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Accounting in Organizations: A Union of
Natural and Rational Perspectives

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Accounting in Organizations: A Union of Natural
and Rational Perspectives

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Abstract

Research on accounting in its organizational context is most fruitfully done by attempting to understand how its rational and natural aspects interact within the lived experience of individuals. Accounting serves both objective and symbolic functions. Research that emphasizes a genuine union of the two aspects reveals accounting's role as a complement and supplement to more qualitative and interactive forms of problem solving. It also reveals that accounting is a technique that must be transcended to be used effectively and that its inadequacies challenge humans as moral agents.

Scott (1981) has characterized the development of organization theory in this century as a progression from: 1) closed system rational models emphasizing efficient input-output transformations, to 2) closed system natural models emphasizing humanly satisfying interpersonal dynamics, to 3) open system rational models emphasizing structural adaptation to environmental and task uncertainty, to 4) open system natural models emphasizing the nonrational aspects of adaptation and the importance of survival over goal attainment. The more recent open system natural models focus attention on power, coalitions, language, rationalized myths, sense making, and ambiguity. Figure 1 presents representative theorists from each type of system model (Scott, 1981, p. 409).

Rational models assume managements are confronted with an objectively knowable, empirically verifiable reality that presents demands for action. Guided by a functionalist framework, managements analyze the apparent cause and effect relations, calculate costs and benefits and take action in response to the requirements of the external environment or the technology of production. Natural models, on the other hand, see managements as responsible agents who interact symbolically and, in so doing, create their social reality and give meaning to their ongoing stream of experience. Problems are not simply presented to managements, problems are constructed by them. Whereas quantitative, literal analysis guides rational models, qualitative, symbolic interpretation guides natural models.

The rational and the natural present two ways of knowing and of taking problem solving action in organizations. The rational approach

Figure 1

Dominant Theoretical Models and Representative
Theorists for Four Time Periods

<u>Closed System Models</u>		<u>Open System Models</u>	
1900-1930	1930-1960	1960-1970	1970-
<u>Rational Models</u>	<u>Natural Models</u>	<u>Rational Models</u>	<u>Natural Models</u>
Taylor (1911)	Bernard (1938)	Woodward (1965)	Hickson et al. (1971)
Weber (1947)	Roethlisberger and Dickson (1939)	Lawrence and Lorsch (1967)	March and Olsen (1976)
Fayol (1949)	Mayo (1945)	Thompson (1967)	Meyer and Rowan (1977)
	Dalton (1959)	Perrow (1967)	Pfeffer and Salancik (1978)
	McGregor (1960)	Pugh et al. (1968, Pandy and 1969)	Mitroff (1978)
		Blau and Schoenherr (1971)	

emphasizes model-based analysis that encompasses relevant causal factors and selects desired outcomes based on a comprehensive understanding. The natural approach, in contrast, is less global in pretense and does not seek a comprehensive understanding as a basis for problem solving. Instead, solutions arise from interaction and adjustment within culturally available ceremonies and rituals. No global understanding is necessary for a political process to generate problem solving action.

Thompson (1967) emphasized that organizations are both open and closed systems; striving for rationality (closure) in the face of uncertainty (openness). We emphasize that the use of accounting in organizations is both a rational and a natural process. The use of accounting proceeds by an interaction of the rational and the natural, in which each aspect serves as the context for the other, as an alternation between figure and ground. The organizational actor encounters an objective, external social world "out-there" that presents structural constraints to action and defines what is rational. But, the individual also participates in the construction of that social world by interacting symbolically with others and sharing subjective interpretations of what is real and what reality means. The interaction of these two faces of organization is the field of mutual context in which accounting is to be understood.

