative one—that architects have abdicated their own artistic convictions and independence to elite demands and commercial interests (Fitch 1947; Gowans 1970; Tafuri 1980). In chapter 4 I examine the convictions of rank-and-file architects and conclude that neither point

of view is correct; architects have neither succumbed to art for art's sake nor is their economic dependence on clients matched by an ideological identification with them. Rather their ideological convictions are more progressive, aesthetically and socially, than is generally realized, and the obstacles for their realization lie in economic and organizational sources.

Professional architects not only bring conviction to design, but in attempting to manage the uncertainties of practice, they establish priorities on the basis of conviction. Convictions of practice, however, differ from convictions of design in that the former are more pragmatic, rooted in the economic realities as well as the social relations of the firm. In chapter 4 these convictions of practice are described, and in chapter 5 the question of their efficacy is discussed.

Concepts and Theoretical Assumptions

Contradictions

The Daedalean risk refers to those instances in which structures of risk are likely to affect firms with certain characteristics and the people who work in them. The general explanation for such structures is sought in a set of contradictions generic to contemporary architecture generally. From the standpoint of individual practitioners these structures of risk are perceived most often as particularistic dilemmas or unique situations. The result is attributed either to fate—bad or good luck, poor or fortunate timing—or to individuals—a clever decision, an unwise personnel policy, a creative personality. The point here is that regardless of luck, timing, or individuals, the broader structural conditions of risk can explain why some firms are more profitable than others, are more likely to be recognized for their design accomplishments, or are least likely to fail in bad times.

In contrast to the uniform and linear trajectories that characterize noncontradictory processes—for example, the transformations typically observed in fetal growth, aging, and the development of a new technology—contradictory forms generate opposing outcomes. Just as a structure of risk can lead to ruin, it also contains the seeds of success because it is a basic configuration for challenge and a creative response. Contradiction is the precursor of failure and success as it simultaneously generates unique opportunities and formidable dangers. The story of Daedalus has both a tragic and an accomplished end.

Historically contradictions constitute the structure from which the dynamics of the dialectical process are generated. Central to both Hegel and Marx is the principle of dialectical change. While for Hegel the historical process was driven by the conflict between abstract ideas, for Marx the contradictions inherent in relations of production and the very nature of the economy are the mechanisms for social change. There is no effort made here to examine long-term historical change or to weigh the relative merits of Hegelian and Marxian theory, yet this important philosophical dispute informs the analysis that I undertake. I identify those circumstances in which the intentions (abstract ideas) of architects are inconsistent with social and material conditions and other circumstances in which intentions are rooted in conditions in which they are consistent. It is not the strength or even the coherence of the set of intentions that determines whether they are consequential but rather their initial relationship to social and economic conditions.

In addition to the conflicts between ideas and social and economic conditions, another form of contradiction is between the conditions themselves. Two examples, by analogy, illustrate the point. Marx maintained that contradictory economic conditions contain the seeds for change and transformation. For example, capitalism must continue to expand because the very growth of capital depends on new markets. But according to the laws of surplus labor (whereby workers give to capitalistic enterprise a portion of their labor), workers become increasingly impoverished and, eventually, local, and finally foreign, markets disappear. A very different instance illustrates in a simpler way how a contradiction has its own dynamic properties that cannot be inferred from the properties of its elements alone. One main advantage of steel lies in its capacity for compression and another in its capacity for tension. Yet when steel is stressed by reversals of compression and tension, it loses its potential superiority derived from each property, becomes fatigued, and fails.

The Daedalean risk is hardly different from these examples of contradiction and of the newly emergent forces that the contradiction sets into play, yet the Daedalean risk draws attention to the actors too. The contradictions built into the conditions of the profession and practice of architecture are beyond the control of architects, but the consequences that ensue from opposing conditions disclose opportunities, however briefly, for response. Thus, in employing the concept of contradiction, I

call attention to the impersonality of the social and economic factors involved in particular problems confronting practice and the profession, but the term *Daedalean risk* clearly implies that an element in the resolution of a contradiction is the possibility of inspired choice.

Rationalization

As a major historical process that has profoundly altered values and the organization of work, rationalization involves the principle that all matters ought to be judged in the terms of objective evidence and be justifiable on rational grounds—indeed on the grounds of efficiency. This orientation conflicts with the transcendental criteria of evaluation in art and supports the utilitarian criteria of the marketplace. According to Max Weber (1976), rationalization achieves the subordination of the sacred to the profane, of the charismatic to the rational. Simultaneously it involves a process of structural transformation; it incorporates Adam Smith's (1937) principle that a comprehensive division of labor among workers and among enterprises promotes economic efficiency and growth. In the domain of work this involves the substitution of personal control by formal authority, the standardization of products through processes of routinization, and the careful calculation of the relation between means and ends. Confounding and furthering this process are the features of corporate capitalism. As capitalism advanced, its earlier entrepreneurial goals of capital accumulation became transformed into those involving control of markets through monopoly and then oligopoly, with its greater emphasis on the control and standardization of labor. The extraordinary specialization achieved in twentieth-century work far exceeds the earlier conceptions of the division of labor. The worker has now become, as Braverman (1974:179) puts it, a "mechanism articulated by hinges, ball-and-socket joints, etc."

