

Draining the Swamp: A Case Study of School System Design

L. B. Jones

hastings county board of education

K. A. Leithwood

ontario institute for studies in education

We undertook a retrospective study of planned change in a medium-sized Ontario school district to acquire a comprehensive view of planned change. We wanted to know how changes became institutionalized, and what types of intervention fostered institutionalization across a school system. Using organization design theory to interpret the data, we found that institutionalization of significant change depended on coherence among crucial components of the school system.

Nous avons entrepris une étude rétrospective de la planification des changements au sein d'une circonscription scolaire de taille moyenne en Ontario afin d'avoir une vue d'ensemble sur la question. Nous cherchions à savoir comment les changements étaient institutionnalisés et quels types d'intervention suscitaient l'institutionnalisation dans l'ensemble du système scolaire. À l'aide d'une théorie axée sur la conception de l'organisation qui nous a servi à interpréter les données, nous avons découvert que l'institutionnalisation de changements importants dépendait de la cohérence qui existe entre les composantes essentielles du système scolaire.

We have made impressive strides over the past decade in understanding curriculum and instructional change. Numerous original studies, some on a massive scale (e.g. Berman, Greenwood, McLaughlin, & Pincus, 1975; Crandall & Loucks, 1983), along with "stock-taking" and conceptual studies, have helped.¹ This body of knowledge is only now being used directly to assist educational practitioners. At least four features of this knowledge limit its practical or instrumental value: its limited focus on classrooms and schools—and a consequent failure to appreciate the influence on classrooms and schools of their larger context (Smith, Dwyer, Prunty, & Kleine, 1988); an emphasis on single innovations—that disguises the complexity facing educational practitioners who must cope simultaneously with multiple innovations (Anderson, 1989; Fullan, 1986); the relatively short time span of most studies of change—and consequent neglect of the institutionalization of changes (Miles & Louis, 1986); and modest attention to studies of planned interventions and their consequences (Fullan, Anderson, & Newton, 1986; Huberman & Miles, 1984).

Our fifteen-year retrospective case study considered each of these four conditions. We have come to believe that long-term curriculum and instructional change can be usefully understood as an organization design problem, and that it is productive to conceptualize curriculum and instructional change as a problem of organization design. We have come to see changes in school system organization as persistent, reflective problem solving.

FRAMEWORK

Our perspective on organization design can be traced to Herbert Simon (1982), who argues that the artifacts of social activity result from processes of devising “courses of action aimed at changing existing situations, into preferred ones” (p. 129). Such processes he labels “design,” a concept used by organization theorists to describe choices made as organizations develop and change. Our retrospective case study answers two questions that arise from Simon’s definition of design: What elements serve as the objects of design activity? and, What are the processes of designing?

Elements of Organization Design

Galbraith’s (1977) conception of variables that ought to serve as objects of design activity was helpful in understanding changes in the school system we studied. A modified version of this framework, represented in Figure 1, identifies four sets of variables systematically interrelated and that together account for the extent to which organizational goals are achieved. Each set is considered an area of choice, controllable in varying degrees by those in the organization. There is no single best array of choices across the four sets of variables. Instead, organizational effectiveness² is a function of:

- (a) coherence or harmony: the extent to which the choices made within each set of variables are mutually supportive;
- (b) situational consistency: the extent to which choices within each set of variables are appropriate to the organization’s size, stage of development, environment, and “technical systems” it uses;
- (c) goal achievement: the extent to which the espoused purposes of the organization, as a whole, and the goals of its individual members are approximated.

As Figure 1 suggests, the goals espoused by an organization imply tasks members of the organization must carry out. The tasks themselves should not, however, be central in decisions about organizational design. Rather, expected levels of task performance, and the extent to which members of the organization view their tasks as uncertain, difficult to perform, and diverse or variable, should be central. For example, the ambiguity and complexity of

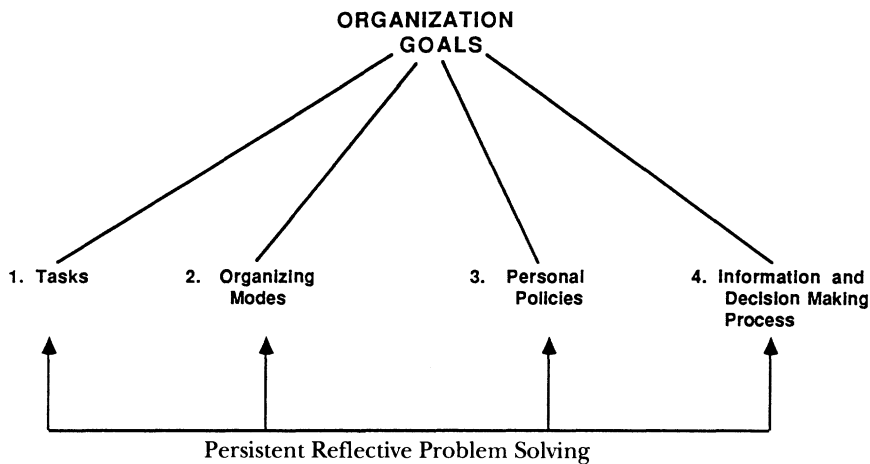


FIGURE 1

Elements and Process of Organizational Design

educational goals (Bidwell, 1965), and the absence of an arcane body of knowledge about teaching (Lortie, 1975), imply that educators will attribute high levels of uncertainty to their tasks. Different degrees of “experienced” task complexity and different performance expectations create different demands within other sets of design variables. Higher levels of task performance expectations would require more discriminating personnel policies.