Accounting is a unique element in the experience of organizational life, and the study of accounting in its organizational context can do much to illuminate the interaction of the rational and natural aspects of organizing. Accounting is one of the major formal sets of symbols available to organizational actors for ordering and interpreting their

experience. As a language, accounting provides categories for discourse that reflect both rational and natural aspects of organizing. Accounting is a rational device in that the objectively measurable characteristics of the organization and its environment--the simply given--is filtered through accounting categories. It is a natural device to the extent that its categories impose a coherence on chaotic organizational processes; defining what is real; dignifying certain questions as important and stopping others as inappropriate or irrelevant. As ritual, accounting brings structure and significance to budgeting, planning and evaluation processes. Through its use, new members come to understand and old members find reinforcement for the shared interpretive schemes of their organization. Accounting thus both makes sense within and is used to make sense of the frames of reference that characterize an organization.

Towards A Genuine Union

Natural system theorists employ a series of dichotomies to distinguish their unique emphasis, concerns and modes of analysis from those of rational system theorists. Burrell and Morgan (1979) aligned organization theories along a subjective-objective continuum. Meyer and Rowan (1977) distinguished productive organizations from institutional organizations. Rhenman (1973) distinguished strategic managements from institutional managements. Each theorist then proceeded to discuss the previously ignored end of their continuum, be it subjective or institutional, as an alternative view of organizations. Contingency theories build on these bi-polar distinctions and propose that specific task-environments are either natural or rational, mechanistic or organic,

theory x or theory y and that management and organization design should appropriately "fit" by being one or the other.

Emphasizing polarities when developing natural system theories is useful in establishing their unique perspective as legitimate, but contingency is too limited an approach to use as a basis for pursuing the implications of natural system theorists. As a basis for research or design it fails to appreciate the interaction of the natural and rational aspects of organizing and the dialectic quality of the lived experience in organizations. In the spirit of Thompson's insight, organizations and their accounting systems are not to be understood as either natural or rational but as both, simultaneously, in a relation of mutual context. We call this alternative to the either-or dichotomies of contingency theories the genuine union of rational and natural systems.

The essence of a genuine union is the recognition that each way of understanding organizations serves as the context for the other. Organizational action is seen as rational relative to an intersubjective domain of understanding, and symbolic interpretations endure when they are seen as resulting in positive empirical consequences.

In the proposed genuine union, the field of mutual context is resolved as a figure/ground relation in which rational structures as context can enable natural processes and in which natural understanding as context can inform rational development. For instance, myth as a natural understanding provides images of a future and defines ideals for the development of rational technology, yet an existing technology presents the problems and promises that give rise to new myths. In

1933, the image of a competent, conscientious, independent accountant was part of a myth that accounting and auditing decisions were based on an established body of principles, standards and practices. Only after this image had resulted in mandated audits for SEC registrants did a technology of standard setting emerge. The technology of standard setting, in turn, provided the ground for defining new images of the nature, purpose and audience of accounting (Boland, forthcoming).

The proposed genuine union of the rational and the natural recognizes the dual nature of any particular aspect of organizations. Although technology is discussed as if it were rational, myth as if it were natural, accounting as if it were rational, etc., each organizational object or event contains the potential of both. Subjective experience, once externalized, confronts us as objective reality and no rational model can escape its inherently symbolic and interpretive nature.

To research accounting in organizations as the genuine union of natural and rational systems requires the following:

- 1) The research must focus on action in organizational settings. The objective is not to study accounting per se, but to study individuals acting in organizations as they make and interpret accounts.
- 2) The research must use case analysis of specific situations in which individuals experience accounting systems while solving organizational problems. Accounting comes into existence in use, and is not done exclusively by accountants. Accordingly,

the perspectives of interest are those of the individual actors.

The attempt is to understand accounting as a lived experience.

- 3) The research must be interpretive and recognize the symbolic use of accounting in ordering and giving meaning to the individual's experience.
- 4) The researcher must step out of the actor's frame of reference and take a critical view of the actor's definition of the situation, in the sense that the actor's purely subjective interpretation must be transcended.

The figure/ground relationship of the rational quantitative aspects of organization with the natural qualitative aspects is brought out by emphasizing the way in which each aspect is in turn bracketed while the other is allowed to hold center-stage. The two case studies presented below dramatize the way in which qualitative, natural systems aspects are bracketed to allow quantitative, rational systems issues to be resolved, and, in turn, quantitative, rational systems aspects are bracketed to allow a resolution of qualitative, natural system issues.

