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Learning to Design Organizations and Learning from Designing Them

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The academic focus of organization studies has unfortunately drifted over the years from the issues that organizations pose for their members and their societies, and the issues that confront people who seek to improve organizations. However, studies of efforts to design organizations can help us to better understand organizations and may also help us to improve them. The papers in this special issue of *Organization Science* describe several specific efforts to design organizations, telling why people wanted to make changes and what happened when people sought to make them.

Key words: organization design; evolution; fit; learning; research issues

This special issue seeks to stimulate interest in organization design, which we define as explicit efforts to improve organizations. For organization design to have a scientific base, research must develop concepts and propositions that suggest design options. Organization design research must compare the efficacy of organizational structures and developmental processes, and organization designers must create methods for implementing effective structures and processes. This issue presents examples of design efforts, and the results show how social science knowledge can relate to organizational practice.

Organization design has been a central topic in the management courses of modern business schools. Most management texts include typologies of organizational structures, departmental technologies, and coordinating mechanisms, and discuss how organization designs should reflect organizations' environments, goals, sizes, and cultures. Texts and courses emphasize the need to adjust structures to new contexts, and they create the impression that search for design principles is ongoing and active. However, concern for organization design has been more symbolic than real. Most accepted academic theories of organizational structure and design rely on research conducted in the 1950s, 1960s, and 1970s by Woodward, Perrow, Lawrence and Lorsch, and Galbraith. Since that time, new kinds of organizations have grown prevalent, shifting the options for organization designs to different organizational properties. In particular, communication technologies have revolutionized the ways organizations operate, globalization has changed organizational identities, workers' educational levels and quality-of-life expectations have continued to rise rapidly, and knowledge-based activities have become central to working life.

Evolving Interests in Organizations and Their Design

Interest in organizations arose in reaction to issues experienced in societies at large. Although organizations of various types have existed for thousands of years, the numbers and varieties of organizations increased during the eighteenth century, and fairly exploded during the late nineteenth and twentieth centuries. People worried about both the effects of organizations and how to extract more benefits from them.

One persistent theme focused on the effects of governmental bureaucracies on societies. Bureaucracy—a system that requires participants to adhere strictly to rules—originated to enable those at the tops of hierarchies to control their subordinates. For instance, bureaucratization made it possible to unite China into one nation, but one consequence was a revolution that overthrew the bureaucratic regime (Rindova and Starbuck 1997). Bureaucratization also enabled the French Prime Minister to elicit compliance from government officials, but one consequence was adherence to rules so rigid and thoughtless that the government had difficulty promoting trade with neighboring nations. Intellectuals have discussed the advantages and disadvantages of bureaucratic forms throughout most of recorded history (Starbuck 2003).

A second persistent theme has been how to make work in organizations more productive. As well as creating many larger and more efficient organizations, industrialization increased productivity, and this raised issues about the equity of financial rewards and the appropriateness of controls, stimulating class warfare and unionization. Industrial consultants said that more effective organization might raise productivity levels

and also mitigate social strife (Fayol 1937, Marx 1867, Mooney and Reiley 1931, Taylor 1903).

Around the middle of the twentieth century, a third theme emerged that focused on the effects of organizational membership on employees and their families. Some human resources practices integrated employees more tightly into their companies and increased their reliance on companies' social benefits (Whitman 1999). Commentators argued that such practices and job designs prevented workers from developing mature personalities, disrupted family ties, and undercut communities (Argyris 1957, Whyte 1956, Wilson 1955).

During the 1950s, studies of organizations were integrated into the academic mainstream. Several prominent sociologists departed from a focus on bureaucracy and contributed more general studies of "complex organizations" (Blau 1955, Gouldner 1954, Jacques 1951, Stinchcombe 1959). Political scientists were discussing intraorganizational power relations and decision making in governmental organizations (Simon et al. 1950). Economists began to consider organizational factors such as communication costs and the value of managerial activity (Marschak 1955, Penrose 1959). Social psychologists discovered that organizations made interesting settings for research about leadership and teamwork (Likert 1961, Lippitt et al. 1958).