Galbraith includes decision mechanisms and data formalization requirements in the set of variables labels called “Information and decision processes.” Also included are the scope of the data base, the frequency with which information is collected and, based on such information, decisions taken. This set of information-processing variables, based partly on Simon’s (1982) explanation of organizational behaviour as “bounded rationality,” contains the central assumption of Galbraith’s conceptual framework: significant numbers of design decisions and a large proportion of organizational activity can be effectively carried out through rational processes. This central assumption does not deny the importance of values and feelings in shaping organizational life; the important role values and feelings ought to play in organization design and activity is often denied because no rational framework exists for their deliberate consideration.

Information and decision processes become more sophisticated as organizations become larger and more mature, and as tasks become uncertain. In its early years, a large school system formed through the amalgamation of many smaller systems, such as the case studied here, would have quite primitive information and decision processes.

A third set of variables in Galbraith's framework is organizational structure. Decisions about structure are choices about the division of labour and about coordination of different members' activities in the organization. Decisions about structure also include choices about how power will be distributed in the organization (for example, degrees of centralization/decentralization) and how people will be grouped to carry out their work (for example, departments, divisions). This set of variables is much less manipulable in school systems as compared with other types of organization. For example, the positions and some of the responsibilities of teachers, principals, department heads and senior administrators are usually specified in government legislation.

Policies on compensation, selection, appraisal, transfer, promotion, and development of organizational members is the final set of design variables. These put emphasis on the importance of people in designing effective organizations: "One approach advocates moving people in and out of positions while the other focuses on changes to the individuals themselves" (Galbraith, 1977, p. 26). This set of variables has, at its core, a set of decisions about the criteria to be used in selecting, transferring, compensating, promoting, and developing people. Decisions about the tasks people are to perform and levels of expectations about performance determine the criteria. Recent research on this set and the way its policies are implemented leaves considerable room for improvement.³

Although neither identified by Galbraith nor examined in this study, the concept of organizational culture deserves to be considered. There is mounting evidence that organizational members' norms, values and beliefs explain much variation in organizational functioning (Rosenholtz, 1989; Schein, 1985) and present significant barriers to change (Corbett, Firestone, & Rossman, 1987).

The Process of Organization Design

Having identified elements of the organization in which changes are most likely to influence effectiveness, what process ought to be used in effecting changes within these elements? We considered the process to be one of persistent, reflective problem solving. Our view of such problem solving had its roots in Simon's view of design, our own approach to planned change, and Schon's (1983) recent work on the role of reflection in professional practice.

Simon's (1982) definition of design—"devising courses of action aimed at changing existing situations into preferred ones" (p. 129)—is a typical definition of problem solving.⁴ Those responsible for much intervention in the school system we studied initially saw organization design in this way. That is, they saw it as occurring incrementally through many elements of the

school system in order to foster growth in student dispositions, achievements or outcomes; such growth was the organization's espoused goal. Growth toward more desirable outcomes for students implies incremental changes in the practices of teachers, principals, and the like. These changes occur as obstacles (lack of knowledge or skill, lack of motivation, insufficient resources, for example) are diagnosed and overcome through some form of intervention. Since 1975, researchers' and case-study practitioners' formulations of these ideas have been refined, partly in light of the experience of our case study.⁵

The term "reflective" is crucial in our conception of problem solving in school system design. While the importance of this concept can be attributed to the semi-professional nature of the schooling enterprise in general, it is especially due to the status of knowledge about the management of change. Unlike professional activities awarded higher social status, designing the management of school change has been given little attention (Fullan, 1986). Further, it is uncertain if products of such design activity accomplish their ends. Under such conditions, experimenting with existing techniques, inventing such techniques, and compensating for their absence are important elements of "reflective" problem solving.

The concept of reflection also refers to the role of technique (procedures for carrying out tasks) in professional problem solving. Schon (1983) suggests, for example:

In the varied topography of professional practice, there is a high, hard ground where practitioners can make effective use of research-based theory and technique and there is a swampy lowland where situations are confusing "messes" incapable of technical solution. The difficulty is that the problems of the high ground, however great their technical interest, are often relatively unimportant [to practitioners], while in the swamp are the problems of greatest human concern. (p. 42)

Under such conditions, reflection involves problem finding, problem clarification and the invention of solutions suited to the context. There are no ready-made techniques to be routinely applied under such circumstances; even relevant techniques require modification before application. This view of reflection awards considerable importance to the stock of clinical, context-related knowledge that the practising professional accumulates through experience, what Lindblom and Cohen (1979) refer to as "ordinary knowledge."