In the first case study, this shift between bracketing and center-staging of the quantitative and qualitative aspects takes place over several years as the environment shifts with respect to an established, well-defined accounting system. In the second case study the shifting between figure and ground of the qualitative and quantitative aspects takes place during one, non-repetitive problem solving process using accounting data from special, ad-hoc analyses.

Study Number One--A University Budget

The first study explores how public institutions (and especially the University of Illinois) interpret and respond to a climate of limited growth or actual decline.¹ The program of inquiry has involved interviews with significant actors in the drama including the Chancellor and Vice-Chancellors as well as Deans, Department Heads, lobbyists, legislators and faculty leaders. The study is particularly concerned with observing and interpreting how the University makes sense of and responds to a decreasing student population, a decline in state and federal funding and the strains of inflation. One important theme in the study is the role of the budgeting process in securing and allocating financial resources.

The formal budgeting system of the University is a well-defined process that has developed over a fifty year period. It is a cycle that takes two years and three months to complete. The cycle moves from departments through the colleges, the Vice-Chancellor for Academic Affairs, the Financial Vice-President and the Board of Trustees to the state Board of Higher Education and finally to the Governor and the legislature. The budget request is stated in terms of incremental needs of five types. There is a form (called a PB) for each type of need, and the budget increment request is the sum of all the separate PB's that survive the entire process. The five categories for needs are:

¹This study group is organized under the auspices of the Center for Advanced Study at the University of Illinois and includes Stuart Albert, Daniel Alpert, Richard Boland, Fred Coombs, Hugh Petrie and David Whetten.

PBI - New programs and major improvements in existing programs

PBII - Requests for increased departmental operating funds

PBIII - New buildings

PBIV - Major remodeling

PBV - Safety and security improvements

These categories for describing needs are kept wholly separate from the existing budget base and only these incremental amounts are discussed in the formal budgeting process. In fact, the "Operating Budget Request" which is presented to Board of Higher Education and the state legislature by the University does not even mention the total budget. Its seventy nine pages (for fiscal 1982) hides the vast majority of the budget dollars and speaks only of additional funding.

The total budget, once determined, is allocated to individual colleges which have complete discretion in its further allocation to departments. Departments, in turn, have traditionally had complete discretion in the use of their funds. Departments have been free to allocate funds among expense categories and to shift funds among categories, at will.

The formal budgeting system is interpreted as an adaptation to an internal climate and to an external environment. The quantitative budget is an adaptation to qualitative value systems as well as to the levels of uncertainty that are emphasized by contingency theories.

Internally, the University value system is characterized by the headship form of departmental management. A department head is distinguished from a chairperson by the greater autonomy granted to the head. Whereas a chairperson is expected to be the voice of the

democratic determination of departmental faculty, a head is expected to be an leader who listens to the faculty but acts based on independent determinations. The University Chancellor has recently stated:

A university cannot be run like a participatory democracy and my view of collegiality does not embrace the concept of units with 30 co-heads. It does embrace the idea of responsible and responsive administrators who listen to the concerns of their constituents and use the structures visualized by the University Statues (Cribbet, 1981).

Hence, the looseness and vagueness which characterized the departmental level budget allocations is an integral part of the autonomy granted to department heads. As one head put it, "you can't tell what I will do based on the budget categories--I can change dollars from any account to any account."

Externally, the University has historically experienced very supportive environmental value systems. The University is called the "crown jewel" of higher education in the state (although recently it has adopted the more modest and politic term, "flagship" of the state system of higher education). Over the last ten years it has received a greater than average share of the total dollars made available for state funding of education. The state has enjoyed a diversified and resilient economy that until recently has allowed new universities and colleges to be founded within the State, even while University funding has increased.

The PB system for budget requests fit this supportive value environment well. It allowed the autonomous departmental units to portray the onward and upward thrust that was expected of the crown

jewel, and rewarded the constant development of new and expanded programs.

