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How Uncertainty Affects Decision Making

An organization is an arrangement for doing something. One of the most important things it does is make decisions. In part, every organization is a design for decision making. Many factors affect the quality of decision-making designs. The most important of those factors is the degree of risk and uncertainty faced by the organization.

Under conditions of considerable risk or uncertainty, synoptic decision-making arrangements (i.e., comprehensive sets of pre-programmed decisions) are an invitation to error and to failure.

Another term for synoptic decision arrangements is premature programming. In unstable or uncertain conditions premature programming blocks the use of vital information drawn from unfolding experience.

This Design Note examines four categories of decision making, the notions of risk and uncertainty, and the pitfalls of premature programming.

The four categories are not mutually exclusive. Different parts of an organization may use different strategies, ranging from a highly determinate procedure in the finance department to a trial and error approach in an R and D unit.

The decision-making strategies of an organization may change over time. One of the critical responsibilities of managers is to determine what kinds of conditions they confront, and what decision-making strategy is therefore suitable.

Decision-making strategies are embodied in organizational arrangements. An organization's rules and assignments of responsibility can be viewed as a program for decision making. A rigid, elaborately specified organizational structure (illustrated by the detailed pyramidal organizational chart) is compatible with—and generally reflects—a highly programmed decision-making strategy.

This is consistent with operations in a highly certain or predictable environment involving the use of reliable methods and technologies.

Organizations faced with high levels of uncertainty will, if they are rational, use other patterns. These may include deliberate duplication of functions (e.g., organizing activities in parallel rather than in series) and arrangements for arriving at decisions through bargaining.

DECISIONS

A decision is a choice. All deliberate decisions are based upon facts* and values or goals. The knowledge needed for a decision may or may not be available. Goals or values may or may not be agreed upon. These two basic elements—facts and values—enable us to classify decisions into four basic categories.

*In practice, "facts" include determinate knowledge and assumed or "believed" knowledge. "Conventions" are part of the latter. A convention is a premise which is literally taken for granted, a stipulation which is not subjected to verification.

Each of these Design Notes states a lesson which may be useful to those engaged in planning, managing, or evaluating development efforts, such as technical assistance projects. A given note may describe a technique and discuss its use, may present and explain a useful concept, or report a functional relationship between some intervention and some outcome. Design Notes are backed by cited evidence from PASITAM studies, published literature, or the reports of development agencies.

Comments and queries are invited, along with requests for additional copies and supplemental materials.
William J. Siffin / Director / (812) 337-1341 / Indiana University / Bloomington, Indiana / 47401

FOUR CATEGORIES OF DESIGN

		Values or Goals	
		+ Agreed	- Not Agreed
Facts or Knowledge about Causation and Instrumentation	Certain +	1. Computational or Programmed Decision Making	3. Bargaining and Negotiating as the means of decisions
	Uncertain -	2. Trial and Error or Pragmatic Decision Making	4. Cleavage Anomic Behavior Charismatic Leadership or Strong Man Decision Making

PROGRAMMED DECISION MAKING

Cell no. 1 represents agreement about aims and knowledge of ways and means. This enables *computational* or *programmed* decision making. Computers work on the basis of this model. So do some organizations. They have tight, linear, and pyramidal structures.

Decision making is easy in these circumstances: all that is needed is knowledge of and adherence to the "program." Errors can be quickly detected and easily corrected. When this model applies, risks of failure are slight; and under such highly determinate conditions, it is appropriate for management to emphasize *control* to assure compliance.

PRAGMATIC DECISION MAKING

Cell no. 2 displays agreement about goals but uncertainty about facts. The organization knows what it wants to do but is unsure of how to do it. Here a rational decision-making strategy involves trial and error, search for knowledge, or experiments (heuristic approaches) to build knowledge in order to move toward cell no. 1. The most critical need is for relevant knowledge. Yet uncertainty may be increased by added knowledge if it opens up additional unexplored avenues.

Conditions of uncertainty in this situation demand *managerial* responses which go beyond control. Management implies the awareness or acknowledgement of

uncertainty and the calculation of risk based upon past performance. Under these conditions an essential managerial task is to define the boundaries of knowledge and uncertainty and to establish receptivity to error signals. Managers must treat policies as hypotheses—as educated guesses informed by experience and subject to confirmation, disproof, and adjustment on the basis of experience. An efficient organizational structure for these purposes is characterized by *redundancy*—by parallel arrangements and overlapping jurisdictions. Considerable use of committees and collective decision making will be found. Overlapping generates tension, which is not cost-free but can help generate information. Parallel channels of action and of information generation and transmission will increase system reliability and reduce the probability of failure.

Intelligence agencies are extreme examples of this kind of organization. Many development efforts also fit into cell no. 2. At some level of generality aims are clear, but means are not.

BARGAINING AND NEGOTIATING

In cell no. 3 facts are non-problematical, but there is disagreement about goals or values.