The final concept in our view of the design process was "persistence." We viewed this concept as important simply because the change process appears, as yet, to be so unpredictable. We assumed that initial views of the problem would change over time and this would require, in turn, developing new solution processes. Change involves cycles of problem formulation, solution

application, assessment of “progress,” problem reformulation and the like. For a major change to become institutionalized across an entire school system it is not hard to imagine many such cycles of problem solving and the need for persistence. Figure 1 includes this process of persistent, reflective problem solving, as well as the elements of organization design.

METHOD

A medium-sized Ontario school system served as the case for the study. It was a county public school system located in the southeastern part of the province encompassing an area approximately 90 miles long and 40 miles wide. Most of the population was located in the southern portion in or near two cities with populations of 35,000 and 18,000. Six of the system’s eight secondary schools were located in these two cities. One secondary school was located in the central and one in northern parts of the county where small towns and villages were centres of population.

When the study was completed the system had 45 elementary schools, two schools for trainable retarded students and various alternative schools and classes for special education. Approximately 1200 teaching staff served about 18,000 students. The board had 18 elected members called Trustees. The Director or chief executive officer was assisted by four superintendents of instruction who supervised school areas, and two other superintendents of Business and Educational Services, each of whom had a permanent support staff.⁶

This “retrospective case study” (Stern, 1979), covered the years from 1968, when the Province of Ontario formed county school systems from a number of smaller boards, to 1983 when data collection began. The data formed a 300-page case record of school system change in curriculum and instruction. The case record, organized by school year, was constructed in three stages: (1) a detailed chronology of planned changes (“innovation events”); (2) additions to and modifications of innovation events, from the perspective of people involved; (3) an internal check of the data by participants in the events who read the case record and provided reactions. The first author, who collected all data, was also an employee of the school system at the time of the study (a curriculum coordinator). He had been employed by the school system during the 15-year period of the study. This provided access to data an “outsider” would not likely have but also required careful checks on observer bias.

The construction of the case record necessitated selection from a great variety of sources. Some could be systematically reviewed—all thirteen years of a major area newspaper, board agendas, minutes and vertical files, budget estimates and expenditures, and archives on the school system’s main change

objective, and other innovations. Other sources included written and taped speeches, curriculum and instruction documents, Ministry of Education guidelines, evaluation reports, goal statements, letters, memoranda, school bulletin board notices and cartoons, other county newspapers and published materials, and written anecdotes about events from curriculum coordinators and others. In addition, a number of informants volunteered unsorted files on innovation events and related issues. Documents were accepted for an issue or event until saturation by duplication took place. To safeguard against overlooking an innovation event, a panel of knowledgeable referees reviewed for completeness the events identified from documents, and each interview began by soliciting the respondent's view of significant change events over the years. No additions were suggested from these sources.

In the second stage of case record construction, innovation events led to questions in twenty-eight interviews with individuals selected for their special knowledge of the events.

Interviewees had special knowledge of the events and included the director and two former directors (CEO's) and five trustees, three superintendents, nine principals and vice-principals, seven teachers, six support staff, and one citizen. In the third stage of the development of the case record, twelve people knowledgeable about relevant events and other interviewees were invited to read the case record for their reaction to its completeness and accuracy. Only a few adjustments were suggested by reviewers and two independent assessments of the case record.⁷

RESULTS

We analyze the 15-year case record in three phases. The first phase, 1968–1969 to 1973–1974, saw decentralized orientation to decision making. The second phase emphasized adoption or development of systematic procedures for managing change, with implementation of a curriculum innovation called the Learning Outcomes Program (LOP), 1974–1975 to 1977–1978. Phase Three, 1978–1979 to 1982–1983, included the integration of program and personnel policies, a pre-condition of further development and institutionalizing of program innovations initiated and implemented during Phase Two.

The orientations in each successive phase were rooted in the preceding phase: in this sense the phases overlapped, each incorporating some aspects of the orientation of the previous phase within a more comprehensive and complex orientation of its own. The increasingly more complex orientations were responses to organizational ineffectiveness (in achieving short-term goals, coherence and consistency) visible in the previous phase, as well as to newly emerging goals. Evidence supporting the developmental nature of the

phases is quite strong and is crucial to the claim that changes in organization design were the product of “persistent, reflective problem solving.”

Phase One (1968–1974): Developing An “Open System”

Phase One began with the amalgamation of twelve small jurisdictions into one new, relatively large school system. Elected trustees played a prominent role in shaping and directing the new system, especially in the first three years. However, it was the first Director of Education’s theory of administration and personal charisma which most accounted for the decentralized orientation of the system during this phase. Interview remarks from trustees at the time showed how persuasive his ideas were. Said one trustee: “whenever he spoke, we listened.” Another trustee who had recommended the appointment because of the energy he saw commented: “In my experience, I have found that it is easier to pull back on the reigns than to push on them.” Yet another trustee remarked: “He actually enjoyed tackling a problem. I’ve never seen anything like him. Give him a tough one and he’d brighten right up.” His administrative theory was based on principles of shared decision making, decentralized responsibilities for change, and effective communication. Given such principles, the Director viewed his short-term goal as developing an “open system” composed of self-sufficient schools which able to provide effective programs for students.