In the last several years, however, the environment has begun to shift. In keeping with trends across the nation, the post-war baby boom generation has passed through its prime college age profile. Student enrollments are forecasted to decline steadily over the next fifteen to twenty years. Concurrent with reduced student enrollments, the economy of the state has stagnated and efforts to reduce the state sales tax have been successful. The result is a massive need for budget cuts across all state departments. Even so, the strongly supportive value environment experienced by the University has saved it from actual budget cuts. The University has, however, suffered reduced annual increments, and less visible components, such as faculty pensions, have been consistently underfunded. In the last two years, only \$50,000 out of \$6,000,000 in PBII requests were funded, and frequency of PBI requests has been reduced from annual to bi-annual submission.

Using the imagery developed earlier in the paper, the values, ideologies, myths and political processes which characterized the internal and external environments were natural systems and the formal budgeting process was an example of a rational technology adapting to a natural environment. In this sense, a natural, qualitative system provides the context for a rational, quantitative system. The qualitative value system is bracketed, or accepted without question, while the quantitative system of budgeting is brought to center stage and designed.

But, when the budgeting process as a rational system is used by organizational actors, it in turn becomes the context for a natural process. It is within the terms of the budgeting system, bracketed as simply given, that value questions are raised, argued and resolved. It gives structure to the dialogue of budget proposals and approvals, and the exercise of university, legislative and governmental value systems. Its role as context remains ambiguous, however, as the flexible and vague account categories allow department heads to freely exercise unique value systems in the face of the formal allocation schemes.

The formal budgeting system was a successful adaptation because it framed the problem of budgeting in a way that was congenial to both the internal and external value systems. Externally, it framed the problem as one of selecting the next jewels for the prized crown-of adding the next scene to the vista of the University mosaic. Internally, it provided a free space of movement that allowed the dramatic enactment of the myths of academic independence and headship autonomy.

The recent demographic and financial shift in the environment affords a unique opportunity for observing and interpreting the use of this accounting system. With these shifts, the congeniality of the adaptation is upset. No longer does the accounting system simply mirror the budgeting problem presented by the environment as if it were an externally determined, objective "fact." The University community and its leaders are faced with a new problem of a different logical type. This new problem is to make sense of its changed environments, both internal and external, to give meaning to its actions and to create its new social reality.

Against the backdrop of this external environmental shift, accounting plays an active role in shaping the definition of the new situation and in constructing the shared understanding of a new world. With this figure/ground shift, the accounting system as a formal set of well defined categories becomes the language used to make an interpretation of the immediate condition and to define images of the future. It is now clearly not a calculus for choice within a bracketed natural system, since the choices that are open and the very field of action in which they are available have yet to be defined.

The symbolic aspect of accounting systems becomes clearly apparent as it is used to define the new frame of reference itself. Firstly, the process of generating and evaluating PB forms continues, even though the funding for them is clearly not available. They are seen now as an important vehicle for defining and clarifying values and for supporting a dialogue on potential solutions. For instance, the Department of Business Administration recently proposed a program for allowing faculty migration to high demand disciplines by supporting post-doctoral study in management for faculty from other, overstaffed areas of the University. Even though the proposal was not funded, the budget process provided a forum for its discussion across departments and levels. The fact that it was highly ranked in the budgeting process is seen as a significant accomplishment in its own right. An alternative direction for the future was articulated, explored and valued in a way that would not be possible outside of the budgeting process.

Secondly, the symbolic importance of the titles used in the budget request is heightened. For example, the titles "academic development fund" and "graduate research board" take on the added connotation of excellence in teaching and scholarship. The budget request argues that the fundamental quality of these two missions is threatened unless these funds are available, although no specific programs they will fund are identified. Similarly, the caption "program of fundamental research directed to Illinois industry" refers to state mandates of 1904 that cannot be met without additional funds. Once again, no specific research programs are identified. These tactics are understandable attempts to gain added flexibility and discretion within the University by utilizing the symbolic aspect of the budgeting system.

