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TYPES OF RESEARCH USEFUL FOR  
EDUCATIONAL PLANNING

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## Types of Research Useful for Educational Planning\*

### 1.0 Introduction

This paper describes one way to catalog types of research that may be useful in educational planning. Perhaps, at some point in time, all research turns out to be useful. But planning is a dynamic process with multiple phases, so not all research is always useful. And there are some who say that most research in education is never useful. It may be the case that much of the research that has been done has not been useful to planners and administrators. The purpose of this effort is to show why that might have been the case, and what research is more likely to prove helpful.

The catalog is intended to serve three purposes. First, it can be used to see where to start doing research for planning. It provides a means for assessing where an organization is in terms of the kind of research needed for planning. The second purpose derives from the first. The catalog can be used to evaluate research proposed by those outside the planning establishment, in terms of appropriateness given the organization's situation. A third use for the catalog (and the concepts underlying it) is the design of training programs for planners who would like to acquire useful research techniques. That is, the catalog aspires to indicate what techniques are most helpful, for what situations.

### 2.0 Perspectives on Planning

Planning requires information, hence the importance of research, or the systematic gathering of information or knowledge about the educational

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\*Members of the Centro de Investigaciones en el Desarrollo de la Educación (CIDE), Santiago, Chile, especially Juan Jose Silva, and Ernesto Schiefelbein, played an important part in the genesis of this paper. I am deeply grateful for their patience in helping me move toward the understandings it may communicate.

system and the reality in which it operates. But what knowledge should we seek? And what procedures should we use to seek it? We can expect various answers to these questions, as is shown in other papers in this collection. We can expect various answers because there are various perspectives on planning that derive from fundamentally different epistemologies, or theories of the nature of knowledge. To build the catalog, I will review two major approaches to planning, concentrating on showing how they differ with respect to definitions of knowledge. I will define these as "ideal types," recognizing that no one planning exercise can, nor should, embody all the features of either definition. By exaggeration I hope to draw attention to the radical implications for research of differences in epistemology.

### 2.1 Normative or Rational Planning

The first or most common approach is alternatively called normative, rational, deterministic, closed-ended, mechanistic, preactive. Planning is normative in the sense that it is carried out in the pursuit of goals or objectives. The normative approach to planning takes goals as givens, determined by the society or by its leaders. Although some planners argue that it is their task to "work closely with political and other leaders to help develop a broad spectrum of choices,"<sup>1</sup> they understand by that the use of the scientific method to marshal descriptive data to which the leaders will then react. That is, the planner is neutral in the specification of goals, his science is value-free. The implicit assumption is that there is broad social consensus about goals, and that

<sup>1</sup> Hauser (1969) champions social engineering to solve society's problems. Holmes (1972) has pointed out that "the important theories in educational research are normative in that they imply conceptions of culture and society."

the leader is representative of society as a whole. Planning is rational in the sense that by analysis of empirical facts, one can arrive at an understanding of the best or correct ways to act to reach the predetermined goals. Analysis is objective, does not involve non-rational components, and is replicable. Planning is deterministic in that the (usually implicit) assumption of the planner is that all actions are caused, and that therefore one can hope to identify the set of factors or events that will bring about the appearance of other factors or events. Planning is closed-ended in the sense that much important information can be known in advance, and therefore it makes sense to lay out all the decisions and actions necessary to reach the goal. Planning is mechanistic in that it assumes (always implicitly) that the values and choices of the subjects of planning (i.e., the people in organizations) have little or no relevance for the outcome of the implementation of the plan, or are themselves determined and can therefore be factored into the plan. Planning is preactive in that in assuming that it is possible to project what will happen in a mechanistic, determined world, the planner prepares for the actions that later will be necessary to take.<sup>2</sup> A major characteristic of normative or rational planning is the use of models to understand what actions should be taken, given forecasts of what is likely to happen. These models often are used as representations of the reality that is the planner's concern.

### 2.1.1 Basic Assumptions

The use of models of this kind involves several assumptions. First, the planner most often assumes fixed coefficients. Relationships between

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<sup>2</sup>See Ackoff (1974).

variables will remain pretty much the way they are now, or were at some moment in time. Second, the planner assumes that relationships are deterministic. A third presumption, used to build models in the normative approach to planning, is that reality is best described in system terms. Each variable is presumed to be related to some other variable, so that changes in the values of one variable necessarily induce or cause changes in some other variable. Those variables that are not influenced by others under study are defined to be out of the system.

In some cases planners build models that allow for changes in variable values over time. Even so, in normative planning, the model builder assumes that the values of these variables at different points in time are knowable, hence assumptions of determinism and system are maintained intact. These models then are used to work out and illustrate to decision-makers the consequences of different combinations of input and process variables. The planner in effect says, "Given reality (as I have captured it), these are the consequences of various possible strategies."<sup>3</sup>

Earlier approaches to normative planning in education have been accused of having left out the human factor, of dealing only with "technical" coefficients. The earliest models included only measures of buildings and numbers of teachers and numbers of students, each treated as a plastic element that could be increased or decreased according to some policy decision made independently of the system's operation. Projections of system growth, manpower analysis, cost-benefit studies may all operate from this presumption.

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<sup>3</sup>Not all models are "rational" in the sense of depending exclusively on known facts about reality. Models can be built deliberately including non-rational elements, such as values. Modelers distinguish between statistical or algorithmic models, and heuristic models that are not "provable."

In many cases, plans based on these conceptions of the operation of educational systems don't seem to work. A fairer statement would be that these kinds of plans are not put to work, that is, they seldom if ever are implemented. Either way, normative or rational planning is faulted.

These plans do not work or are not used, the argument is made, because they did not include enough information. They have excluded from analysis important aspects of the structure and function of the educational organization.<sup>4</sup> Education is not, the argument goes, a passive system that can be totally dominated from the outside by a technical planner. Instead, education should be seen as an active system, within which competing interest groups vie for power and, in and through their conflict, generate the outcomes of the system. If, it is argued, we took into account the political structure of the system, and if we included in our models our knowledge of competing interest groups, administrative competencies, organizational history and the like, we could make plans that work, ones that are used by decision-makers.<sup>5</sup>

This inclusion of more and "humanistic" knowledge may not, however, represent a fundamental shift away from a normative approach to planning. Most of the people who have taken this approach (Warwick included) sound as though they believe that with sufficient study it would be possible and likely to know enough to anticipate enough about the system's performance to produce the desired outcomes. That is, their argument is not that it

<sup>4</sup> Warwick, D.: "Integrating Planning and Implementation: A Transactional Approach." Development Discussion Paper No. 63, HIID, June 1979.

<sup>5</sup> Warwick refers to the structure of the system as the "environment" of the bureaucracy. But in fact he includes the variables of the environment in his analysis of the performance of the system.

is impossible to predict system performance into the future, but only that it is unlikely, unless one takes into account how the actors in the system think and behave, in which case we will have nailed down the most important deterministic relationships.

### 2.1.2 Procedures in Normative Planning

Normative planning assumes the following as the correct sequence to follow. One begins by identifying goals. A diagnosis of the present situation then indicates whether those goals are being attained to a sufficient level of satisfaction. If they are, no action is proposed. If they are not, one begins to look for alternative courses of action. These are evaluated in terms of the resources available and the relative costs (and cost-benefits) of the alternatives. A choice of alternatives is made. The writing down of this logical process, or sometimes just the statement of the actions to resolve the problem, is called the plan. A formal presentation to the public is contained in a plan document.

Every "good" planner will recognize the above as an oversimplification. The process is not nearly that neat. Everyone knows that plans are only initial statements, that they must be modified as more information becomes available. Plan documents, however, seldom if ever get modified, perhaps because that would represent admission of prior error. The documents are used by bureaucrats who often would not know how to modify the underlying plan to justify a new course of action. Planners go on to other things, some because they were foreign consultants hired to produce a plan, others because they did not define their task as one of influencing actual behavior, but only one of producing documents.

The plan serves as a map, as a model of reality, that shows you where to go and how to act, given the boundaries and goals established by others. The

plan serves as a prediction of what will happen in the future. It promises that if its recommendations are carried out, then desired outcomes will be realized.<sup>6</sup> The promised future is sometimes far away. Only 11 years ago the "best" planners were recommending shooting for targets at least 10 and preferably 20 years into the future. Even now the dominant assumption appears to be that an educational plan should project at least as far into the future as the period covered by the national economic plan, usually five years.

## 2.2 An Alternative Approach to Planning

The second ideal-type of planning is often called situational planning, and sometimes is called open-ended, transactional, or interactive. It assumes that many of the important aspects of the functioning of human organizations are not predictable except at very short-range. This is so because those organizations are run by persons, who are teleological beings, and whose perceptions of what is possible and what is desirable change as a function of the situation in which they are placed. The main concern of the planner should be, therefore, not prediction of and preparation for the future but rather shaping of the present.

Planners trained in social science research techniques, especially those of quantitative sociology and economics, may have difficulty in conceiving of a non-deterministic, non-linear, non-rational world. The following example may help to make clear some of the assumptions underlying situational planning.<sup>7</sup>

The game of chess is a model of reality of a medieval society. Obviously it is only a model, and a crude one at that, failing to capture what we might consider some of the more important aspects of medieval life and times. But even this simple model presents a tremendously complex set of alternative

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<sup>6</sup>If one stays within the assumptions of rational planning, a plan would be meaningless if this assertion were not believable.