Aside from the Director’s personal preference, his “open system” orientation to decision making helped reduce the sometimes openly expressed mistrust, and the regional rivalries created by amalgamation, both of which promised to continue under local control. This was not unimportant in the early days of the new system and the case record supports the claim that the Director’s initiatives went some distance toward establishing a climate of trust. For example, one principal of the time commented in an interview about the first retreat the principals had with the Director: “There was Frank in his sweaters and sneakers, waiting at the gate to welcome us. He shook our hands and we knew things had changed. He made us feel valued—it was a class act. After that most of us would come to his support at the drop of a hat.” On the other hand, the “open system” orientation rested on two assumptions that eventually led to its modification: first, that the board would be able to rationalize publicly the considerable diversity across schools in the system that resulted from local control, so that the public would continue to believe that equal educational opportunity was being successfully pursued. Eventually, the want of demonstrably valuable uniform “Board programs” led to rejection of this assumption.

A second assumption was that, with a few exceptions, individual teachers and principals possessed the required curriculum knowledge and skill, and

the will to use them to improve programs locally: what they lacked was a supportive organizational environment in which to exercise that knowledge and skill. This assumption was inconsistent with other "data" that gradually became available to the Director: the firing or "resignation" of some 56 teachers in 1970; the results of a system-wide assessment in 1971 which found a lack of "commitment and professional competency" on the part of teachers; and a lack of curriculum planning and development in the schools. The same report expressed reservations about the curriculum role of principals, echoing a superintendent's judgement, expressed a year prior, that principals were "not qualified academically and lacking in imagination in planning and directing their respective schools."

The lack of school initiative in program improvement and the need to respond to the Ministry's new Credit System⁸ policy, stimulated the Director to change additional elements of the organization's design. To this point his initiatives had been largely confined to changes in organizing modes and persuasive, information-providing strategies. He gave personnel policies increasing attention during the final three years of Phase One. Larger budgets provided for in-service education of principals and teachers and clarification of principals' roles, with procedures for assessing the performance of superintendents. Some superintendents had continued to see themselves as working fairly autonomously in their own regions, largely ignoring system-wide initiatives with which they did not personally agree. Even large new expenditures on in-service education were controlled locally and thus often not consistent with systematic program improvement.

The final two years of this Phase marked a considerable effort more systematically to improve curricula with significant erosion in school-level decision making. However, the many inadequacies of the four-phased program improvement plan of the Superintendent of Curriculum (and of its execution) forced recognition of several sources of organization design ineffectiveness: limitations of extensively decentralized decision-making in achieving system-wide goals and high priority tasks; lack of formal curriculum knowledge and skill among school personnel concerning their improvement task; and lack of reliable techniques for effectively managing program improvement at either the school or school system level.

Phase Two (1974–1978): Developing Techniques For Managing Change

Throughout Phase Two (Fall 1974 to Spring 1978) the school system's primary task was program improvement. Although the Director continued to play a key role in organization design it was a very different role than he had played during Phase One: rather than relying so extensively on his own persuasive skills, his influence was primarily through the new people he

brought into roles of responsibility and the support he gave them in the face of considerable opposition from "old guard" superintendents. This change in role could be explained in part by his uncertainty how to improve programs directly. In any event, the task required the involvement of many others who possessed technical skills not well defined in the fall of 1974.

Leadership in the system was being exercised by a small group of curriculum coordinators who had an increasingly sophisticated repertoire of relevant skills, and the Assistant Superintendent of Curriculum with the backing of the Director. By the end of this Phase, the Director had resigned (of his own accord) in the face of intense political pressures which elected trustees seemed unable to manage.

The first year saw implementation of curriculum materials made in summer 1973 under a four-phased program improvement plan of 1972. The eight subject coordinators appointed to assist discovered insurmountable problems in the materials to be implemented and in the unreadiness of school staffs to consider the task. By the spring of 1974, they had gained Administrative Council support for an alternative approach to program improvement later known as the Learning Outcomes Program (LOP).

Because LOP remained a focal point of organization design through Phases Two and Three of the case, it warrants more elaborate description. LOP began as a coordinated effort at classroom, school and school system levels to identify and write learning outcomes valuable for students. LOP was unique in responding to problems it encountered and created; since school staffs were unskilled in preparing learning outcomes, LOP evolved into a major in-service program; when confusion arose among principals concerning their curriculum responsibilities, LOP added a description of role responsibilities. After a half-dozen years of such evolution, LOP had become a complex, multidimensional innovation that served as both a unitary focus for school system change efforts and a source of confusion about what was meant by "implementing LOP." However, by the end of the period of the case study learning outcomes valuable to the school system had become clear and the system had produced comprehensive curricula to assist teachers in achieving many of these outcomes. Many in the system saw LOP as a coordinated set of procedures fostering a shift from traditional, knowledge-based curriculum and instruction (what Miller & Seller, 1985, refer to as a "transmission" orientation) to a curriculum and forms of instruction designed to foster self-directed student problem solving (Miller & Seller's "transaction" orientation).