A more significant symbolic aspect of accounting is the potential for use of account captions which have political appeal to legislators with the intention of reallocating the funds, once received, to other purposes. For instance, significant funds were considered for request under the captions "repair and maintenance" and "equipment" even though the intention was to use the monies for research and salaries. The maintenance account, however, connotes union laborers and equipment connotes tangible industrial products, both of which were felt to be politically viable. State legislators can understand these categories and can link them to their own chances for re-election. Therefore, it was argued, they would be more willing to support them than the more amorphous requests for research.

Thirdly, the formal budgeting language enters the political arena and takes on a new significance. In particular, the Governor of Illinois had taken a posture on faculty salaries as a part of his re-election campaign. A faculty raise of at least 10 percent was promised and a request for 11.25 percent was incorporated into the first 1982 budget proposal. The politicization of this budget item is an especially intriguing phenomenon. First, the amount of the raise was lowered to 10 percent--the minimum promised. But this was not enough. Salaries are the single biggest item in the University budget, and the shortage of state funds put extreme pressure on the 10 percent figure.

The political need was to change this figure in dollars without changing it as a reported percentage. As a first step, the 10 percent was redefined as 8 percent initially with an additional 2 percent increment six months later. Both of these increments were calculated on only 90 percent of the total salaries. This was still officially reported as a 10 percent raise. Pressure for budget cutbacks was not abated, however, and it is at this point that the formal process for hiding the vast bulk of the budget from open scrutiny turns to the University's disadvantage.

Certain non-recurring estimation errors, payment timing differences and miscellaneous income that lay buried in the current year's budget were identified at the State level. These amounted to roughly forty percent of the promised raise. The State's actual funding was then further reduced by this amount, and these dollars were taken out of the hidden bulk of the current budget and put into the exposed, incremental category of next year's budget as faculty raises. Overall, almost half

of the budget category for 1982 faculty raises represents a stripping of non-recurring slack from the 1981 budget. By using the slack in this way, a 5 percent increase to the total salary base will be required in 1983 just to maintain the budget at its 1982 level. Yet, the faculty raise is still officially reported as being 10 percent, just as the Governor had promised.

Fourthly, the strain this environmental shift puts on the accounting system makes its inadequacy for representing the situation readily apparent to the individuals who construct the accounts. Yet, the individuals are trapped in a structure where they feel there is very little they can do. The strain on their moral character is significant. When advised to classify budget requests as maintenance or equipment they resist. "It's not honest!" But they are met with a stark rejoinder. "Do you want the money or not?"

When the first signs of cracks start to appear in the budget, the administration's response is to patch up the problem, making the budget look like it's supposed to, so that the vast majority of the University won't worry about it. As good managers they take it upon themselves to bear the mental anguish and weather the storm. In the case of the faculty raise this strategy left them with a most difficult situation. The form of the budget was fine as publicly reported, but they knew its substance was sorry indeed. What started as a problem too trivial to bother the faculty with quickly became a problem that was so complicated they doubted the faculty's ability to understand it. During one interview session, two budget administrators were explaining some of the

details and the recurring question of "what can we do?" was met by one administrator lowering his head and softly saying, "we could tell the truth."

Because accounting is symbolic not literal, vague not precise, value loaded not value free, dealing with meanings not just things, it tries humans as moral agents. An accounting system must be understood as symbolic because its inadequacy as a literal, objective representation of things and events is experienced by those who make it and use it. As moral agents, humans can respond to the experience of accounting inadequacies by transcending its formal categories. Happily, in this study, key administrators have done just that. By calling special meetings of the faculty and by attending departmental and college meetings they have sought to interpret the meaning of the budget categories. Shortly after the union attacked the raise as a sham and claimed it was closer to 7.1 percent than to 10 percent, a Vice Chancellor announced it was actually closer to 6 percent. Transcending the formal accounting system does not come easily and requires an act of courage. When we think of accounting as strictly rational it is hard to see this need for transcendence and courage. It becomes apparent only as we appreciate the natural system aspect of accounting through the lived experience of an individual.

Finally, the study reveals the symbolic aspect of accounting in the creation of new categories and words. An accounting system is a living language which changes over time in response to new needs and situations. In this study, two new words have entered the formal system.