<sup>7</sup>This example is elaborated from Matus (1977).

outcomes, so many so that for years computer programmers found it extremely difficult to build the program that would allow the machine to play as well as most people. If one defines the "system" of a chess game as including only the pieces on the board, one has a low probability of predicting the next move that will be made, even when the game is being played between expert players. Predictions three or four moves ahead are impossible. In part this is because some moves in chess have the ability to change the "structure" of the game, to alter the relationships between the pieces so that the "best" following move is totally unlike what it would have been had some other move been made.

But more important, the pieces on the chess board do not move themselves, they are not governed by some inner logic and overarching perception of the "system" of the board that allows them to choose the "best" move. What move is made, instead, depends on the players, who have not only varying perceptions of the possibilities on the board, but also varying objectives in playing the game. For example, one player may be seeking to win, another might want only to stalemate (tie). These objectives change during the game as the players' judgments of their chances for winning change with the play. After several moves, for example, one player may see that he is certain to lose within the next five moves, and decide to play for a stalemate. The other player, who perhaps started with a pessimistic evaluation of his chances, switches his objective from stalemate to victory. Even more, the style of play of each player is a reaction to the style used by the other player. In response to one kind of attack the other player uses a given defense; when the attack changes, the defense changes, and so on.

In this situation then, even full knowledge of the present would not make long-range planning possible.<sup>8</sup> That is, even full knowledge of the current objectives, and the current skills of the actors would not be of much use in understanding what is likely to happen four or five moves ahead.

If we could have full knowledge of the future, then, of course, a model of the play of a chess game would in fact predict the outcome of a game. But as soon as we "planned" to change the outcome of the game, for example, by changing the response to the first move to guarantee victory for our side, the future reality of which we would need knowledge would change. After each move we would have to go back to our crystal ball to see what the new future would be.

Chess players don't use crystal balls. Skillful chess playing does not depend on long-range forecasts, so much as it does being able to: 1) correctly diagnose each situation as it occurs; and 2) move to create a more favorable situation. After each move of his opponent, the player makes a new assessment of the situation, and plans his next several moves, on the basis of assumptions of how the opponent will respond. The computer programs designed to play good chess apparently do the same thing. That is, rather than store in memory the extremely large number of possible games that can be played on a chess board, the computer develops a capacity to evaluate each situation in terms of its immediate (short-run) possibilities. Decisions are made on the basis of what is the best possible move, given these circumstances. And the circumstances

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<sup>8</sup>In most planning situations full knowledge even of the current situation is not available (or is available only at very high cost). The "model" is more like Kriegspiel than regular chess. In Kriegspiel each player has to guess the movements of the opponent--they do not share a common board. A judge announces the square where a capture has taken place but not the pieces, and forbids illegal moves. The players must constantly infer their opponent's moves and intentions on the basis of limited information. See Hollis (1977) for an analysis of this game as a metaphor for rational human behavior.

are re-evaluated after each move.<sup>9</sup>

Planning is, in this approach, a continuous process for guiding an organization toward objectives. Both strategies, and objectives, are assumed as changeable and changing. It is radically different from normative planning, in which one assumes (even if only as a means for planning) a fixed goal, and then chooses the best strategy for reaching that goal.

This kind of planning is transactional or interactive in the sense that it assumes that the organization (and the persons within it) is the subject of the planning. In pursuit of its objectives the organization not only changes itself but also attempts to change its environment. Each change permits a different perspective both on what is required in order to continue to move toward existing goals, and on what other goals might now be attainable, given changes in the organization and the environment. Interactive planning seeks to encourage this "permanent revolution" in which the organization (or the persons within it) makes its own history.

Rational planners tend to limit their role to the determination of means-ends relationships, using knowledge about the past. They assign the decision-maker responsibility both for definition of objectives, and for implementations of plans once drawn. They tend to stand apart from the system for which they are planning. Situational planners, on the other hand, are committed to their system, and are involved in all aspects of the change process of the organization. The distinction between planner and decision-maker is blurred, and perhaps all of the responsibilities of planning are subsumed under management.

Situational planning does not assume consensus about goals and values among the actors in the system.

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<sup>9</sup>Gabor (1969) referring to Claude Shannon's work on building a chess-playing robot, argues that the best move is one that will allow the greatest freedom after the opponent's response.

Instead it is assumed that actors may have fundamental and irreconcilable differences in objectives. Solutions are therefore almost always compromises, worked out in essentially unpredictable transactional processes. Knowledge of actors' values, while useful, is not sufficient.<sup>10</sup>

Finally,

...interactivists try to design the systems they control so as to increase their ability to learn and adapt rapidly. They maintain that experience is no longer the best teacher; it is too slow, too ambiguous, and too imprecise. Therefore, they attempt to replace experience by experimentation wherever possible. They try to design the implementation of every decision as an experiment that tests its effectiveness and that of the process by which it was reached (Ackoff, p. 27).

Situational (or interactive) planning is more than just immediate decision-making. It does have a future orientation, there is a concern for what will happen down the road. But this kind of planning hopes that the road is being made, rather than followed. It is open-ended.<sup>11</sup>

<sup>10</sup>Schon (1971), after reviewing a battle scene in Tolstoy's *War and Peace*, comments that "The implementer of public policy, like the commander-in-chief, works in a situation whose inherent ambiguity expresses itself through the incompatible perspectives of the key actors." (p. 23)

<sup>11</sup>Describing his "human action model," Ozbekhan (1969) says, "It is a plan in which the outcome is invented or created as something new, rather than as a solution arrived at as a result of the manipulation of givens. (p. 124) He argues the following differences in approaches:

Mechanistic Model	Human Action Model
Goals given from outside	Selects values, invents objectives, defines goals
Designed to solve specific class of problems	Seeks norms, defines purpose
Internal organization independent of purpose	Higher order organization defined by purpose
Controlled by external policy	Self-regulating and self-adaptive
Programmed actions toward given outcome	Regulation of steady-state dynamics through change and permanence of meta-system's self-adaptive and self-regulatory tendencies, through policy formation
Feedback and general control by action amplification	Goal-derived feedback
Emphasis on feasibility (timeliness) of alternative action schedules	Defines mechanistic system's operational characteristics

### 2.3 Normative Planning and Research vs. Situational Planning and "Development" Research

The above contrast between different conceptualizations of planning has its parallel in different conceptions of the process or activity of research. For example, Guba (1968) distinguishes between "research" and "development" as two different sequences of data-gathering and analysis. He lays out the following steps in the sequences:

<u>Research</u>	<u>Development</u>
Depict	Depict
Relate	Invent
Conceptualize	Fabricate
Test	Test

The researcher depicts much as a painter depicts; he attempts to discover the salient elements in the situation and then to portray them in their appropriate relationships and contexts. The developer depicts not to portray the process but to monitor it, to discover problems in their still incipient stages and thus to be able quickly to counteract them.

The researcher tests in order to verify or refute his hypotheses. It is imperative in his testing that he maintain vigorous control over all elements so that only those that enter specifically into the hypotheses can interact. Thus we establish universal laws. The developer is not concerned with controls, however...When he develops a solution to a problem it must be clear that it will work (not only in the laboratory but) in the worst of all possible worlds in which everything irrelevant is free to contaminate (Guba, p. 47).

While Guba chose to use another name to describe a scientific method that does not follow the dominant paradigm,<sup>12</sup> others have suggested that this view of

<sup>12</sup>Patton (1975, p. 40) contrasts the "dominant" or conventional approach to evaluation research, with what he argues is a needed "alternative." The alternative paradigm he describes is congruent with a situational approach to planning.

<u>Dominant Paradigm</u>	<u>Alternative Paradigm</u>
quantitative	qualitative
concerned about reliability	concerned about validity
objective	subjective
distant from data	close to data
focused on impact of components	holistic analysis
concerned about outcomes	concerned about process
for scientists	for practitioners
large samples	case studies
interested in generalizations	interested in uniqueness
tends to ignore interactions	picks up individual-treatment interactions

science and research is unnecessarily limited, that what Guba called "development" is just as much research as what he calls research, and that for education, "development" is a more appropriate research approach than is Guba's "research." One view is the following.

The narrow view of science tends to define it by three characteristics: (1) as descriptive, (2) as value-free, and (3) as nomothetic. Science as thus conceived has limited utility for education, great as the utility within those limits may be.

(1) According to this definition science is purely descriptive, the investigation of relations among phenomena. But education is not, strictly speaking, descriptive although, of course, it makes great use of descriptive knowledge. Education's primary phenomena simply would not exist if it did not produce them itself. It is an 'operative science' (to use Bacon's term) or a 'productive science' (to use Aristotle's), not a descriptive one. It is an intentional, artificial intervention in the nature, development or maturation of human beings.

(2) This intervention through education must be justified. This fact stands in sharp conflict with the definition of science as value-free.... Education...is intended to be 'good for' students...Since...education does not aim at mere 'change' but an 'improvement' of some sort, education is inevitably involved in normative discourse and problems of value to an extent that the 'hard' sciences rarely are...

(3) Finally, says the narrow view, science is concerned with universals, or, in more current terminology, with generalizations of extremely high probability" (Dunkel, 1972 pp. 78-79).