Professional organizations themselves are not yet so fully rationalized as industrial firms, nor is the professional worker engaged in such highly routinized work as Braverman describes. Nevertheless large corporate architecture firms begin to take on many of the features of their corporate clients and use the same strategies to control their markets and their employees. The deskilling phenomenon is not rampant, but it is common enough. One architect I interviewed in a prestigious

Park Avenue firm had started work with the firm over fifteen years before and for the past ten had done nothing but door moldings. "My options of moving elsewhere," he told me, "are limited."

The concept of rationalization is a bridge linking the convictions of architects, the profession of architecture, and practice, for whether its primary source is ideological (as it is according to Weber) or embedded in the nature of economic institutions (as it is according to Smith), the principle has profound significance for work of any kind.

The Study

This investigation is based on a survey of 152 Manhattan architectural firms (listed in the appendix) and over 400 architects who work in them. In order to examine how firm practice changes over time, I collected two sets of data, the first in 1974 and the second in 1979. The 152 firms are a representative sample of Manhattan offices (selected randomly from the Manhattan telephone directory); they constitute about one-third of all Manhattan firms (of which there were approximately 540 in 1974).[2] Undoubtedly they are not typical in many respects of firms throughout the country. New York City firms, for example, are preeminently design oriented. Except perhaps for Chicago, Manhattan offers the architect the best possible environment: an aesthetic vanguard, a wealthy clientele, professional architecture schools, and a diversity of professional organizations that are used for consulting, subcontracting, and joint ventures.

In the first study information about each firm (its characteristics as an organization and as a professional practice) was obtained in a one- to three-hour interview with a principal of the office: the owner of the firm, a partner, or the president. Because most of the information I was seeking was factual, considerable variation and flexibility was built into the interview format. Sometimes an assistant was called into the office during the interview to provide specific information from the files; on occasion the information sought was not available at the time and was obtained later in a telephone call or by letter. For the approximately 60 firms that had fewer than six architects, a telephone call, usually about an hour long, supplemented by a

short questionnaire, was generally used instead of a personal interview.

Although this format was somewhat complicated for data collection, it was ideal for obtaining factual information about an organization because it was flexible and targeted knowledgeable sources. It was not adequate, however, for securing other data, such as the priorities of leadership or managerial strategies. For questions of this sort, therefore, it was important to obtain information from a principal in a face-to-face interview. This was not possible for small firms in which there were no personal interviews, and for that reason the investigation of certain issues dealing, for example, with the overall philosophy of firm practice (its agendas), is based on fewer than the total number of firms. There are also characteristics of firm organization, such as the complexity of its formal structure, that are relevant only for comparatively large practices; the analysis using such characteristics is based only on firms with at least six full-time architects and a complement of technical staff.

In 1974, the time of the first data collection, I was told repeatedly by architects that in spite of a decline in the economy, they would never leave New York. But the economy continued to worsen, and the decline in the construction industry began to have serious repercussions for local architecture. The fiscal crisis of New York in 1976 dealt the most severe blow for it meant the end of much building activity directly or indirectly financed by the city or the state. By 1979, when the second study took place, nearly half of the original firms had failed.

The second round of data collection was not as extensive as the first, for its main purposes were narrowly focused: to determine what features differentiated firms that failed—had gone bankrupt or had left the city—from those that had not and to analyze major changes that surviving firms had experienced. In 1979 the data collection was based primarily on telephone interviews, although for the largest firms questionnaires supplemented interviews to obtain detailed information pertaining to number of personnel and annual productivity. The response for both studies was extraordinary; there were only a few refusals in 1974 and none in 1979.

A second source of information is the individual architect. In 1974 the person in the firm who had been interviewed was asked if questionnaires could be sent to the architecture staff. In about two-thirds of the firms, permission was given and the

names of individual architects supplied so that I could send each a questionnaire. The reluctance of many of the firm heads to divulge names of staff or to encourage their participation is understandable, though it creates problems of representativeness and of the generalizability of the findings based on individual data. Fortunately such refusals were not systematic—that is, the head's likelihood of refusing was not related to such firm characteristics as type or size—and the inevitable refusals by individuals were not systematic either—that is, related to their position in the firm or to other firm characteristics. Overall about 50 percent of all the architects in the 152 firms returned questionnaires. Thus although these data are a valuable source of information, some caution is necessary in generalizing the results obtained from these data, particularly when dealing with questions of architects' convictions.