Developing learning outcomes for students required skills that few teachers and principals had. This created a demand for professional development to which the system responded through school-based assistance provided by coordinators and newly appointed "Learning Outcomes Officers," through

multi-school in-service sessions, and through the preparation of written guidelines by the coordinators. LOP also created a demand for skills in managing change. Although the technology for writing learning outcomes was well known to some and thus learnable, this was not the case for change management skills. This created what Galbraith (1977) refers to as a "theoretical bottleneck" in the system's efforts to become more effective; people in the system did not possess the know-how to accomplish the tasks they had defined for themselves.⁹

Their response was to contact the regional office of OISE, whose staff specialized in planned change. This contact, the beginning of a long association, led first to adoption of a general procedure for managing the implementation of LOP. As people in the system began to carry out the tasks of this general procedure, the need for more specific instruments and procedures became evident. From 1976 to the end of the period encompassed by this case, a large number of instruments and procedures were introduced to assist in implementing LOP. Some were adopted with little modification (for example, Hall and Loucks, 1975, levels-of-use concepts); some were developed collaboratively with OISE faculty (for example, a program evaluation procedure). Others were entirely homegrown (for example, an "initiatives negotiation process").

During Phase Two, organization design activity emphasized elements which Galbraith labelled organizing modes and information and decision-making processes. The result was a set of change management techniques that had a significant, positive impact on organizational effectiveness. They provided the technical capacity the system needed to make decisions consistent with its defined task of program improvement. Design work that focussed on organizing modes contributed less clearly to growth in organizational effectiveness. Decisions made one year were sometimes reversed the next, and some changes were quite inconsistent with the system's task. These inconsistencies were the product of the influence on the Director of the old guard superintendents who continued to oppose LOP implementation. On the other hand, helpful changes in organizing mode were as much a product of individuals placed in the role as the role itself. One could easily imagine, for example, the curriculum coordinator role having little positive influence in the system had appointees in the role not been willing to take professional risks in opposing the preferences of the old guard superintendents for whom they sometimes worked directly. And this willingness to take such risks was due in large measure to the trust they had in the Director's continuing support.

By the end of Phase Two, considerable design activity also had been devoted to personnel policies. This focus continued to grow until it became the orienting theme of Phase Three.

Phase Three (1978–1983): Integration of Program and Personnel Policies

The system's main task continued to be program improvement through LOP implementation although several Ministry of Education curriculum initiatives led to an enlarged view of improvement. New special education legislation for special students in the "least restrictive environment possible" led LOP to expand its scope to include special education services and programming. The Ministry also issued prescriptive curriculum guidelines for the intermediate division; LOP was then supplemented with a procedure for detecting similarities and differences between new, external curriculum policies and existing system programs.

Personnel policies were the subject of the most intense organization design activity during Phase Three. Perhaps the most significant prior work on personnel policy, during Phase Two, was the Trustees' adoption of LOP-linked criteria for selecting the second Director (these criteria were presented to the Board by the Central Support Team). Use of these criteria resulted in selection of a Director with declared commitment to and extensive background in program improvement.

After initial scrutiny of LOP, he endorsed its continuation and worked on integration of program and personnel policies, initially through development of a "management-by-objectives" evaluation of his own role. Job descriptions, performance appraisal practices, and in-service activities were then gradually reshaped so that skills in managing LOP became the basis for them all. The resulting consistency between system tasks, decision-making processes, and extrinsic reward systems was greater than ever. Further, the second Director took a strong interest in developing system capacity to measure its own progress in achieving learning outcomes, thus clarifying and increasing the levels of performance expected of staff. Systematically collected data in a variety of program areas often revealed less-than-anticipated levels of program implementation and student achievement. This became the basis for much of the decision making concerned with system goals and priorities.

By the end of the case study period a significant degree of coherence was evident among organizing modes, personnel policies, and decision-making processes in the system. Such coherence could be argued to account for much of the system's success in "short-range" tasks. For example, most surface features of LOP were in place throughout the system. This included written programs at all levels in the system with intended learning outcomes for students; teaching materials and other instructional services identified and organized in support of these outcomes; a common language for communicating about curriculum development, implementation, and evaluation issues and practices; and specific responsibilities for planned change in curriculum for all system roles.

There was also evidence of significant improvements in the quality of programs and student performance. Over eight years, highest-level program implementation increased from 10% to 40%, as received by students, new schemes to aid student learning over multiple grades appeared; there was more attention in many programs to development and assessment of such cross-curriculum skill areas as writing and significant improvements in student writing performance and in mathematics computation.

Finally, LOP activities contributed to problem solving in other areas. Special Education programs became an extension of regular programming both for "gifted" students and for students with various learning problems; Special Education measurement instruments used regular program measures for diagnostic purposes, as well as independent testing; staff evaluation and in-service training were linked to school goals, including LOP curriculum priorities; and hiring criteria for administrative, support, and teaching positions embodied LOP priorities.

In 1981 the third Director was hired, the second having moved to a larger school system as Director. Again, the Board employed LOP-linked criteria and selected the curriculum superintendent responsible (initially as an assistant superintendent) for much of LOP's implementation during Phase Three.