At the most, one could hope that the "research" of Guba is useful if education is treated as a phenomenon to be studied, much as a zoologist studies a colony of ants. Studies of that kind are useful for knowing what has happened in the past, and which could happen again if variables stay the same. But the nature of human communities is that they can and do seek to alter their circumstances as well as adapt themselves to them. Planning, based on research of what "is" (at the time of observation), is likely then to be of limited utility for planning for change or for Dunkel's improvement. Galtung makes this comment:

.....what one would have against planning would not so much be that predictions would be shown wrong or that interesting possibilities are excluded from serious attention. It is rather that long-term planning will take place on the basis of the variables considered relevant and important yesterday (Galtung, 1973, p. 235).

He goes on to argue:

...one cannot from data from the past alone infer anything at all about the future. For that purpose different things are needed: a clear conception of the values one wants to realize; a tremendous amount of imagination as to educational structures that might satisfy those values; and also, very basically, theories that may justify the assumptions. In empirical research neither values nor suggestions about new structures enter, and theories may come as a consequence of empirical research but are not in and by themselves part of it. (1973, p. 233).

Critical to a situational approach to planning is theory about the desired future state, including explicit statements of objectives and of how the system could operate to meet them. Normative planning often is atheoretical in the sense that empirical description of the current reality is used to extrapolate what objectives could be reached in the future. There is no choice possible in an empirical law, and values are hidden. But a theory of the future requires statements and choices of values to be created.

## 2.4 Summary

To this point I have reviewed two "ideal type" conceptions of planning and of research for education. The first presumes that reality is stable, that relationships among variables are relatively unchanging, and that these relationships are knowable. One can, therefore, forecast what is likely to happen in the future by the study of the present and past. Plans for the future can be made on the basis of understanding what has happened up until now.

An alternative perspective on planning and research argues that reality (at least an important part of) is not stable because it depends on judgments and consequent actions of human beings, who are responsive in tremendously complex ways to the situations in which they find themselves. Predictions can be made with any degree of reliability only a short distance into the future because people will change the present reality by their actions, and, in turn, be changed by the effects of their actions.

The first approach to research and planning would suggest that we study the present, learn enough about it to build a working statistical model, and then use the model to generate not only forecasts of the future, but also the likely consequences for us of changes in major variables. We would then plan how to adapt to or avoid those consequences.

The second approach argues that this effort is a waste of time, that instead of building elaborate algorithmic models, we should move as fast as possible to operate in the real world, observing what happens as we attempt to realize our values. We should develop a theory (or heuristic model) about that world and improve the validity of the theory by putting it into action, by

making it real.<sup>13</sup>

Research and planning under the first approach require technicians who have highly developed instruments for quantitative measurement and analysis, who are relatively dispassionate or objective, who are necessarily removed from decision-making. The second approach would imply that research and planning need to be part of the activities of the decision-maker, that decision-making is, if you will, part of the research process itself, and that research is a political and politicized activity and, hence, an emotional activity.<sup>14</sup>

The contrasts between the two approaches have been overdrawn deliberately to emphasize the need to reduce our dependence on the first, or "scientific" approach to research and planning. In the section that follows I will argue that the "good" planner has to use both normative and situational approaches to planning, and to use both the dominant and the alternative paradigm in research to support planning. If this paper appears to come down heavy<sup>14</sup> on the need for situational planning and development research, it is because

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<sup>13</sup>Given this view, planning is similar to non-rational invention as described by Schon (1967). He argues that, in some instances, invention - the creation of new forms and processes - proceeds better through the use of non-rational techniques. This means working "backward from intriguing phenomena rather than forward from well-defined objectives," responding "to problems and opportunities discovered along the way..." (1967, p. 18).

<sup>14</sup>Even though cognitive; see Scheffler (1977). Churchman (1968) goes further to assert that "...The planner has to leave off being a precise scientist. He needs to encourage radical viewpoints. In fact, I would be tempted to say that whenever planning begins to look as though it is following tried and true procedures that have worked in the past, then planning is in danger of becoming useless." (p. 164).

researchers and planners have tended to ignore (the need for) those alternatives in their work and writings.<sup>15</sup>

### 3.0 A Framework for Classifying Research for Planning

Planning is not a unitary phenomenon. It is not an action, nor a process in the sense of something that is integral. It might be best to describe planning as a set of activities that appear in a number of forms as an organization creates its own history. We may borrow from the normative or rationalist conception of planning a set of labels for these activities. Planning takes place in each of the four major cycles in organizational problem-solving; we can call them detection-analysis-decision-action cycles.<sup>16</sup> Normative

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Not all planners can be accused of ignoring the non-rational uses of planning, however. For example, Davis (1966, p. 63) calls special attention to the double utility of manpower planning: to provide rational projections, and to motivate "political decision makers."

Schon (1967) offers three reasons for persistence in the use of the rational approach. First, it promises to reduce uncertainty. Second, in conditions of stability, in a relatively unchanging environment, its assumptions are largely justified. It is useful for planning in a steady state.

"but there is another sense in which belief in the rational view may be justified. There may be utility in acting as if it were true. The process of planning, which assumes the rational view, may be useful even though plans are bound to be inadequate. The formulation of objectives for technical effort provides direction for the effort and a stimulus for action..." (p. 41).

This is the point made by Davis.

To the extent that assumptions of the rational approach are justified, the planner does not have to assume an explicit ethical or moral stance. It is enough to point to "the truth," and pass responsibility for action to the political decision maker. When the planner uses his techniques to influence others, however, he must be prepared to justify his action in ethical or moral terms. I will return to this question later.

<sup>16</sup> These terms are meant to parallel Guba's scheme; they will be defined shortly.

planning often appears to have been done under the assumption that each program or project of the organization moves through one cycle only. A more reasonable assumption is that even within projects there may be more than one cycle going on at any one time. At any one time, therefore, the "planner" or planning in an organization may be concerned with detection, with analysis, with decision, and with action simultaneously.

The information required for appropriate performance in each of these cycles varies. What is very important to know for detection is almost irrelevant for action, and so on. Similarly, the methods required to collect data vary. A survey may be good at one time point and almost useless later, or earlier. Different analytical techniques will be required according to the stage of the cycle.

If one is willing to accept the perspective of this paper, that planning consists of data collection and analysis in each of the stages of decision-to-action cycle, then one must also accept the notion that all organizations plan, because all organizations go through at least some of the requisite data collection and analysis. Instead of categorizing actions in terms of degree of planned-ness, it would be more useful to talk about the quality and quantity of information used in each stage leading up to the action. And planning is seen as a part of each stage in the cycle, that is, as part of detection, of analysis, of decision-making, and even of action itself.

The detection-to-action cycles of the organization are set within a

context, a larger cycle that the organization (or a program or a project) is moving through: This larger cycle also influences the data collection and analysis process. The stages of organizational change have been identified under various labels, and certainly the number of phases is not a fixed quantity, but it seems convenient to describe three.

These are:

- getting ready or unfreezing;
- doing change or changing;
- consolidating or re-freezing.

This simple categorical scheme is consistent with either an evolutionary model of change, or a dialectical model. That is, one can use this scheme to discuss change that is supposed to flow smoothly from one stage to another, or one can use it when change is supposed to be a series of jerking starts and stops, moving from one equilibrium point to another, with disequilibrium being the most frequent stage of the organization.

My own preference is, however, for the latter model or paradigm. Much of the discussion that follows is colored by convictions that organizational change is almost always a function of conflict between competing groups within and without the organization. It seldom is a result of consensus, in which change occurs without anger or passion, in which everyone wins. A death-decay-rebirth model seems better to fit the reality of organizational change, than does a "progress" model.<sup>17</sup> The reader will be able to detect those kinds of biases in the discussion that follows.

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<sup>17</sup>See Nisbet (1969) for a review of a variety of models (or metaphors as he calls them) for change.

### 3.1 The Categorization of Research

The combination of four stages in the detection-to-action cycle with three phases in the organizational context gives a 12-cell schema for classification.

<u>Stage</u>	<u>Phase</u>		
	<u>Getting ready</u>	<u>Doing Change</u>	<u>Consolidating</u>
Detection	1	5	9
Analysis	2	6	10
Decision	3	7	11
Action	4	8	12

For each of the cells (1,2,3, etc.), I will provide some thoughts, first about the type of information that seems most important to have, and then about the type of data, and collection and analysis methods needed to produce that information. The schema is consciously crude and no doubt will leave out much, but hopefully will provide a framework for more careful observers to generate a complete catalog of types of research for planning.

#### 3.1.1 Detection

The issues included in this stage are those that deal with an assessment of the current state of affairs in some evaluative sense, e.g., "How good are we doing now?" Or, they deal with the objectives and values that could be used to evaluate current performance, or which assess possibilities for doing something better than that being done now.

Cell 1. Most planning, using the normative approach, assumes that it is sufficient to compare the present state of affairs with a set of

objectives or goals that have been determined in some prior time. If the system is not meeting those objectives or performing at the levels specified in the goal statements, then something should be done. In the Getting Ready phase (Cell 1) the question is, "Should something be done?"

To answer this question two kinds of methods are needed: those that help clarify value positions, social objectives, norms, etc.; and those that describe the position of the society, organization, unit or person on those value dimensions. This latter kind of data could be called, if you wish, "valuative coefficients", to distinguish it from the technological coefficients that are the more usual stuff of the normative planner.