Method of Inquiry

Classic studies with which social scientists and many architects are familiar are based on the investigation of a single case—a psychoanalytical analysis of a youngster (Freud's analysis of Little Hans's dreams), a group (the working-class gang whose ways of coping are interpreted by William F. Whyte in *Street Corner Society*), a neighborhood (Gans's *The Urban Villagers*), or an entire society (Benedict's *The Crysanthemum and the Sword*). Such detailed and thorough investigations of a single case yield not only a Gestalt, a richly detailed description of that unique instance, but suggest by implication a more universal explanation—about dreams, social relationships, or a society's cultural values. The principles inferred presumably apply not merely to Hans or Japan or one neighborhood but to all that are similar. An investigator who focuses on a particular case draws attention to how the various elements are interrelated and mutually reinforcing. The West Enders' acquiescence to Boston redevelopers and the destruction of the community (described by Gans) are the outcome of a general process that depends on the fatalistic attitudes of the urban villagers, their closely knit peer groups, their lack of ties to the world outside the community, and the paternalistic attitudes of those who traditionally provided social and other services. A sensitive and skilled researcher provides through such a synthetic analysis an understanding of a coherent whole and of the underlying dynamics.

The advantages of a case study are simultaneously its limitations. A guiding theoretical assumption is that elements (people or groups) constitute a social system and that features of those elements (group values, individual attitudes, social class, methods of child rearing) are interrelated and can be subsumed under a broad interpretative framework. This makes it difficult to account for incongruities and variation. Moreover it is impossible to tease out what is a genuine causal factor that operates on others. Is it, for example, the high social density, the ethnic homogeneity, the traditions of respect instilled in early childhood, or the tendency to repress aggressive feelings that is responsible for the strong norms of deference and politeness among the Japanese? One cannot find the answer to this question in *The Chrysanthemum and the Sword*. The relative importance of cultural values and of social class cannot be disentangled to explain why the West Enders failed to organize to save their neighborhood. And one could entertain other hypotheses for Little Hans's dreams of the horse besides a losing battle with his father over his mother's love.

Because this investigation is not based on a case study, it does not focus on processual features and the distinctive qualities of a given firm, a group of professionals, or any particular practice of architecture. Rather than attempting to paint a single ideal type of contemporary architecture, I am examining variations among firms and within them in order to explain these differences. Such an objective requires a study based on many cases, which is the reason for basing the analysis on surveys of many firms and architects. Such comparative data capture the variation for which I use statistical analysis, which is important because the range of variation among architectural firms is great. A final reason for a survey is that this approach has certain inherent advantages in establishing systematic comparisons with an end to explaining causal relationships.

Everyone is familiar with empirical relationships cast as causal statements: proximity increases the likelihood of friendship; social support buffers the effects of stressful events; spatial arrangements in an office reinforce attitudes about status differences among workers; dome structures are unusually stable owing to the action of the meridians that carry loads down and of the opposite action of the parallels at the top and the bottom to, respectively, shrink and elongate.[3] All of these empirical, causal statements follow from systematic, comparative observa-

tions of many cases, not just one. They are typically cast as probabilistic, not deterministic, influences. To use the example about the stability of dome structures, there is not a perfect mathematical function (to the architect's peril) that can relate the forces because not all relevant other influences can be considered absolutely constant. The weight and quality of the brick and mortar will play some role; distortion of the structure is caused by uneven settling and by winds; the proportions of the dome affect its stability. In short we are talking about systems of variables that are not isolated and about systems in which many more variables than can be measured are operative. These are variables that ideally we would want to control—either experimentally or by randomization—or to measure.

Experiments are ideal for establishing causal relationships because randomization can be used to eliminate unknown sources of causation, because the causal (independent) variable(s) can be manipulated by the experimenter, and because the effects of other extraneous causes can be ruled out, as in the case of the sterile laboratory or a vacuum chamber. Moreover in fields in which the experimental method has been used successfully, such as nuclear physics and inorganic chemistry, the potential for accurate and refined measurement is great.

Social scientists, however, seldom use experiments, for reasons that render the approach practically useless. There are ethical problems in manipulating subjects or lying to them; it is impossible to study large-scale phenomena in experimental settings; many things of interest in the social sciences exhibit much initial diversity (with respect to, say, individuals' residence or their criminal backgrounds). It is precisely for these reasons that experiments are not very useful for the purpose of generalization, and besides that there are the problems of accurate measurement in contrived situations. For these reasons, the approach adopted here is probabilistic.[4] Two points should be made. First, as a substitute to randomization, the typical social science survey is based on a sample that is representative of the population and therefore leads to results that are generalizable. Second, some of the sources of variation that are canceled out through randomization in an experiment are deliberately measured in a social survey and, once measured, can be statistically controlled and entered into the causal model. For example, if it is found that architects, compared with members of other occupations, are more likely to be Democrats than Republicans,

it may be useful to control statistically for the size of the city in which they grew up (since we know that in the general population, those who grew up in big cities tend to be Democrats and those from small towns, Republicans). We may find that the reason why architects tend to vote Democratic is that most come from large cities and that otherwise architects are no more likely to be Democrats than any other occupational group. On the other hand we may find that controlling for the size of the city of origin makes no difference, and architects, regardless of where they grew up, are more likely than people in other occupations to vote Democratic.[5]

The conclusions of this study are based primarily on regression and discriminate function analyses, and both incorporate these principles of probabilistic influences and of causal effects that are independent of other conditions. Readers interested in the details of these analyses are referred to chapter notes. The main findings of the study and the interpretation of these findings are reported in the text, and their discussion will present no particular difficulties for those unfamiliar with statistical procedures.