CONCLUSIONS

In our view, the retrospective case study methods applied to a 15-year slice of life in one school system resulted in a richly detailed understanding of the causes and consequences of planned change in that system; we are aware of few other studies of curriculum change spanning a longer period of time and adopting as comprehensive a view of influences on the curriculum (for example, McKinney & Westbury, 1975; Smith et al., 1988). Results of our study are the product, however, of a partly unique set of conditions, people, and events. As with all case studies, those who would apply the results under different circumstances should extrapolate tentatively and proceed with caution. Results of the study are also a product of the framework used to select, organize, and interpret data. Long-term change was viewed as a process of persistent, reflective problem solving for tasks, organizing modes, personnel policies, and information and decision-making processes. These elements of the organization gradually altered, partly through planned change to improve organizational effectiveness. Effectiveness should here be understood not just in terms of organization goals and of individuals' less explicit goals, but also of coherence among elements and of consistency with the setting. Although this perspective accommodated the case study data well, it intentionally highlighted the meaning attached to planned change activities by those involved in system-level actions and decisions; this was one

of the major purposes of the study. In spite of the considerable care taken to remove observer bias, a system-level perspective is also consistent with the role played in the school system by the person who collected the data (Jones). We understand much less about the meaning those at the school level (for example, department heads, principals and teachers) attached to these same activities; it may have been quite different. With these methodological and conceptual limitations in mind, we examine the significance of our results.

One purpose of the study was to demonstrate the value of conceptualizing curriculum and instructional change as a problem of organization design, given the organization elements identified in Figure 1. There are several grounds for claiming that this has been demonstrated in a reasonably convincing way. First, data collected in the study were readily classified and interpreted within the organization design framework. This constitutes a demonstration of the framework's value, especially because these data were initially collected in the absence of an *a priori* conception or theory similar to the framework used in the paper. We looked for "critical events," interventions, obstacles and the like. But the interpretation, classification and further collection of data corresponded closely to Glaser and Strauss' (1967) technique for developing grounded theory. The post-hoc use of organization design theory in this study is an example of following a research path, the final stage of which involves testing the explanatory or external validity of one's data. As Brinberg and McGrath (1982) explain, this is done by comparing one's data to a sample of existing, potentially relevant theories; finding a close match increases the confidence one is able to have in the interpretation of one's data.

Second, the organization design framework revealed a core of school system variables normally thought of as "administrative," that were crucial to curriculum change. The most influential of these variables were the procedures for collecting information and decision making which dominated the case during Phase Two and the personnel policies which were changed to consistently support efforts to implement LOP during Phase Three. In the absence of changes to these elements of organization design, it seems likely that LOP would have been short lived. Yet they are not variables attributed much attention in research to date on curriculum change. Changes in these design elements, furthermore, seem to account for much of LOP's institutionalization. Indeed, this finding raises intriguing questions for further research and powerful implications for practice. For example: Would changes in personnel policies, much earlier in the LOP implementation process have significantly speeded up institutionalization? It seems possible that they would have. Would the introduction of specific procedures for managing change and training in their use set the stage for change as well but faster than the Directors open system orientation during Phase One? Results of the

DESSI study (Dissemination Efforts Supporting School Improvement) (Crandall & Loucks, 1983) suggest that commitment to a new practice frequently develops through experience with and mastery of that practice, not in advance. Our data support such a conclusion. Institutionalization is the long-term goal of most curriculum change. This study gives us a clear picture of the conditions that prevailed within and among the elements of one school system's design when LOP had reached that stage. Because these conditions could have been created much earlier, had they been known, results of the study offer the real possibility of speeding up future changes through the process of organization design.

Finally, the classroom and school perspectives which have dominated research on curriculum change have often argued for particular choices within selected elements of organization design; decentralized decision-making processes, for example. Results of this study suggest that there are no best design choices in the abstract, a position consistent with Galbraith's (1977). For example, decentralized decision making appeared to be effective in building a climate of trust early in the system's history. But greater central control seemed essential when program improvement became the focal task for the system. As another example, the design element "organizing modes" underwent the most frequent changes over the period of the case. Annual or semi-annual adjustments were made most years in the responsibilities of superintendents. This was an attempt to develop an administrative structure that was coherent with the prevailing characteristics of other design elements and fostered whatever were the priority goals and tasks of the day. In this sense, the best design choices are those that create an internally coherent organization that fits its unique setting and consistently foster's growth in whatever are its overall goals and the goals of its individual members.

Serious discrepancies between organization and individual goals is perhaps the most serious form of design "incoherence." Our framework gives precedence to neither set and case study data illustrate how both sets can change over time and become better integrated. The school system's official goals and related tasks served to motivate activity which in time generated new goals. This is consistent with Simon's (1982) view of designing without final goals on the grounds that "Exposure to new experiences is almost certain to change the criteria of choice, and most human beings deliberately seek out such experiences" (p. 186). An information-processing view of organization design problem solving, as in this framework, necessarily places emphasis on the role of individual goals, values, and aspirations in explaining actions. Such goals have considerable explanatory power in this case. The initial goals of the organization were uncertain and general; they gradually became more certain and specific. This refinement paralleled efforts to negotiate changes in the system with teachers, principals, and others at the

school level and the "old guard" superintendents at the system level. To the extent that LOP eventually could demonstrate that teachers' jobs could be more rewarding, implementing LOP was consistent with teachers' goals. Negotiation was still underway in 1983, in part because of the ambitious nature of the curriculum emphasis within LOP (a transaction orientation). The system never did manage to come to grips with "old guard" superintendent goals in the period of study but these superintendents were gradually replaced. They retained their regional sources of power initially and later preserved their status in the system's hierarchy by blocking a change that would have had the effect of "deskilling" them.