Most planners have been content to rely upon official statements of goals and objectives to provide the comparative standard for their assessment of the situation. There has until recently been little application of social science research techniques to the task of developing goal statements to be used in the planning process.<sup>18a</sup> Even in the United States, where recent legislation has required state governments to develop public agendas for education, there has not been much effort in this direction. The methods that could be used to identify goals are the sample survey, content analysis of public documents, and occasionally structured interviews. There has been some work on historical content analysis,<sup>18b</sup> but in general little work has been done on the methodology of assessing

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<sup>18a</sup> One example is the revealed preference method, described by Roemer (1975) for use in economic planning. The reactions of political leaders to sets of alternative development strategies are analyzed to reveal their implicit goal rankings

<sup>18b</sup> For an example of this in practice see Alvarez (1975).

objectives and goals of collectivities for use in educational planning.

Table 1 is a list of 34 priority topics for research on education.

Among the 8 items classified as Detection research are three topics (3, 14a, 16b) that might be considered as relevant to methodology of goal assessment.

The second kind of data required are the descriptive statistics - traditionally used by planners to measure the fit of performance to objectives. We are now learning to use indicators rather than the ill-defined educational statistics collected by all ministries.<sup>19</sup> Indicators may be inappropriate in this phase, as the emphasis on quality of measurement makes them an excessively expensive tool to use to answer the question, "Should something be done?"

The international donor agencies have developed their own set of measures to answer the question of whether they should make loans: as my paper on "Information Requirements for Educational Planning" argues, these measures reflect the biases of the international agencies, and are not necessarily good measures of the objectives and goals of the societies, states or organizations running the educational system in question.

The contrast between normative and situational approaches to planning shows clearly in the kind of information used to answer the question posed in Cell 1. Situational planning (more common among national planners than among the international agencies) asks, "Is this a situation

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<sup>19</sup>Two examples of work on indicators are OECD (1973), and USAID (1977). See also "Information Requirements for Educational Planning: A Review of Ten Conceptions," Development Discussion Paper No. 67, HIID, June 1979.

Table 1

Classification of 34 Topics for  
Education Research Priorities by IDRC, 1976\*

Detection

1. The development, evaluation and application of methods to identify minimum skill requirements such as reading, writing, arithmetic and basic knowledge of the environment.
3. The development, evaluation, and application of methods to identify attitudes that the society values and the extent to which they can or should be transmitted or reinforced by the school system.
4. The development of studies prior to implementing education programs to identify the skills and knowledge that can be utilized by rural people within existing economic and social constraints.
9. Studies of core knowledge, skills, and attitudes useful to a wide range of occupations, that schools could provide. In particular, what are the skills and attitudes valuable for a life of productive self-employment (whether in farming, commerce, or craft industry) and how are these best developed?
- 14a. What effect do local demands have on national plans and resource allocation?
- 16b. What factors inhibit effective communication upward from local communities and downward from national policy-makers?

Analysis

5. Studies of the impact of some conventional schooling inputs -- teacher qualifications and training, class size, school architecture, media -- on the quality and efficiency of education. In particular, can the period of teacher training be reduced without affecting teacher quality or pupil learning?
6. Studies of nonschool determinants of learning, such as nutrition and health, that can be influenced by policy. This type of study might find, for example, if there are trade-offs between free lunches and higher level teacher training.
8. Studies to determine why students leave school before completing the primary cycle; what they do after leaving; what they gain from school; and to what extent literacy, knowledge, and skills are lost when primary school pupils leave the school system.

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Based on International Development Research Center, Educational research priorities; a collective view, Ottawa: 1976.

11. Studies of the employment history of past graduates to improve the understanding of training needs and how training is acquired and utilized.
12. Improvements in the routine collection of data, such as current and projected demand for schooling and quality of schooling (availability of textbooks, qualification level of teachers, pupil/teacher ratios); detailed studies of the procedure for determining the size and distribution of allocations for school development as they relate to the performance of pupils, in terms of their region, sex, ethnic group, etc.
- 17a. What are the characteristics of effective teachers and administrators?
- 17b. What kinds of training programs, what combination of pre-service, in-service, correspondence courses, workshops, etc., develop desirable characteristics most effectively and efficiently?
- 17c. What are the incentives that attract teachers and administrators into the field and affect morale?
- 17d. To what extent is the quality and training of the head teacher a key factor in the success of the primary school?
- 18a. How do individual educational innovations tend to spread?
- 18b. How can successful "pilot" programs be tested for their transferability to other locations, and replicated on a large scale?
- 19a. Coarse indicators of comparative costs of various educational programs can help the decision-maker in the process of allocating resources more efficiently to institutions and programs.
- 19c. Can detailed cost-effectiveness studies of various forms of higher education, which often have unit costs many times that of primary school, reveal potential savings that could be transferred to lower levels of the education system?
- 20a. Studies that analyze who is currently paying for different levels of education compared with who benefits by receiving the education can help reveal the nature and effects of inequalities and the extent to which public expenditure is subsidizing students from high-income families at the expense of poorer students. A number of such studies have already been undertaken, but more are needed to complete the picture.
21. The design of reliable and low-cost literacy tests and standardized achievement tests, including reliable and valid tests for minority groups. Tests that the classroom teacher can both administer and analyze could be particularly useful.
22. Although specific program evaluations (for example, of educational technologies, nonformal education programs, and vocational training) may suffer from difficulties associated with measuring relevant learner outcomes (particularly behavioral changes) and attributing these outcomes to the education program as opposed to other influences, the results can be

sufficiently reliable to indicate overall program worth, costs, implementation problems, and possible improvements.

23. Evaluation of methods to improve teacher training and teacher supervision.

### Decision

2. Experiments with the most cost-effective methods of providing those skills such as reading, writing, and arithmetic, which are considered basic requirements.

7. Experiments with the use of the vernacular as the medium of instruction in the early years of primary schooling with a view to improving pupils' long-term school performance.

10. Since there is little evidence that high-cost training schemes are necessarily effective, there is a need for experimentation with an evaluation of alternative vocational training schemes such as apprenticeship, informal on-the-job learning, and programs managed by industry and government and financed by employers and employees.

13. The design and implementation of the most cost-effective means of redressing these imbalances, such as special programs or new financing formulae.

15a. What record-keeping systems can be developed to help in the collection and utilization of basic data on the system?

15b. How can manuals and procedural guidelines be developed to assist headmasters and inspectors in carrying out routine tasks?

19b. Studies of "unit" (per pupil) costs in conjunction with experiments that analyze the effect of various inputs on the desired output of the educational program could indicate potential savings within institutions. For example, can school buildings be used more intensively through double shifts or teachers more intensively by increasing class size without reducing output? Are guides for teachers a more effective use of paper than textbooks? Are additional expenditures on in-service training programs after schooling a more cost-effective use of resources than the provision of more textbooks during schooling?

20b. The identification, implementation, and analysis of alternative sources of financing, such as local financing for pre-university education, or student loan programs for university education, could suggest a more equitable distribution of existing resources.

23. Evaluation of methods to improve teacher training and teacher supervision.

Action

14b. What is the role of the educational establishment in encouraging or impeding educational reforms?

14c. How is research commissioned and used?

15b. How can manuals and procedural guidelines be developed to assist headmasters and inspectors in carrying out routine tasks?

16a. As systems grow more complex, what functions can best be performed at the local, district, or provincial levels, and which in the central ministry?

16b. What factors inhibit effective communication upward from local communities and downward from national policy-makers?

in which something can be done? Is there a coyuntura, a coming-together of events that makes it possible for something to be accomplished at this moment in history?" The focus is less on the fit between goals and system performance--the system is more often in disequilibrium and needing change than in equilibrium--and more on the availability of resources and the structure of forces necessary to bring about a change.

It is not that the current state of affairs is ignored. On the contrary, the situational planner necessarily must be aware of the kinds and extent of dissatisfactions of actors and interest groups in the system. The very process of raising the question as to the adequacy of system performance may be used to test the possibility of mobilizing the system for change.<sup>20</sup> The planner is interested in raising levels of consciousness about the performance of the system. He wants to identify possible constituencies (interest groups, pressure groups, centers of power) whose support could be mobilized for the process of generating change in the system.

Little or no research has been done on methodologies for accomplishing this most effectively. Other papers in this series (numbers 13, 21 and 22) address the problem of assessing the structure of power in a Ministry of Education, and of tracing the network of relationships through the educational system. But we know little about how the action of asking questions can be part of forming the answer.

The topics 1, 4 and 9 in Table 1 are representative of the kinds of efforts that normative, rationalist planners have made in this area. The

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<sup>20</sup>This clearly was one of the objectives of the National Educational Congress called by President Allende in Chile in 1971-72. An effort was made to involve as many people as possible in discussions of what was wrong with the current educational system.

argument is that we must first identify what the system really needs (in terms of some functional pre-requisites for successful performance). The second task is to persuade decision-makers of the validity of our research. As commented earlier, this assumes either that there is consensus about objectives, or that there is a possible arrangement of the system that will satisfy optimally the needs of all participants. Situational planning assumes that there is considerable dissensus about objectives, and that the eventual task is to find that combination of forces that will make it possible to bring about change in a direction favorable to the interests of the group to whom the planner owes allegiance. Presumably those interests are reasonably well understood--the problem in Cell 1 is to determine whether there are objectives and policies that could mobilize people with those interests, and whether the situational context makes such a mobilization feasible.