These burgeoning research interests were redirecting organization studies toward academic issues, and taking them away from the issues discussed in workplaces and societies more generally. Expanding business degree programs were providing resources that were independent of the applicability of research. By 1956 nearly 43,000 Americans per year were graduating from collegiate business programs, and by 1998 this number had more than quintupled to 233,000 per year. In 1956 only 3,000 Americans per year were graduating from MBA programs, but by 1998 this figure had shot up to more than 100,000 per year. Because these students had to take courses relating to organizations and management, there were many more jobs for teachers. Organization studies became increasingly autonomous from external constraints, and more internally organized.

Teachers in business programs gained the latitude to define what they found to be interesting or important, and they did so from the standpoint of academic research. Partly because of well-publicized competition among business schools, research methodology received ever more respect, and the most prevalent empiricism became a stylized type that isolates observers from the people observed and allows observers to maintain detachment and to generate worlds of remote understanding. Subtopics proliferated and derived their popularity from their intellectual appeal or conformity to methodological norms rather than from their relevance to life outside academe. There was a movement away from studying individual organizations to studying groups or populations of organizations, with the objective of constructing generalizations. Studies of activities within organizations also became specialized, focusing on sense-making processes and relations between individuals.

Although these research topics have potential applicability to organization design, few efforts actually explored their implications for design. The themes that had originally given rise to an interest in organizations received little attention. Few organization researchers, for example, have focused on the social problems associated with organizations. Although the old social problems still exist and new ones have appeared, business students are not eager to discuss the disadvantages associated with their future occupations. Prominent organization researchers have generally ignored the long-run changes in organizations' characteristics that were stimulated by technological and population changes such as rising educational levels, computerization, telecommunication capacities, or globalization.

In the initial issue of *Organization Science*, Daft and Lewin (1990, p. 1) remarked that organizations had been making various experiments with organization design and that "these redesigns seem far removed from academic research" and that "organization studies have been a source of recurrent disappointment for practitioners and academics alike." Daft and Lewin (1990, pp. 1–2) said "current research approaches . . . do not seem adequate when the subject of study is multidimensional and complex, the needs of practitioners are ignored, and there is premature focus on a limited set of topics." One of three remedies they advocated was research about organization design. Few of the most prominent management researchers have taken the advice, although many authors have complained about the irrelevance of academic research.

Academic critiques of extant organizations and theories about them—sometimes called critical theory—have been somewhat more prevalent outside the United States during the last two decades. Romme (2003) has asserted that interest in organization design is, and has been, especially strong in Europe. He argued that as academic organization researchers were withdrawing more and more from involvement with worldly issues, the expansion of education was producing thousands of engineers and scientists who took jobs in industry and began thinking about how to improve their organizations, and business schools were producing thousands of MBAs who offered their services as management consultants. As one result, organizations could employ highly educated people to address their internal problems. However, because these activities have been defined and funded by organizations themselves, they have concentrated on making organizations more efficient or profitable and have not devoted resources to the effects of organizations on their employees, their communities, or their societies.

Research Issues and Organization Design

One problematic consequence of researchers being able to choose what they study has been a focus on the past (Starbuck 2006). Data are always retrospective, and theories consistent with retrospective data may not describe the future or even the present. In a challenge to the usefulness of such research, Platt (1964) argued that theoretical progress depends on confronting theories with crucial experiments that rule out unproductive lines of thought. Because researchers can craft retrospective theories to make them consistent with prominent stylized facts, these theories never appear utterly inadequate, and so testing them never rules out unproductive lines of thought. To expose the limitations of theories, organization researchers and designers alike have to use theories to predict, and then they have to verify whether what happens corresponds to what they predicted. Organization design is an important and interesting area because it requires designers to make predictions, and it then generates evidence about the extent that predictions prove out in practice.