Most recently, the term "shortfall" has been coined to explain the inadequacy of the incremental budget categories. "Shortfall" is the amount of increase officially reported in the formal budget that is not really an increase at all. It also connotes a mortgage on the future used to make today's reported increment appear adequate.

The concept of a "tax" is another innovation in University accounting terminology. A "tax" is a charge levied on all departments on a uniform percentage basis. Budget officers are then able to re-allocate the receipts of the tax on a non-uniform basis. This is an attempt to decouple the loss of funds by one group from the gain of funds by another. Its success as a buffer mechanism, however, is yet to be proven.

Changes in the formal accounting language are intimately tied to shifts in power and control. The development of a tax mechanism is a convenient way to exercise power and reallocate resources. Other actors in the drama are also trying to change the accounting language to enhance their power. At the state level, legislators voice concern over the lack of control and equity in the use of University monies. They desire to increase the standardization in the amounts and use of funding by categories, effectively eliminating the department heads' freedom to shift funds among categories and the administration's ability to tax and reallocate. At this point in time, the drama is just beginning over these changes in the formal accounting system. However, it should prove to be another example of the interaction of the natural and the rational as the various factions strive to transform the budgeting system to their own advantage.

Study Number Two--A School Closing Decision

In this study we describe and interpret the role that accounting analysis has played in the decision of an elementary school district (grades K through 8) to close one or more school buildings in response to declining enrollment.² We argue that the district itself addresses the decision in both its rational and natural system aspects by identifying "quantitative factors" (e.g., space requirements and financial forecasts) and "qualitative factors" (e.g., preservation of neighborhood schools, maintenance of "trust" among children, teachers and parents). Further, the district analyzes this problem by using each set of factors in turn to provide the context or ground within which the other set of factors is justified or made sense of. Thus, accounting analysis is alternately being viewed as the central concern against a background of educational values, and as the background against which competing educational values are debated. Instead of incorporating educational concerns into the accounting schema (through some form of cost-benefit aggregation), educational and accounting issues are maintained as distinctive, but interacting domains. We interpret the interaction as a switching back and forth of figure and ground.

The district in question is an upper middle class suburb of Chicago with the pseudonym of Allison Park. The elementary district owns a

²Data reported in this section were collected by Louis R. Pondy and Anne S. Huff as part of a study of "Issue Management by School Superintendents" supported by a grant from the National Institute of Education, grant no. G-80-0152. Support is gratefully acknowledged. Views expressed do not necessarily reflect official opinions of N.I.E.

junior high (grades 6-8) and four elementary (K-5) buildings. Like many communities in the nation, the school age population has declined about 30% over the past ten years. Five years ago, the largest elementary building, Center School, was tentatively scheduled for a phased close-down to take final effect in 1983. Only about half of the district's sixth grade classes and the administrative offices still occupy the building. It was planned that the other three elementary buildings would continue to function as neighborhood schools.

Several alternatives for Center School were actively considered: (a) raze the building and sell the land for residential development, (b) sell the building to the Village for conversion to senior citizen housing, (c) sell the building to a local fundamentalist Bible Church for use as a religious facility, and (d) rent the building to small non-commercial organizations. Of these, the most seriously considered was the possibility of conversion to senior citizen housing. Early in 1981, the Board of Education authorized a \$15,000 study jointly with the Village Council to evaluate the feasibility of the conversion. Because of important events that took place during the Spring of 1981, that feasibility study was never undertaken. Instead, the possible use of Center School as an educational facility was reactivated. It is the re-evaluation of the decision to close Center School that we focus on here, especially the role that accounting analysis played in the process.