Cell 5. The major macro-policy decisions have already been made for the system by the initiation of cell 5. The methods needed to clarify value positions, power settings, and the performance of the system, shift from the national scene to focus on the leading bureaucratic officers (e.g. Directors-Generals) within the educational establishment. Attention is more on programs and sub-programs than on the total system, and the "fit" that is examined is between the performance of those sub-systems or programs, and the objectives set for the system (whereas previously the performance of the educational system was compared with societal goals). Indicators thus become more important, but we will delay a thorough consideration of them until looking at Cell 9.

In almost all cases, the "leading bureaucratic officers" within the educational establishment are policy makers who translate political decisions, made at higher levels, into broad policies for the organizations over which they have authority. In many cases these policy makers are "foreigners" in the system, that is, they are named to their posts from outside the post, typically have few ties to the organization, and often do not stay long within it. They include the group of critical actors with and for whom the planner will work, plus their allies and opponents. Whereas in Cell 1 (Getting Ready) a wide variety of sources were consulted in order to identify broad currents and trends, in Cell 5 (Doing Change) emphasis is on understanding the value positions of a relatively small set of persons (not groups) who will have most influence on what takes place. The essential information is how these actors define their objectives, the range of alternative actions that they see as feasible, and the points at which those alternative actions are contradictory or supportive of each other.<sup>21</sup> Organizational analysis is more helpful than systems analysis. Much more work needs to be done in this area, especially to determine if a normative approach would differ from that of situational planning.

Cell 9. After changes have been made in the system, emphasis is on consolidation, on insuring that positive accomplishments are continued and that less-successful innovations are phased out. The policy maker or change agent's objective is to prevent the "counter-revolution" that will come when those disadvantaged by change marshal their forces in an attempt to recover what they have lost.

Those who led the change have an important advantage on their side.

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<sup>21</sup> Roche (1972) has done some interesting work on the measurement of preference curves of decision-makers.

It is easier to maintain something that exists than it is to create something new: what exists usually does not need to be justified, while new programs must be. In this stage, as in the first, the critical information required for detection is the extent to which programs are reaching desired objectives. But whereas in the Getting Ready stage that information was used to generate change, in this instance negative results are used to generate organizational conformance. The actors in this stage are now policy implementers and administrators, who need information about the extent to which the organization is running along the course laid out for it. The emphasis, then, is on control. The most effective control device is one in which program operators are asked to report their attainment of previously set targets based on the broad objectives of the change movements.

The indicators used in Cell 9 differ from those of Cell 1 in that typically they are concerned with the internal operation of the Ministry. For the normative planner there is little concern for how the product of the organization fits with the needs of the society; questions of that kind presumably were settled by the process of change. The system has discovered what to do, now the issue is whether or not it is doing it. Educational organizations in Cell 9, therefore, are interested in questions of efficiency and achievement, but not particularly in the "relevance" of education for society.

Normative planners tend to not be concerned about the extent to which the information asked for served to generate a situation of compliance among the

operating units in the Ministry, and the validity of the information received. The rationalist approach tends to be associated with an insensitivity to the organizational contexts in which data are produced. Normative planners tend to treat all numbers the same, to assume that all requests for information generate the same cheerful reaction from those who supply the raw data. We are now beginning to learn of the limited validity of many of the statistics reported by Ministries of Education as, for example, the severe under-reporting of repeater rates.<sup>22</sup> Most data collection systems in education rely on the good will of reporters who often have interests that would be jeopardized by reporting truthfully. (For example, in many countries teachers whose class size goes below a certain minimum face transfers to other schools or areas.) A situational planner in this cell would both strive to increase awareness of the significance of numbers (i.e., that they are used to evaluate compliance with organizational objectives) while striving to maintain validity.

In Cell 1 there would be an equivalent concern for validity but the process of data-collection would be designed to increase non-compliance and desire for change.<sup>23</sup> There has, to my knowledge, been no work on the consciousness-raising effects of different kinds of data-gathering techniques, or the

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<sup>22</sup> See Ernesto Schiefelbein (1975) and Paper #38 ("Estimation of Enrollment Flow Rates") IGSE, CSED, for estimations of the magnitude of under-reporting of repeating in Latin American systems. See Paper #76 ("The Use of Educational Statistics for Policy Analysis") for an example of how this occurs. Harvard Graduate School of Education, Center for Studies in Education and Development.

<sup>23</sup> The dialectical process (permanent revolution) followed by the situational planning approach requires the definition of a thesis (Cell 1), the elaboration of an antithesis (Cell 5) and the implementation of a synthesis (Cell 9). Organizational compliance is essential if the synthesis is to be achieved. This synthesis then becomes the thesis for the next iteration. The situational planner must, therefore, be concerned about the psychological and organizational effects of his technical behavior, as well as about the validity of the data collected.

Table 2a  
Major Research Techniques  
for Normative and Situational Planners

Relation to change process	Detection
Getting Ready for Change	<p style="text-align: right;">Cell 1</p> Description of broad social problems in value terms--who gets what, to what effect. Use means distribution statistics.
Doing Change	<p style="text-align: right;">Cell 5</p> Target related. Identification of values and states of critical actors, both within and outside system. Systems analysis, description.
Consolidation	<p style="text-align: right;">Cell 9</p> Indicators. Summative evaluation to induce compliance.
	Much popular literature serves purposes of Detection, especially description of educational "needs" based only on description of social problems.

role of data collection in the political process of an organization.<sup>24</sup> In recent years there has been an increased interest in "qualitative" research techniques that, in principle, are more sensitive to this issue, but the field is not yet characterized by a rigorous approach to questions of method and validity.

### 3.1.2 Analysis<sup>25</sup>

This stage confronts issues that examine why current performance is or is not adequate. Research of this kind attempts to provide information on the performance of the system in terms of the inter-relationships of elements. It is, therefore, useful for understanding how the system works, or why it does what it does. Analysis issues are also those concerned with methods and methodologies for understanding system performance.

Cell 2. Once the judgment is formed that something is wrong, and therefore that action might be necessary, the planner-decision-maker in the Getting Ready phase needs to understand what it is about the functioning of the present system that leads to "failure" or at least to a sense that things could and should be better. In other words, the decision has been made that something is wrong, now the question is, "What is it?" Now the need is to look at why the system is producing undesired outputs or failing to produce desired ones.

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<sup>24</sup>But Argyris (1971b) has described the conflicts generated in an organization by the introduction of "rationality" as represented in a Management Information System.

<sup>25</sup>This phase might better be called Diagnosis, because of its similarity to the action of the physician in identifying a disease by virtue of description of the symptoms. I use the word Analysis because most research in educational planning is of this kind, insufficient for planning, but not recognized as such because of the label.

The answers to these questions will not tell the decision-maker what to do to correct the situation. That is, what is learned in this stage, although it points the way to a determination of solutions, is not adequate in itself to correct the system's performance. Analysis provides the researcher with a set of statements linking indicators of system malfunctioning to measures of system input or process, but it does not indicate what would be the consequences of changing levels of input or characteristics of process.

For example, a planner might begin with research in the Detection stage that indicates that the economy is not performing well. An inquiry which determines that shortage of skilled manpower is a major cause, would be characteristic of Cell 2 research. Or, given a Detection study that shows that the system is not producing enough skilled manpower, Analysis research might investigate whether this is a function of insufficient input to schools, too high a dropout rate, too much repeating. Our language encourages us to see the solution of the problem in the elimination of the symptom, e.g., in dictating a change in dropout rates or mandating increased production of skilled manpower. But often these variables are the consequents of a series of other variables, and cannot be changed directly. Hence Analysis does not necessarily provide all the information necessary to correct a problem.

Research in this cell generally involves associating performance--as measured by some output indicator--with variables describing either input or process characteristics of the system, or status characteristics (classification) of participants in the process. Four major kinds of output measures are used. These are measures of the: quantity of outputs (which may be graduates or dropouts); qualities of outputs in terms of knowledge or abilities; qualities of outputs in terms of subject matter and level; and cost per output.

The input variables include measures of qualities and quantities of teachers, buildings, and students. Process variables rarely include more than some nominal measure of program characteristics, although some research actually gets at instructional and administrative practice. Typical of Analysis research in Cell 2 are the Sector Assessment studies done by USAID,<sup>26</sup> production function studies, cost-benefit analyses, and manpower studies. Most published academic research on education is done on Cell 2 questions. Much of this research is denunciatory. It tells what is wrong with the current system (given the usually implicit values of the researcher) but it seldom provides useful insights on what to do about it, being content to urge only not doing that which is wrong.

The popularity of this research can be attributed to its usefulness in bringing about a process of change.<sup>27</sup> Cell 2 research is critical in the Getting Ready stage as a first step in mobilizing support behind specific solutions that will be proposed later. Denunciatory (or descriptive) research itself does not define those solutions, however. Its major function is to "unfreeze" commitments to previous solutions. To accomplish this, it is necessary that the research and its results be presented in the most impressive manner possible. Once having detected some sympathies for change in Cell 1, research in Cell 2 is used to persuade people to withdraw their allegiance

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<sup>26</sup>For a critique of these see Andre Danfere "A Survey of Education Sector Assessment," Paper #18 in this collection.