Organization design also applies distinctive criteria in evaluating theories. Established research knowledge on organizations has met scientific criteria for assessing validity, but it has rarely been assessed for its organizational usefulness. The research ideas cited in this issue have been judged scientifically excellent, as indicated by extensive discussions in academic publications, and the studies in the issue provide evidence about how useful these theories were for real-world organizations. Such tests of organizational usefulness are an important intellectual challenge, because for the broader community to recognize the value of organizational research, its findings must be shown to be useful in identifying or solving practical problems. However, determining usefulness involves extrascientific criteria that are not directly considered in academic research. The intellectual challenge is to establish bridges between organization knowledge that is based on academic research and organization design contributions that are considered useful based on organizational needs.

Although research may help people to create better organizations, researcher involvement in organization design may be worthwhile on purely scientific grounds. Depending on the circumstances, organizations often promote misleading impressions of both their capabilities and their limitations, and most of the time they do not exhibit nearly the full range of behaviors of which they are capable. Instead, they avoid violating essential constraints and stay close to equilibrium in almost all dimensions nearly all the time. Prevalent studies of organizations tend to ignore dynamics that unfold over time and to overlook causal factors that influence these dynamics. This leaves nearly all degrees of freedom unexplored, and does not show what could happen within an organization or how it might impact its environment. Studies emphasize equilibria, deemphasize reorientations, and may still not show how equilibrating processes work.

To appreciate the full ranges of potential organizational behaviors, researchers need to see how organizations respond to efforts to displace them from equilibrium—as happens when designers attempt to produce changes. As a result, researchers can see some of organizations' adaptive and reactive capabilities, which opens the possibility of discovering why equilibria exist. Design projects disrupt routines, energize members, and mobilize advocates and opponents. "Garbage can" decision making becomes likely, as design decision making elicits additional issues and actions that people would like to promote as solutions (Cohen et al. 1972). From a researcher's perspective, design projects constitute natural experiments that are likely to reveal obscure or inactive organizational properties. Design projects also expose differences among overtly similar people and belief systems, activate system dynamics, and show the symbiotic interactions between organizations and their environments. As design projects involve people who are living real lives, they directly embody real-life limitations. Even researchers are not interested in being the subjects of research when their participation could threaten their livelihoods or career prospects (Campbell and Russo 1998, Riecken and Boruch 1974, Rivlin and Timpane 1975). Where outcomes may harm or benefit many people, only design experiments that appear to offer benefits without risk become feasible. As reality unfolds, however, the initial assessments of benefits and risks may prove to have been inaccurate, as several studies in this special issue demonstrate.

Some articles in this issue describe design projects in which the authors participated, all are based on extensive information gathered from directly involved participants, and some present the viewpoints of uninvolved observers. The articles talk about three topics that receive little attention in contemporary texts. Firstly, what should the criteria be for evaluating organizational performance? Because different stakeholders seek to apply different criteria and because designs have unanticipated consequences that lead to new evaluation criteria, design activities arouse political controversy, and debates may occur about designers' personal preferences. In addition, even uninvolved observers may become aware of and disclose their values. Secondly, what are effective ways to develop design ideas? Because organization designs need to be perceived to be useful and acceptable to a supportive coalition within an organization from the beginning, research methodologies alone are not adequate. Design methodologies have to persuade organizational participants to act with conviction. As Brunsson (1982b) pointed out, a rationale that people accept as valid for deciding what to do differs considerably from a rationale that people accept

as a basis for action. Thirdly, what are the roles of initial design planning and of later discovery generated by the design project? Processes of organization design can begin almost anywhere, and they rarely, if ever, end where the designers expected them to end. Rather, the mappings that link designs to reality are always underspecified, initial plans often turn into first steps in evolutionary discovery processes, and the success of design efforts depends strongly on participants' abilities to learn from their experiences and to persist in their efforts to elicit changes. Design processes influence, and are influenced by, broadening networks of widely distributed elements over time.