There were three pivotal events of Spring 1981 that forced a fresh look at the Center School decision:

- (a) The Board hired a demographer to make enrollment projections for the next ten years. Under the high projection (which forecasted an actual increase in enrollment), it appeared that the remaining three elementary buildings might not be adequate to house all students in the late 1980's. Since Center School was the largest of the four elementary buildings, the Superintendent and Board considered the possibility of keeping it open and closing one (and possibly two) of the small neighborhood buildings instead. This strategy would have necessitated moving toward a "central campus concept" and abandoning the long-standing policy of neighborhood schools. A careful cost analysis showed that a central campus configuration would cost \$100,000 to \$150,000 per year less to operate than the neighborhood configuration. The analysis was "careful" in that details such as differential energy costs, staff positions that could be eliminated in each configuration, and so forth were included in the comparison.
- (b) The two members of the Board's Planning Committee made a ten-year financial forecast for the district. It showed an increasing operating deficit (under all building configurations) growing to more than \$1,000,000 per year by the end of the decade, thus putting a premium on efficiency criteria. In this way, the accounting analysis had a direct bearing on the value priorities of the district. (It is interesting to note that the Planning Committee members had considerable managerial expertise to draw on; one of them had responsibility for

managing a multi-billion dollar investment fund for a major Chicago bank.)

- (c) Enrollment declines were not uniform across the district. Consequently, one of the neighborhood schools had "large" classes (29 students in one fourth grade class), and this led to a vocal public protest from parents who had come to expect individualized attention, and who resented the presence of small classes in other schools. This issue of "class size inconsistency" lent further weight to the central campus concept which would consolidate grades in one locale, and thus permit more uniform class sizes than the current neighborhood school configuration.

These three pivotal events forced the Superintendent and Board to consider making Center School (together with one of the other elementary buildings) part of a central campus configuration. As of this writing, the issue is still not decided, but we can trace the outline of events during March, April and May of 1981 during which the issue was sharpened and shaped. The key events were a series of public meetings of the Board that were carefully structured and orchestrated. The nature of that structuring is the central empirical point we wish to make with regard to our thesis that rational and natural factors provide the context for each other in processes of complex decision making.

First, the Board partitioned the problem into segments dealing respectively with "quantitative" and "qualitative" aspects.

Second, they elected to focus initially on the "quantitative" aspects in a series of public meetings that laid out the space-requirements and

financial implications of all meaningful configurations. Elaborate slide presentations were made at various points by the superintendent and by the planning committee members, with all of the usual trappings of sophisticated financial and quantitative analysis. (One might argue that the very care with which the analyses were done and presented, the use of outside consultants, coverage by the press, and access to the public could be seen as symbolic of responsible management. In this sense, accounting analysis is both literal and symbolic; it represents the facts, but in doing so according to the canons of public ritual, it also symbolizes deeper values of accountability and citizen participation.)

Third, to deal with the "qualitative" (i.e., educational, non-financial) aspects of the choice among possible building configurations, a committee of about 15 teachers was appointed to draft a statement of values that should bear on the decision and to draw up a list of pros and cons for each alternative configuration. At the April 1981 Board meeting, the Committee made its report. (Members of the audience were permitted only to observe, not speak; public participation was scheduled for an open meeting nine days later. The Board President explained later to one of the researchers that the purpose of this prohibition was to permit the Board to structure the issue in an orderly way.) The Committee espoused five values that they felt ought to guide the decision: an enriched educational program; a child-centered approach with individual attention; dignity and self-esteem for children; mutual understanding and purpose between family and school; and trust and involvement between parent, teacher and child.

Unlike the quantitative analysis, the qualitative analysis does not yield an unambiguous preference for one alternative. One ad hoc group of "concerned citizens" published a flyer that concluded:

"Closing neighborhood schools deprives the community of the best environment in which to foster those values which make an Allison Park education unique, the trust and involvement in a caring relationship between family, child and school."

But other parents and teachers at the open meeting argued with equal force that the central campus configuration could equally well serve those same basic values.

One interesting feature is that the \$100,000 extra cost of maintaining neighborhood schools amounts to an additional tax burden of only \$40 per family per year, according to a parent letter to the local newspaper. But from the frame of reference of the Superintendent, the \$100,000 saved by moving to a central campus translates into four to five extra teachers. So, even relatively hard data are symbolic and subject to radically different interpretations depending on one's frame of reference.