<sup>27</sup>This is one way of understanding the continued use of manpower analysis after repeated and thorough critiques of its assumptions and methods. As Davis (1966) noted, manpower analysis is useful, less perhaps for indicating what should be done than for persuading people that something should be done. But, we can then ask, is this the best means to mobilize for action?

from elements of the existing system.

This research will most often be done by "the planner" or commissioned by him. It represents a deliberate attempt to influence the structure and process of the educational system and, therefore, must be justified in ethical or moral terms. The normative planner has two choices. He can choose to serve his Prince well, and justify his actions in terms of faithful service to a good cause; or he can argue that his use of scientific methods results in the generation of the only or the best solution in rational terms. This belief is so firmly ingrained in most social scientists and planners that the issue is never raised; their science is value-free.<sup>28</sup> But as many critics have pointed out, behavior is only rational in pursuit of objectives, "rational" planning necessarily involves choices, and choices imply values. The normative planner is obliged to state the value premises within which he operates; this means acceptance of a set of objectives already determined, if not by an individual, by a social system to which the planner gives allegiance. Hence, although Machiavelli is not a popular folk hero, many planners end up in his position.

If normative planning begins with an acceptance of some values and objectives, then rationality would dictate that the planner should use his technical talents in every way possible to pursue the realization of those objectives.

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<sup>28</sup>"The issue is not whether it is possible to employ empirical and quantitative techniques, but rather how to employ the results. There has been an overwhelming tendency in mainstream social science toward reification, toward mistaking historically conditioned social and political patterns for an unchangeable brute reality which is simply 'out there' to be confronted. In the eagerness to build a new natural science of human beings, there has been a tendency to generalize from regularities of a regnant moral paradigm, and to claim that we are discovering universal laws... The most serious defect in this endeavour is not simply unwarranted generalizations, but the hidden ideological bases... Scientism in social and political studies has become a powerful albeit disguised ideology." (Bernstein, 1978, p. 106).

When planning is taken seriously, this is in fact what happens. The normative planner does this by presenting his research as both scientific and irrefutable. He uses computers, large samples, complicated statistics, many tables. He concentrates on demonstrating the high reliability or precision of his data, using many significant digits in his numbers. The Methods section of his report may be as long as the Results section, and both longer than the Conclusions. Only another scientist can really understand his argument, and even that is not certain. In effect, he paints a landscape<sup>29</sup> using tables as his canvas and numbers as his pigments, and the viewer is confronted with a picture that is very difficult to see except synthetically.

In all of this, the validity of the findings in terms of their social meanings often is ignored. The researcher assumes (and seldom makes explicit) a model of society and the objectives of the educational system that is being analyzed. His research is conducted on the assumption that what is being pursued is legitimate. For example, normative planning makes much use of manpower analysis as a fundamental means for showing where educational systems fall short or overproduce given economic targets. It is rare that any attention is given to alternative means of organizing the economy that would completely change manpower estimates.

All of the studies in Table 1 under Analysis are of that kind: all appear to take the system as given, and essentially deterministic.<sup>30</sup> In all the studies the image is that of an auto mechanic cocking his ear to listen to the motor, applying his micrometers and electronic timers to determine

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<sup>29</sup> or argues a brief. See Rivlin (1973).

<sup>30</sup> Question 17c might be taken to indicate the presence of goal-seeking actors in the system, if the question were reworded: "What would teachers and administrators do if they were given the chance?"

what is malfunctioning. The essential form and process of the motor cannot be changed, it can only be adjusted. Similarly the educational planner, given this list of research topics, would apply his technical tools and gauges of both regression and rate-of-return analysis to determine where the system was not meeting expectations. Normative planning, uninterested in questioning the basic system, seeks change but only within given parameters. It can plan for more or less of a known quantity. It is predictive or preactive. Cell 2 analysis in the normative mode tells us what will happen unless I do something (different), instead of telling us what will happen if I do something.

The situational planner, on the other hand, is interested in the answers to the question, What could this system become, or be made to do? What would be required to make it do something different from what it now does? Given the present set of circumstances, what opportunities are there to make the system behave in a fundamentally different but better way?

The potential for change in an educational system depends on two major factors. First, change within the system will occur only as a result of changes in the actions of the persons who make it up. By affecting levels of consciousness of the human actors as to objectives and possibilities, the planner can stimulate change. Second, because educational systems are open, i.e., transact with their environments, change is also a function of what takes place in the environment. Normative planners tend to treat the educational system (and sometimes a sector within the system) as closed, i.e., they propose changes within that sector without consideration of relationships with its environment.<sup>31</sup> For the situational planner, change is possible not only by

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<sup>31</sup> Coleman (1972) lists 14 different groups with interests in policies related to educational vouchers. The list may be longer or shorter for other kinds of policy decisions, or may include other groups. Most of these groups are outside the formal school system (e.g., taxpayers, state governments, political parties, new potential suppliers of education).

modifying (i.e. making adjustments in) existing relationships but also by creating totally new ones. The situational planner goes beyond an analysis of what is wrong with the current system, to determine whether in the meta-system perspective (educational system and environment taken as system) there are possibilities of new combinations that would be attractive to both actors in the educational system and those in the environment. These combinations may involve changes in actors' objectives, or relationships, or both.

We can illustrate this approach by rewriting some of the questions in Table 1. Question 5, for example, could be re-stated to ask, "Under what conditions do low quality teachers do better than high quality teachers?" "Are these conditions desirable?" Question 6 in its present form comes very close to analysis of the kind that the situational planner would welcome, except that it tends to treat the free lunch as just one more kind of input. A situational planner would ask whether the direct benefits of free lunches do not in themselves outweigh benefits from gains in education. That is, he would not take the objectives set for the educational system as final in themselves but, instead, consider larger system objectives. Similarly, Question 8 could be reworded to ask whether students are better off staying in school or leaving. One could ask why the question in Table 1 is concerned only about primary school leavers: one could ask, "Do students leave at the optimal time?" "From their perspective?" "From the system's perspective?" Question 11 leaves open the question of whose needs are to be included. The phrase "training needs" implies that there is one best way to produce graduates and that employers know it (or in any event are unwilling to change their employment practices). If, on the other hand, one knew how employers decide on

what technology to use and what training to give, it might be possible to re-design the production-training system for higher productivity and efficiency. The educational planner might, for example, plan to train employers as well as workers. As a final example, Question 17a would be rewritten by the situational planner to ask, "What are the requirements for successful relationships between teachers and students, teachers and administrators?" Success could be defined in terms of goals of the actors, goals for the system, goals for the meta-system. Ideally, planning leads to realization of all three congruently.

In other words, situational analysis seeks the generation of alternative images of how the system could operate. In order to benefit fully from the utility of the dialectic, these alternative images must represent a clear contradiction of the existing system, and they should be presented as forcefully as possible, appealing to values and emotions as well as to "reason." There are a few examples available of how this can be done. One is the work by Mitroff and others, who use the creation of myths about the operation of an organization as a device to enable decision-makers to think about a wider set of possibilities than is possible using the normative approach. The "myth-information system" approach they have developed takes into account not only information about the problem from the perspective of the various actors, but also information about the philosophy and psychology of the actors that determines their response to and organization of data.<sup>32</sup> Schon (1971) describes the use of narratives, case histories, dramaturgic approaches, and projective models.

Both normative and situational approaches to planning involve intervention into the lives of others, and hence raise ethical concerns. As suggested

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<sup>32</sup> See footnote on following page.

<sup>32</sup>See Mason (1969); Mason and Mitroff (1973); Mitroff (1971); Mitroff and Betz (1972); Mitroff, Nelson and Mason (1974); Mitroff, Barabba and Kilmann (1977). The following differences are noted between "scientific" and Mythic information systems.

<u>Mythic or Personalistic Information</u>	<u>Scientific or Nonpersonalistic</u>
1. Highly partial, personal, interested	Impartial, impersonal, disinterested
2. Tends toward the specific, i.e., not generally true	Tends toward generalization
3. Heightens emotions, stirs passions, drama essential	Eliminates emotions and suppresses passions
4. Acceptance and use of bias	Elimination of bias
5. Highly repetitive, redundant	Elimination of repetitiveness and redundancy
6. Tends toward the implicit and vague	Tends toward the explicit and precise: the result either of deductive processes or of inductive experimental processes.
7. Feeling-toned	Thinking-toned
8. Takes moral stands	Amoral
9. Is exoteric	Is exoteric

(Mitroff, Nelson and Mason, 1974, p. 380)

earlier, there is no "problem" for the rational planner who believes his assumptions about the actors' objectives and the ability of his analysis to discover the best way to reach them. But planners act to persuade others of the validity of their procedures and results by demonstrating the "scientific" quality of their work. The "high science" techniques of regression analysis, rate-of-return analysis, manpower analysis, all contribute to that ambition. The techniques are themselves neutral, but often are used in a scientific way that obscures rather than illuminates, that obfuscates rather than clarifies. Planners who use these techniques to prescribe policies, as is often the case, are engaging in scientism. In many cases the normative planner may feel obliged to do this, in order to overcome resistance to change, to develop a commitment to the kinds of changes that will be proposed. His techniques, then, become part of a manipulative procedure; they can no longer be justified by appeals to rationality.