Traditional Organization Design Research: A Focus on Fit

Traditionally, research studies on organization design have adopted a much narrower perspective than we are advocating here. Most of these studies have started by assuming that organization designers understand well the design contexts and what designs should achieve, rather than perceiving design goals as in any way problematic. Thus, attention has focused on what components to include in designs and how to evaluate design performance. The assumption is that if a design includes the appropriate components, if the relationships between these components are logically consistent, and if they are congruent with organization goals, then the design will perform well. Discussions have consistently emphasized "alignment," "fit," and "congruence," notions that draw attention to how designs should look in order for people to believe that they can do what they are supposed to do.

Traditional design discussions usually feature prescriptions about both the criteria organizations should possess and properties that should satisfy these criteria. Chandler (1962), for example, said that there should be a fit between a firm's strategy and its structure. To deal with the future, studies of organizational designs adopt a prescriptive stance when they define fit. Over time, organization design research has made progress by becoming more specific in identifying the components to be aligned, more detailed in identifying the criteria for evaluating fits, and broader in terms of the range of rigorous research methodologies used to explore ideas about fit. As a consequence, discussions of organization design have grown more complex.

Focusing on the components to be aligned, Nadler and Tushman (1997) distinguished between the work to be done, the individuals to be involved, and the formal and informal structures used. They suggested that "congruence" should characterize the relationships between these four components and organization goals. Similarly, Galbraith (1973, 1995) identified five components, each of which has subcomponents. He said that organization designs should align (1) a strategic vision identifying sources of competitive advantage with (2) role, authority, and reporting structures. There should also be (3) linking processes that include teams, networks, and integrative roles; (4) reward systems; and (5) processes to select and develop people; and all should be consistent with the strategic vision. In a manual describing how to prepare an organization design, Galbraith et al. (2002) showed how complex it is to identify relevant components and to align them.

Goold and Campbell (2002) wrote for practitioners. They argued that organization designs should lead to a self-managed network of expert units that interact in creative, bureaucracy-free, cohesive ways. They propose different evaluation criteria to check whether elements of organization designs have the potential to achieve this ideal. For example, they said designers should check whether sufficient attention is being paid to product-market strategies, corporate added-value strategies, personnel motivation, and organizational constraints. Designers should also check whether activities requiring close coordination are grouped to encourage development of specialized skills, and if boundaries protect specialist units so that other units with different values do not block their contributions. In addition, designers should check whether upper-level responsibilities are justified by hierarchical knowledge and competence, and whether controls over lower units are consistent with units' responsibilities and motivate units' managers. Through these and other criteria, Goold and Campbell extended and complicated the idea of a "design fit."

Hypothesis testing offers another way of exploring the impacts of component alignment on performance. Russo and Harrison (2005) investigated design variables that they expected would help firms reduce toxic emissions. They hypothesized that toxic emissions would be lower if environmental-quality managers reported directly to plant managers, if managers have financial incentives related to emissions, and if environmental-quality managers participate in strategic discussions. However, statistical tests indicated that none of these variables affected firms' toxic emissions. To make sense of these unexpected results, Russo and Harrison reconsidered their methodology and asked whether the causality might be reversed; i.e., if emissions change, might direct reporting relationships, incentives, and strategic participation change? Further statistical analyses supported this idea, so the authors concluded that in a context concerned with toxic emissions, these organization design components might be reactions to, rather than causes of, firms' performance. Their study illustrates how difficult it is to interpret empirical research results that attempt to link aligned organization design components to performance.

Another way to explore relationships between design components and performance is through computer simulations. Siggelkow and Rivkin (2005, p. 103), for example, built simulations "to develop hypotheses about the effects of turbulence and complexity on appropriate formal design." They constructed very simple environments that varied in turbulence and complexity, and they considered different designs of very simple two-department firms. One design let departments make independent decisions, another linked departments with a central authority to make decisions, and a third had a central authority making all decisions. The designs also varied the use of firmwide performance incentives. Simulation runs compared response speeds and search scopes as the alternative designs dealt with environmental turbulence and complexity. The simulation runs showed, for example, that response speeds improved when departments considered more alternatives in simple environments, but departmental priorities and coordination slowed response speeds when departments considered more alternatives in complex environments. Simulation does not demonstrate the validity of assertions about real-world situations; it is a deductive tool that illustrates the implications of theorists' assumptions, which may not be valid for real organizations.