The second purpose of the study was to explore further the process of organization design as persistent, reflective, problem solving. Data from the case illustrate how "the system" learned from its trials and developed more sophisticated approaches to problem solving. Because of the unpredictable nature of most planned change strategies used and the effects of unplanned critical events (such as resignations of directors), problem solving was not smooth or regular: Smith et al. (1988) suggest that any adequate theory of change has to acknowledge such unpredictability. Nevertheless, problem-solving effectiveness increased as systematic procedures or techniques were introduced, especially during Phase Two of the case. Our data suggest a much more significant potential role in planned change for techniques or systematic procedures resulting from disciplined development work than is currently being suggested especially in relation to teaching. For example, Sanders and McCutcheon (1986) remark that: "Instead of asking how the findings of research [which might include disciplined development work] could be made accessible and useful to practitioners, we could ask: how can practitioners apply the tools of research to inquire into the practical problems of teaching they face in their own work" (p. 67). Systematic procedures are available to guide curriculum change. Our case illustrates that they can be modified and used with effect. The energy thus saved can then be spent on developing procedures for other tasks (we are skeptical, however, of the value of the conventional "tools of research" in such development work) and the inevitable unpredictable events which arise.

While the case awards considerable value to systematic problem-solving procedures introduced most notably in Phase Two, their consistent adoption and use depended entirely on the persistence of key individuals in the school system. Without this persistence over extended periods of time, often at considerable personal risk, there were many incidents which would have terminated LOP implementation. Organization design theory probably underestimates the importance of key individuals: it does, however, show how the negative consequences of their departure can be minimized and sometimes turned to positive advantage. Establishing LOP-linked criteria for

choosing new directors was the most obvious example, in the case. This was a design decision that institutionalized persistence on a defined problem.

The cumulative effects of persistence and reflection in successful planned change could be seen in various dimensions of the organization over time, including: a move towards a more "tightly-coupled organization" (Weik, 1976) as reflected in more coordinated planning and actions among those in all roles in the system; the image of the problems faced in bringing about planned change became more clearly defined and more complex with implications for all roles; increased problem solving capacities among many key individuals and in the system's standard operating procedures; and a shift from a conceptual view of a desired state for the innovation to more detailed and practical descriptions of the desired state and criteria for success.

A major implication for school system administrators is that loosely-coupled schools and school systems are not likely to be successful in bringing significant and long-lasting change. The frequently heard debate over centralization versus decentralization is too simple and overlooks the contribution to organizational effectiveness made by coordinated actions among people in the system. School system support appears to be a factor in sustaining any planned change of significance, first of all because of the focus which it brings to bear on individual schools over time, intentionally or otherwise. Consequently, school-based improvement schemes need the active support of the system to survive in the long run. What is not evident from this study, but warrants further attention, is the contribution of organizational culture as compared with other elements of the organization.

NOTES

¹ See, for example, Fullan (1977, 1982) and, most recently, a large group of policy makers and researchers from many countries collaborating under the umbrella of the International School Improvement Project (CERI/OECD).

² The multidimensional definition of effectiveness offered here is consistent with Galbraith (1977) and Seashore (1983) in respect to coherence and goal achievement. Mintzberg (1983) identified situational consistency.

³ For example, see Lawton, Hickcox, Leithwood, & Musella (1985) regarding performance appraisal; Morgan, Hall, & MacKay (1983) regarding promotion; Leithwood & Avery (1986) regarding development.

⁴ See, for example, Baird (1983) and Fredericksen (1984).

⁵ Leithwood & Robinson (1979), Leithwood & Montgomery (1982), Leithwood (1982).

⁶ The study was initially reported as the first author's doctoral dissertation. The first author was also an employee of the school system in which the study was conducted.

⁷ A more detailed reporting of results (by year) in relation to each element of

organization design is provided in a longer paper available from the authors on request.

⁸ This policy was aimed at the intermediate and senior divisions (grades 9–13) and allowed students far greater choice in courses.

⁹ This was the Trent Valley Centre, a field centre of the Ontario Institute for Studies in Education.