Situational planning is ethical to the extent that it enhances the consciousness, and hence the freedom, of the relevant actors in the dialectical confrontation. Schon notes that "...this sort of knowledge does not relieve us of the anxiety associated with uncertainty, but depends on an ethic for social learning" (1971, p. 202). That ethic requires that the planner (and the organization in which he works) participate fully in the dialectical process, that is, be as vulnerable to change as are other participants in the process. I would imagine that, in practice, this objective is attained no more completely than is the objective of full rationality in normative planning. It is likely to be attained least in those situations where rationality in planning makes most sense, that is, in conditions of high stability where one group or point of view enjoys an absolute monopoly of power. The principle

of vulnerability is most likely to be fulfilled in those circumstances in which situational planning makes most sense, where there is widespread dissatisfaction with the dominant paradigm, and various pressures for change.

Cell 6. Once the decision is made to shoot for (at?) a given target, the heavy scientific approach used so often in Cell 2 can be abandoned. In fact, to maintain it would be dysfunctional. The decision-maker has relatively little time between the moment in which problems are defined in the Detection stage, and the deadline for taking action if he is to maintain the momentum of the change process. Reliability, one of the prime concerns of dominant paradigm research approaches, is the first victim of the exigencies of getting the Reform accomplished while there is still time, while the political patron of the Reform is still in office, before the Opposition can mount its counter-attack, before the bills come due on the new programs that must be established to get something going.

The political realities usually are such that the planner's main concern is no longer calculating just what is needed. Now it is understanding how to get as much going as soon as possible. That is, the concern now is not with the right solution--in terms of meeting some larger system objectives--as it is with the feasible solution--in terms of what can be done given the context of the larger system and characteristics of the elements in the educational system.

The major type of research that should be done in this stage falls under the classification of formative evaluation. The term refers less to a set of specific research methods or statistics as it does to an orientation toward the research procedure. Formative evaluation takes a disjointed incremental

approach to the question of, 'What is it possible to do in these circumstances that will move us toward our objectives?' The approach is disjointed in that the small experiments that are tried out are not derived from a coherent model or theory about the system, and consequently may bear little or no relationship one to another. It is incrementalist in that, typically, the experiments are small in scope, focus on one specific program or element of a program at a time, take a deliberate sub-optimizing stance, and allow the system to keep running.

As case studies of reform and planning experiences (detailed in other papers in this collection) show, conventional educational planning often gets in the way of the decision-maker who uses this approach to make a change in his system. The requirements (above all in terms of time) of conventional planning analysis procedures, in a situation of rapid change, exceed available information. Planning is seen as mere statistics-gathering, and a hindrance to action.

But it need not be that way. It is true that the planner does not have time, once the decision for change is made, to design totally new programs to reach objectives. He can, however, introduce alterations into existing programs that might both radically change the system as well as extend the period of time he needs to understand how to make the system implement these new objectives. He does this by analysis of existing programs, in each case looking for ways in which to meet the new objectives through small (and feasible) modifications in the existing programs. This requires an understanding of the operation of the system (gained in part through the political structure analysis-detection done in Cell 5) as well as fast-feedback on the effects of the modifications made in programs. The kind of information that

is required does not meet the conventional standards for "good" scientific research--on the other hand, it is sufficient to allow the planner to monitor and guide the evolution of the system.

More work needs to be done on the cataloging of evaluation research techniques that can be used by the educational planner. We need to know which are most useful for searching through existing programs in order to identify those with greatest possibilities for change, and possibilities for inducing change into other elements of the system. We need to know the relative time costs of the various techniques, in terms of design, application, feedback and evaluation.

Of the questions listed in Table 1, two come close to the evaluation research model proposed for Cell 6. These are questions 18a and 18b. As will be seen, these questions are similar to those asked in Cell 3 (Getting Ready-Decision), but require much shorter periods of time.

Cell 10. Evaluation research during the Consolidation phase has two major objectives: to demonstrate that goals have been attained; and to identify those elements of the system that should be corrected to achieve fulfillment of goals. Perhaps because research of this kind does not lend itself to publication, it is of little interest to academicians and is rarely published. Table 1 contains no examples of research problems of this kind.

As anticipated in the discussion of Detection-Consolidation (Cell 9) the normative planner tends to focus on technical aspects of the problem. He uses analysis in this stage to determine where programs are failing to measure up to objectives, and what changes might be useful to bring those programs up to standard. To do this he needs information on the levels and kinds of

Table 2b  
Major Research Techniques  
for Planners

	Analysis	
Getting Ready	<p>Cell 2</p> <p>Tendencies toward Scientism--use of sophisticated analytical techniques to mobilize support for change. Regression analysis, rate-of-return, manpower analysis, cost-benefit analysis. Should rely more on techniques that generate alternative perspectives.</p>	
Doing Change	<p>Cell 6</p> <p>Formative evaluation techniques--short-run, low concern for reliability. Evaluation of existing programs in terms of what could be accomplished with them. Look for alternatives.</p>	
Consolidation	<p>Cell 10</p> <p>Similar to Cell 2 but less rigorous. Cost-effectiveness analysis</p>	
	<p>Almost all published research falls in Cell 2. Much of that is "denunciatory," i.e., criticizes without offering alternatives, and prescribes without adequate basis.</p>	

inputs being made; that is, levels of achievement of program objectives. Often he finds that cost-effectiveness analysis is a useful instrument (while in Cell 2 he would have used cost-benefit analysis).

The planner who conforms more to the situational definition should pay more attention to the functioning of the administrative system responsible for implementation of the programs. He should, therefore, have some interest in the effects of the act of evaluation on the performance of the system. There is a lot of work to be done here. The analysis of the development of the educational planning office in El Salvador,<sup>33</sup> provides an illustration of how situational planners, motivated to consolidate the gains of a Reform, used the data collection procedure as a means to insure compliance of operators with system objectives.

### 3.1.3 Decision

Decision issues are concerned with specifying what actions to take or carry out in order to reach objectives, reduce costs, or otherwise move toward the goals specified in Cell 1 (Detection), and with overcoming the obstacle analyzed in Cell 2 (Analysis). The research supporting decisions is prescriptive, it is specifically concerned with what should be done, rather than with describing what is. What should be done is a question of choice and, therefore, implies the exercise of values. Dunkel's comments on the limitations of value-free science should be kept in mind when considering the choice of methods for research for this stage. Research cannot provide the answer as to what should be done: what it provides is a clearer vision of the value-consequences of alternative courses of action.

Cell 3. That vision is one kind of information needed by the decision-maker. In addition, he needs to know whether in fact (no matter what the cost)

<sup>33</sup> See Davis, "Planning in the Ministry of Education of El Salvador," Development Discussion Paper No. 70, IID, June 1979.

it is possible to carry out the contemplated action. And he needs to know what successful completion would cost, in terms of political capital as well as of physical and human resources. In addition, whatever method he uses should increase the legitimacy of the decision once made.

The research methods for the Getting Ready stage include pilot programs and other efforts to generate a sample of the to-be-preferred reality that would result from a Reform. The planner has several kinds of evaluation techniques available to demonstrate the efficacy of the solution contained in the pilot program. If the program is an innovation, then he can use a (high science) experimental design to demonstrate the excellence of the proposal (assuming it is in fact excellent). If the new program is a variant of an existing program, then natural experiment or quasi-experimental designs are appropriate. Inferential statistics are used (improperly) to "prove" that these prescribed actions will have the desired effect.

Normative planners have experienced three kinds of difficulty with the use of pilot programs and formal experimental research. First, results are not always positive. If one has done the necessary promotion to get public attention to results, only to have them prove negative or inconclusive, a program's future can be destroyed. Second, there is a tension between the need to use high science techniques that lend an air of legitimacy to process and results, and the need to get back results prior to the time when action must be taken. Experiments tend to get confused with demonstrations. Decision-makers are likely to observe, "If the idea is good, why a pilot project?" Or they can note that once they have decided the present program is inadequate, they gain little additional information from an experiment (Davis, Development Discussion Paper No. 70, HIID, June 1979.

Furthermore, good ideas that are "proved" to be that after the opportune moment for introduction has passed, must wait for another turn of the wheel of history (Schon, 1971). Finally, the high science of experimental designs often errs on the side of internal validity (or reliability) while ignoring problems of external validity, especially in the form of replicability in other contexts. In order to make research "scientific," and to get results on time, the planner often must so alter the conditions of testing that he no longer can answer whether this program is in fact possible to do in the larger system. Natural experiments and quasi-experimental designs avoid that problem, but are constricted by the availability of baseline or historical data on the performance of existing programs, and are limited to the known present, ignoring the possible future.

All of the 9 research topics for Decision questions proposed in Table 1 appear to be consistent with a normative approach to planning. Some of the questions come close to suggesting "turning the system on its head" but, overall, the orientation is one of acceptance of the basic structure of the system, and of research to make it work more effectively given that structure.

A situational approach to the problem of decision-making in the Getting Ready stage would emphasize the use of sharply contrasting views of possible realities. The mythic model approach of Mitroff, described earlier, is one way of doing this. Another is the use of a version of the Delphi technique designed to contrast different perspectives of the situation (Mitroff and Pondy, 1974).