Although lists of design components to be aligned and lists of evaluation criteria to check on alignment may appear to have practical value, these criteria for fit say less than they appear to say. At best, they might help designers decide whether they have reached a stable end-state. However, they do not indicate whether this end-state is a good one, and they do not provide useful information about how to go about achieving a good end-state. For example, the prescription to match an organization to its environment does not indicate whether it would be better to try to change the organization, or better to try to change its environment, or both. Changing only the organization might result in an end-state that leaves environmental opportunities undeveloped or underexploited, and conversely, changing only the environment might fail to develop or create highly useful organizational properties (Dunbar et al. 1996, Porac and Rosa 1996). Because designers can try to alter many properties of both the organization and the environment, they have truly vast numbers of degrees of freedom. Even careful statistical studies have generated results that are difficult to interpret and that raise many new questions. Because designers do not have complete information when they begin, their activities must include exploration of multiple alternatives. The results of design efforts depend not only on relations among components, but also on the processes used to arrange components, the motivations of the people who are participating, and on how all of these evolve over time.

King (1974) reported on a field experiment focusing on job design that illustrates the elusiveness of outcomes from design interventions. This experiment involved four plants operated by one company, and it appeared to be comparing the results of job enlargement with those of job rotation. Plants 1 and 2 experimented with *job enlargement*, in which machine crews both set up their machines and inspected their own finished work. The other two plants, Plants 3 and 4, experimented with *job rotation*, in which workers shifted from one task to another at scheduled intervals. However, there was also another difference between plants. When the director of manufacturing told the four plant managers the reasons for the experiment, he gave them different explanations. He told the managers of Plants 1 and 3 that research implied the job changes should raise productivity, and he told the managers of Plants 2 and 4 that research implied that the job changes should not affect productivity, but should improve "industrial relations." In the plants where the plant managers had been told to expect higher productivity, productivity rose 6% over the ensuing 12 months; and where the plant managers had been told to expect better industrial relations, absenteeism declined 12% over the ensuing 12 months. However, productivity at the two job-enlargement plants was only 0.4% higher than at the two job-rotation plants, and absenteeism at the two job-enlargement plants differed by less than 1% from that at the two job-rotation plants. Hence, the changes in workers' actual activities had tiny effects, whereas the differences in the plant managers' expectations seemingly had much larger effects.

Prescriptions about fit between organizational components or between organizations and environments assume that the participants perceive the design contexts accurately. However, some evidence indicates that a majority of managers harbor very inaccurate perceptions of their organizations' properties and of the properties of their organizations' environments (Mezias and Starbuck 2003), so it is quite unclear how people who misperceive the elements they are trying to fit together can achieve the fits they seek. In addition, at least one very successful consultant has observed that when managers choose consultants they choose the ones whose ideas align most closely with their own, implying that managers choose consultants who share their perceptions, and thus do not counteract their misperceptions (Rhenman 1973).

Learning Designing: Emerging Fits

Our experiences as editors, conference participants, and participants in projects to change organizations, as well as our reading of research about organization design, have persuaded us that designing must be iterative, that design efforts must be persistent, and that designing and taking actions are intimately bound up with one another. Strong initial beliefs may motivate, but they can also

keep designers from seeing the situations they are trying to affect. Indeed, some designers start acting with little idea of what is wrong or why the goals they want to achieve may be organizationally important. It is theoretical assumptions rather than practical experiences that impose static perspectives on organization designs and that suggest to designers that their focus should be on aligning components, after which they can just sit back and wait for the desired results to appear.