In summary, the district has been able to structure a decision process to deal with a complex, value-laden problem in such a way that accounting data are given a prominent place, but not the dominating place in the decision. In one phase of the process, accounting occupies center stage, and qualitative aspects are "bracketed" or temporarily placed beyond question. Note, however, that it is the qualitative issues (e.g., creation of central campus concept) that are precisely what make doing the quantitative analysis sensible in the first place. At a later stage, it is the quantitative aspects that are bracketed and,

within that framework, a different style of debate ensues over the qualitative, explicitly value-oriented, educational issues. Just as the quantitative analysis seems to follow certain roles of "careful" procedure, the qualitative debate seems also to follow its own, more explicitly political logic.

We believe that this exchanging of figure and ground, of alternating between "bracketing" and "center staging" is a fruitful way of thinking of accounting in its organizational context. It provides us with a novel method for dealing simultaneously with the rational and the natural, with the closed and the open, in a way that goes beyond current open systems thinking and contingency theory. The choice need not be between the closed and the open, the literal and the symbolic. Each can provide the context within which the other makes sense and is seen as significant.

Implications

The two short studies of accounting usage provide a basis for appreciating accounting in organizations as an interaction of natural and rational systems. In the first, the accounting system was a well established adaptation to an institutional and value framework. As such, it was seen as a rational system relative to the natural system in which it was embedded. Accounting was figure to environmental ground. A sudden shift in the environment highlights the role of accounting as a formal language for interpreting and making a sense out of the new situation. Accounting then becomes ground for understanding environmental figure, and its natural aspects as language are emphasized over its rational aspect as a calculus of choice.

Against the backdrop of environmental change, other natural system aspects of accounting are revealed, including the ceremonial functions, the role in value clarification, the symbolic significance of accounting categories, and the political use of the accounting system. Perhaps most importantly, the inadequacies of accounting as a rational system are experienced by those who use it and the result is a challenge to them as moral agents. In order to use it effectively they must transcend it and must exercise courage in a political struggle. Finally, the first study emphasizes that accounting systems change and that the change is not simply guided by a rational assessment, but is part of a larger organizational dialectic.

The second study shows accounting being used in a special analysis occasioned by an environmental shift similar to that in the first study. Here, the problem solving process itself is an example of the mutual support that rational analytic and natural interactive approaches can offer each other. An ongoing natural system debate is bracketed while a rational system analysis is made. Accounting and quantitative analysis thus take center stage and are sensible within a qualitative framework of values. The accounting analysis is then, in turn, bracketed to complement and set the stage for more qualitative and interpersonal forms of dialogue. The accounting analysis was thus developed within an existing values context and subsequently used to define a field of options in which values are further clarified by other means as a basis for taking action.

There is a wisdom to be gained from the second study that accountants would do well to recognize. The wisdom lies in the explicit

attempt to avoid trying to solve the school closing problem exclusively within the framework provided by accounting. Instead, accounting is used as one voice in an interactive problem solving dialogue that included qualitative, natural system components as well.

As an important object of organizational experience accounting systems display both rational and natural systems aspects in an alternating figure/ground relation. Contingency approaches to accounting system design and to organization design are inadequate for understanding their dual nature as both symbolic and literal, both qualitative and quantitative, and both analytic and interactive in their problem solving processes.

As an alternative to contingency theories we propose a genuine union of rational and natural systems theories. In so doing we view accounting in organizations as a set of objects and processes that are created and given meaning through the lived experience of individual actors. Accounting arises in interaction and is a part of both rational and natural systems aspects of organization. In the field of mutual context suggested by the genuine union, accounting is simultaneously seen as figure and as ground; as an adaptation to a presented social reality as well as a context for constructing a social reality.

Accounting in organizations is always partial, in itself. Accounting is meaningful in relation to other objects and processes of organizational life, being completed only in the interaction of individuals that constitutes organization. Accounting systems are created, interpreted and changed in an historic process. Understood as a genuine

union, accounting system design is not a choice between rational or natural systems and it is not a reduction of one to the other. It is, instead, an appreciation of both in their field of mutual context.

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