Many development activities fall into this category. Technologies and other resources are available, but the true aims of action are ambiguous or not altogether coherent. A degree of ambiguity is characteristic of goals in quite a few development efforts, partly because of underlying potentials for conflict among parties to the undertakings. Then wise managers may deliberately adopt vague formal goals over which participants can agree.

Less Machiavellian but no less common is the need to allocate scarce resources among a group of desirable activities. Honest men will disagree about choices, and goals cannot in such conditions be set by "logic" or by the discovery of an underlying consensus. The only rational way to resolve such a situation is through bargaining and negotiating.

A disposition to bargain and negotiate indicates that the participants do value the organization or effort, at least to some degree. Participants in bargaining do not have to be equal in power. But any actor must be able to inflict sufficient harm or disruption to encourage the others to bargain. This is common in international relations, in labor negotiations, and in organizations where subordinates can sabotage decisions with which they disagree. Under such conditions rational managers provide for consultation and negotiation.

INSPIRATIONAL DECISION MAKING

When disagreements about goals or values are greater than commitment to the organization, and when there is even disagreement about the relevant facts of the situation, *cleavage* may result—internally unresolvable conflict. This is a state of *disorganization*. The situation looks normless and purposeless. Participants may withdraw or exhibit anomic behavior. Occasionally organizations fall into this state. There are three possible exits: (1) the organization can collapse; (2) the lesser opposition can be driven out; or (3) the organization can override the disagreement. A cell no. 4 situation usually leads to some form of outside intervention. An external agency may send in a strong man to impose direction and order upon the situation. As a crises measure this often works; but an underlying structure of agreement must also be evolved. Organizations built upon one man are inherently unstable: remove the leader and the organization collapses.

The strong man forces the organization to act *as if* it were in a different condition, to act as if there were agreement on goals and certainty of knowledge. To succeed, the effort must acquire the quality of a “self-fulfilling prophecy.”

PREMATURE PROGRAMMING

Acting “as if” may be termed *premature programming*. Organizations tend to prematurely program when outside forces require the appearance of assured and determinate control of an uncertain situation—when action is imperative but operational ways, means, and aims are less than clear. Premature programming *appears* to provide an orderly, coherent view of the environment and the organization’s response to it. It is usually reflected in comprehensively programmed decision making. Decisions are approaches *as if* facts were known and goals agreed upon. A linear, elaborately specified, well-articulated system of formal decision making is used.

Premature programming appears to make decision making easy: it enhances the illusion of certainty and control. The cost is reduced access to knowledge about the environment, the effectiveness of means, and the acceptability of goals—in short, reduced ability to detect and correct errors. Potential for organizational learning and effective decision making is undermined.

In the real world there are many cases where organizations must act *as if* goals were clearer than they actually are, and *as if* all the necessary facts were at hand when they clearly are not. Action requires programming even when the actors know it is premature. Premature

programming can be constructive *if* it is supplemented by decisional arrangements which recognize that the pseudo-determinate stipulations of fact and value are really highly contingent. To do this imposes important requirements upon an organization and its management, including intensive monitoring and assessment of current experience, a large capacity for flexible action and change of direction, and an incentive system which discourages cover-ups and encourages error detection and correction at operating levels. Programming processes in such cases are continuous rather than linear.

CONCLUSION

Development activities usually take place in environments characterized by high levels of uncertainty, where knowledge of means-ends relationships is far from perfect and where there is potential for serious disagreements about goals. The essence of management under these circumstances is to acknowledge this uncertainty and adopt organizational forms and decision-making strategies aimed at reducing it. This approach is inconsistent with rigid, comprehensive initial specifications of organizational design and decision making. In such a situation, the basic requirement is that planning and action proceed concurrently more than sequentially—granting that some planning must always come first.

SOURCES

Hirschman, Albert O., and Lindblom, Charles E. “Economic Development, Research and Development, Policy Making: Some Converging Views.” *Behavioral Science* 7 (1962): 211-22.

Landau, Martin. “The Concept of Decision-Making in the ‘Field’ of Public Administration.” In *Concepts and Issues in Administrative Behavior*, edited by Sidney Mailich and E. Van Ness. Englewood Cliffs, N.J.: Prentice-Hall, 1962.

_____. “Decision Theory in Comparative Public Administration.” *Comparative Political Studies*, July 1968, pp. 175-95.

_____. “Development Administration and Decision Theory.” In *Development Administration in Asia*, edited by E.W. Weidner. Durham, N.C.: Duke University Press, 1970.

PASITAM. “Decision Making in Organizations.” Video tape, 14 minutes. Prepared by Martin Landau. Bloomington, Ind.: PASITAM, 1976.

_____. “Decision Making in Organizations: Fitting Strategies to Alternative Conditions.” Audio-Visual Complement. Prepared by Paul Cunningham. Bloomington, Ind.: PASITAM, 1976.

Thompson, James D., and Tuden, Arthur. “Strategies, Structures, and Processes of Organizational Decision.” In *Comparative Studies in Administration*, edited by James D. Thompson, et al. Pittsburgh: Pittsburgh University Press, 1959.

This Design Note was prepared by Paul Cunningham.

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