Designers need to respect their ignorance of the organizational goals that they should be pursuing, of the situations they are attempting to affect, and of the consequences of their actions. Designers' longer-run visions of their projects' goals and scopes often turn out to be much larger than their initial visions. Because designers nearly always misunderstand to some degree, they should view their efforts as experiments that might not turn out as predicted, and they should pay careful attention to the outcomes of these experiments. Some outcomes accord with designers' expectations and others do not. As Brunsson (1982a, p. 4) said: "when an organization is specifically designed to deal efficiently with one set of objectives, tasks and situations, problems may easily arise when it has to handle other objectives, tasks and situations." Successful development depends on being able to analyze these outcomes, learning where projects should be bounded, how and why people or artifacts resist or help, and where needed resources are located. Because earlier efforts alter design situations, later efforts have to depend on and to take account of what has happened. An implication is that earlier efforts may create options that did not exist initially, so earlier design efforts can be more useful if they create options for future efforts.

Because we hoped to learn more about design processes, we urged the authors of this special issue to break with traditional approaches to studying and researching. We wanted to learn about what really happened during design projects, and so we called for papers that described explicit design efforts intended to improve organizations. We asked authors to describe how designers approached the design tasks, what they sought to achieve, and how their design understandings and the things they actually did evolved over time. We wanted authors to conceptualize design as a process that was open to evolution rather than closed from the beginning through tight alignments. We wanted to find out what happened over time and how evaluations of designs changed. We hoped to learn how unanticipated events led to redesign efforts and still further outcomes.

Designers and observers of design projects often have trouble extracting implications from unique cases, particularly as the bases that people usually use for generalizing—e.g., statistics—are absent. Useful generalizations can emerge from describing the processes designers use to accurately map and take account of the uniqueness they deal with in specific cases. Conversely, some designers start with generalized theories and hypotheses that prevent them from seeing, assessing, and exploiting unique elements in their settings. Several of the design projects described in this special issue started not with detailed assessments of the alignments among components, but with very general goals and a few insights drawn from other situations. Several projects used metaphors to link their specific situations to situations elsewhere or to provide insights. Metaphors provide suggestive, motivating, highly flexible visions not only of what a design project may be trying to achieve, but also how participants might achieve these goals.

Designers often need to devote effort to educating participants about what a design requires, and to public relations so that those in broader environments understand and accept what the design is seeking to achieve and how it is seeking to achieve it. Although designers typically believe they know or can find out how to achieve desired outcomes, other people in their environments may not understand what the designers are trying to do or how they expect to achieve their goals. A lack of shared understanding among project participants or outside in the broader environment can escalate into serious resistance that threatens projects' success. Environmental forces terminated several of the design projects discussed in this special issue, thus demonstrating how different environments may interpret outcomes from design projects as contributions, confirmations, challenges, or insults.

Future Studies of Organization Design

We believe that insights from organization design research can improve organizations' efficacy, and also the quality of organizational life. However, for designing to yield benefits, many assumptions that underlie traditional approaches to organization design studies have to change, and ways of thinking about design options will need to include evolving technologies, media, and ideas from diverse disciplines. Design projects need to start from broader orientations and objectives, beginning with an orientation that considers both the goals of the design and the design process to be essentially problematic. This broadened orientation will significantly alter research findings and research theories relevant to organization design. Although designing an organization is necessarily an ongoing rather than one-off experience, current research typically ignores changes that occur over time.

A focus on *emergent* fits, in contrast, seeks to understand how designs develop and respond to evolving situations. To do so, designs must be set up to expand

action possibilities that can then be pursued. As design situations evolve, designers need to create new and contextually relevant responses rather than to adhere to their predictions and plans. As Boland and Collopy (2004, p. 9) remarked: "A design attitude views each project as an opportunity for invention that includes a questioning of basic assumptions and a resolve to leave the world a better place than we found it."

In social science, striving for generality involving predictable relations between one variable and another is often inappropriate, for not only are the factors or processes important in one situation often different in the next, but also the situations themselves change as new circumstances emerge. As Brunsson (1982a, p. 11) proposed, "Instead, the main purpose should be to generate theories formulated for and based on specific situations which have been studied empirically. These theories form 'languages' that provide a means for understanding the situations studied. Such theories can then be used by people involved in similar situations, when they are trying to improve their understanding of their own reality."

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