REFERENCES

- Anderson, S. E. (1989). *The management and implementation of multiple changes in curriculum and instruction*. Unpublished doctoral dissertation, University of Toronto, Toronto.
- Baird, L. L. (1983). *Review of problem-solving skills*. Princeton, NJ: Educational Testing Services.
- Berman, P., Greenwood, R. W., McLaughlin, M. W., & Pincus, J. (1975). *Federal programs supporting educational change. Vol. V: Executive summary*. Santa Monica, CA: Rand Corporation.
- Bidwell, C. E. (1965). The school as formal organization. In J. G. March (Ed.), *Handbook of organizations* (pp. 972–1022). Chicago: Rand McNally.
- Brinberg, D., & McGrath, J. E. (1982). A network of validity concepts within research process. In D. Brinberg & L. H. Kidder (Eds.), *Forms of validity research* (pp. 5–23). San Francisco: Jossey-Bass.
- Clark, D. L., Lotto, L. S., Astuto, T. A. (1984). Effective schools and school improvement: A comparative analysis of two lines of inquiry. *Educational Administration Quarterly*, 20(3), 41–68.
- Corbett, H. D., Firestone, W. A., & Rossman, G. B. (1987). Resistance to planned change and the sacred in school cultures. *Educational Administrative Quarterly*, 23(4), 36–59.
- Crandall, D. P., & Loucks, S. F. (1983). *A roadmap for school improvement: Executive summary of the study of dissemination efforts supporting school improvement. Vol. 10*. Andover, MA: The Network.
- Fredericksen, N. (1984). Implications of cognitive theory for instruction in problem solving. *Review of Educational Research*, 54, 363–407.
- Fullan, M. F., Anderson, S. E., & Newton, E. E. (1986). *Support systems for implementing curriculum in school boards*. Toronto: OISE Press.
- Fullan, M. F., & Pomfret, A. (1977). Research on curriculum and instruction implementation. *Review of Educational Research*, 47, 335–397.
- Fullan, M. F. (1982). *The meaning of educational change*. Toronto: OISE Press.
- Galbraith, J. R. (1977). *Organization design*. Reading, MA: Addison-Wesley.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory*. Chicago: Aldine, Atherton.
- Hord, S. M., & Huling-Austin, L. (1986). Effective curriculum implementation: Some promising new insights. *Elementary School Journal*, 87, 97–115.
- Huberman, M., & Miles, M. (1984). *Innovation up close*. New York: Plenum Press.
- Lawton, S., Hickcox, E., Leithwood, K., & Musella, D. (1985). *Development and use of performance appraisal of certificated education staff in Ontario school boards*. Toronto: Ontario Ministry of Education.
- Leithwood, K. A. (1985, June). *The nature and development of procedural knowledge*. Paper

- presented at the annual meeting of the Canadian Association for Curriculum Studies, Ottawa.
- Leithwood, K. A. (Ed.) (1982). *Studies in curriculum decision-making*. Toronto: OISE Press.
- Leithwood, K. A., & Avery, C. (1986). In-service education for principals in Canada. In K. A. Leithwood, W. Rutherford, & R. vanderBegt (Eds.), *Preparing school leaders for educational improvement* (pp. 132–154). London: Croom-Helm.
- Leithwood, K. A., & Montgomery, D. F. (1982). A framework for planned educational change: Application to the assessment of program implementation. *Educational Evaluation and Policy Analysis*, 4, 157–168.
- Leithwood, K. A., & Robinson, F. G. (1969). *A framework for planned change* (mimeo). Toronto: OISE.
- Lindblom, C. E., & Cohen, D. K. (1969). *Usable knowledge*. New Haven, CT: Yale University Press.
- Lortie, D. C. (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.
- McKinney, W. L., & Westbury, I. (1975). Stability and change: The public schools of Gary, Indiana, 1940–70. In W. A. Reid & D. F. Walker (Eds.), *Case studies in curriculum change* (pp. 22–39). London: Routledge & Kegan Paul.
- Miller, J. P., & Seller, W. (1985). *Curriculum perspectives and practice*. New York: Longmans.
- Miles, M., & Louis, K. S. (1987). The school on institutionalization: A reflective review. In M. Miles, M. Ekholm, & R. Vandenberghe (Eds.), *Lasting school improvement: Exploring the process of institutionalization* (pp. 48–68). Leuven, Belgium: Acco.
- Mintzberg, H. (1983). *Structure in fives: Designing effective organization*. Englewood Cliffs, NJ: Prentice-Hall.
- Morgan, C., Hall, V., & MacKay, N. (1983). *The selection of secondary school headteachers*. Milton Keynes: Open University Press.
- Rosenholtz, S. (1989). *Teachers' workplace*. New York: Longmans.
- Sanders, D. P., & McCutcheon, G. (1986). The development of practical theories of teaching. *Journal of Curriculum and Supervision*, 2, 50–67.
- Schein, E. H. (1985). *Organizational culture*. San Francisco: Jossey-Bass.
- Schon, D. A. (1983). *The reflective practitioner*. New York: Basic Books.
- Seashore, S. E. (1983). A framework for an integrated model of organizational effectiveness. In K. S. Cameron & D. A. Whetten (Eds.), *Organizational effectiveness* (pp. 55–70). New York: Academic Press.
- Simon, H. A. (1982). *The sciences of the artificial* (2nd ed.). Cambridge, MA: MIT Press.
- Smith, L. M., Dwyer, D. C., Prunty, J. J., & Kleine, P. F. (1983). *Innovation and changes in schooling: History, politics and agency*. New York: Falmer Press.
- Stern, P. (1979). *Evaluating social science research*. New York: Oxford University Press.
- Weik, K. E. (1976). Educational organizations as loosely coupled systems. *Administrative Science Quarterly*, 21, 1–19.

L. B. Jones is superintendent, Hastings County Board of Education, Belleville, Ontario, K8N 1N9, and K. A. Leithwood head, Centre for Principal Development, Ontario Institute for Studies in Education, 252 Bloor Street West, Toronto, Ontario, M5S 1V6.