Cell 7. The disparate solutions that develop from the formative evaluation technique applied in Cell 6, are integrated in Cell 7. All the required techniques involve creation of a partial or complete representation of the

system, in the form of a mathematical model or simulation. The simplest kinds of models are in PERT and CPM analyses. Flow models can be used to project expected numbers of students, or demand for teachers and buildings. More complicated models, working up to the "educational system of Chile" model of Schiefelbein and Davis can also be used. The better models not only will test the feasibility of proposed actions but can, with some cautions, provide information on cost and level of goal attainment at the same time (as is the case with the linear programming technique). The data for these models often emerges from use of the techniques described in Cell 2.

In most cases the time available during the Doing Change period is so short that the planner cannot possibly build and test these kinds of models. Only by having them built before change actually starts can he hope to be able to use them effectively. Missing from most of these models is the political information that planners and decision-makers need to evaluate the feasibility of alternatives or the success of their actions. The information can be included into simulation models of the educational system, using role playing and game theory. I know of no systematic attempt to develop this technique for educational planning, but it has been used in business and, of course, in the training of military personnel.

The difference between normative and situational planning shows clearly in the research approaches used at this stage. Normative models are based on fixed conceptions of the educational system. The model is run to show how the system would operate, given the validity of assumptions about parameters and coefficients. Ceteris paribus is the password; if things stay the way we believe them to be now, this is what is likely to happen. The

situational planner, on the other hand, builds models that allow him to look at what might happen if parameters were exceeded, if coefficients were changed. This can be done with models themselves, as shown in simulation studies which deliberately exceed historical parameters, to show that "explanations" based on empirical laws are questionable.<sup>34</sup>

Cell 11. The decisions made in this stage (of Consolidation) are principally of the "more or less" kind. Evaluation research results from Cell 10 are used to determine which programs (from the Reform) are to be kept, and which to be eliminated because they do not, in fact, contribute to the Reform's objectives. High science techniques of research (such as those from Cell 2) can be used to evaluate programs that are to be extirpated, but which have politically powerful constituencies.

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<sup>34</sup>Fisher (1971) shows that the Cobb-Douglas function is valid only within the boundaries of historical values of the relevant variables. Once these values are exceeded, the function no longer holds.

Table 2c  
Major Research Techniques  
for Planners

	Decision	
Getting Ready	Cell 3 Pilot programs, experimental designs used to establish legitimacy of decisions made. Use quasi-experimental designs if possible.	
Doing Change	Cell 7 Mathematical and simulation models.	
Consolidation	Cell 11 Formal summative evaluations useful to eliminate resistors.	
	Some published research - usually very large, expensive studies.	

### 3.1.4 Implementation or Action

In this phase the concern is with the actual execution of those programs and policies defined under the Decision phase. That concern necessarily deals with the capacity of operating units within the organization to bring about a program.

Cell 4. What is required, prior to beginning change, is assessment of the competency of executing groups to carry out their responsibilities during the Reform. This may never have been done systematically. "Good" planners do it in some fashion, but typically it has not been defined either as a subject for research nor as a responsibility of the educational planner. Normative planners are unlikely to consider the necessity of doing this kind of research to the extent that assumptions about the determinism of the model deafen them to the noise introduced by human actors. Some planners have been careful, however, to examine the legal impediments to change prior to the introduction of new programs, and others have paid special attention to the training needs of existing staff who handle new programs. The Sector Assessments and Sector Surveys done by USAID and the World Bank now ask for an assessment of the capability of organizations to carry out a proposed change. The five questions, included under Implementation in Table 1, illustrate a growing interest in the problem of how to get Ministries or other educational agencies to actually carry out dictated policies or programs.

Of special interest, because they lend themselves to a situational analysis of the problem of implementation, are the series of questions proposed by DeHasse and Welsh in their paper on "Morphological Mapping."<sup>35</sup>

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<sup>35</sup>Jean DeHasse and Thomas Welsh, "Morphological Mapping: A Methodology for Increasing the Fit Between Planning and Implementation," Paper Number 22 in this collection.

By placing administrative behavior within a larger context they make it possible to see a wide range of possibilities and problems with respect to implementation. Their approach makes it possible to suggest ways of restructuring existing organizations, or ways of introducing otherwise ill-fated proposals, so that a program can be implemented.

Cell 8. The research questions in this cell parallel those of Cell 5 (Detection - Doing Change) with the difference that here attention is given over to those agencies with specific responsibility for implementation of programs. The questions of greatest significance would seem to be: the commitment of executing agencies to policy coming from above; resources available and personnel competencies to carry out policies; and relationships with the client population and the environment that can help or hinder implementation. What little research has been done on problems of implementation has tended to focus on resistance to change by executing agencies. Others have found it more useful to assume a desire to cooperate, accompanied by a lack of understanding of what is expected. One study suggests five questions to guide research into implementation:

1. Do people understand what is expected of them?
2. Are they capable of meeting these expectations?
3. Are resources available?
4. Is the organization compatible with their change?
5. Are the personnel disposed to change?<sup>36</sup>

Cell 12. If the activities covered in the first three cells in Consolidation (9, 10, 11) of this phase are carried out successfully, there is not much to do with respect to implementation. The organization runs along smoothly

<sup>36</sup>Gross, Giacquinta and Bernstein (1971). See also Donald Warwick, "Integrating Planning and Implementation," Development Discussion Paper No. 63, HIID, June 1979.

following the course laid out for it previously, with malfunctioning elements detected and eliminated or corrected.

It may be useful, however, to describe two methods that normative planners use to maintain a constant quality control on the process of compliance with the mandates of the Reform once accomplished. These are Organization and Methods studies, and the Program Planning and Budgeting System techniques. O & M studies work out the detail of the procedures for implementation of policies. They are useful for identifying possible bottlenecks, staff requirements and training needs, and provide an opportunity for the central control unit (which may be the planning office) to monitor the day-to-day activities of executing agencies. (The non-research equivalents are operating plans drawn under the direction of the central planning office.)

PPBS techniques qualify as a research instrument, in the sense that they can be used to analyze staff and time requirements to carry out specified tasks. The techniques also serve admirably as control devices. Some (Hoos, 1972) think the principal function of PPBS is organizational control in the post-decision stage. This is true principally of the program objective focus of PPBS, rather than its use of zero-base and multi-year budgeting.

Situational planning relies much more heavily on techniques classified under "organizational development," in which the emphasis is on increasing the capacity of the organization to handle future situations within a given context. The intent is to create, if you will, a "learning organization," in which even failures to implement are used as opportunities to help actors within the organization develop more effective procedures and attitudes.<sup>37</sup>

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<sup>37</sup> See Argyris (1972a); and Argyris and Schon (1974).

Table 2d  
Major Research Techniques  
for Planners

	Implementation or Action	
Getting Ready	<div style="text-align: right;">Cell 4</div> Assessment of competency of executing groups, training needs. Legal studies.	
Doing Change	<div style="text-align: right;">Cell 8</div> Analysis of dispositions and abilities of executing groups.	
Consoli- dation	<div style="text-align: right;">Cell 12</div> Control devices such as O & M, PPBS; organizational development techniques	
	No published research.	

Table 2  
Major Research Techniques for Planners

Relation to change process	Detection	Analysis	Decision	Implementation or Action
Getting Ready for Change	Cell 1 description of broad social problems in value terms--who gets what, to what effect. Use means distribution statistics.	Cell 2 Tendencies toward Scientism--use of sophisticated analytical techniques to mobilize support for change. Regression analysis, rate-of-return, manpower analysis, cost-benefit analysis. Should rely more on techniques that generate alternative perspectives.	Cell 3 Pilot programs, experimental designs used to establish legitimacy of decisions made. Use quasi-experimental designs if possible.	Cell 4 Assessment of competency of executing groups, training needs. Legal studies.
Doing Change	Cell 5 target related. Identification of values and states of critical actors, both within and outside system. Systems analysis, description.	Cell 6 Formative evaluation techniques--short-run, low concern for reliability. Evaluation of existing programs in terms of what could be accomplished with them. Look for alternatives.	Cell 7 Mathematical and simulation models.	Cell 8 Analysis of dispositions and abilities of executing groups.
Consolidation	Cell 9 Indicators. Summative evaluation to induce compliance.	Cell 10 Similar to Cell 2 but less rigorous. Cost-effectiveness analysis.	Cell 11 Formal summative evaluations useful to eliminate resistors.	Cell 12 Control devices such as O & M, PPBS; organizational development techniques.
	Much popular literature serves purposes of Detection, especially description of educational "needs" based only on description of social problems.	Almost all published research falls in Cell 2. Much of that is "denunciatory," i.e., criticizes without offering alternatives, and prescribes without adequate basis.	Some published research - usually very large, expensive studies.	No published research.

### 3.2 Discussion: Implications for Planning

Missing from the above description of useful research are most conventional studies. Usually not generated in a "policy problem" context, the conventional studies typically provide little help to educational administrators or other policy- and decision-makers concerned with acting on the system. These studies have the following characteristics:

- 1)- problems identified are small, dealing with some relatively insignificant (from the planner or administrator's perspective) aspect of the system;
- 2) conceptualization of the problem most often derived from social science theories more concerned with "understanding" a system than with "intervening" to change it;
- 3) as a consequence, many if not all, the variables analyzed are not subject to control by administrators or planners, as is the case with social class (on the sociological level), sex (on the individual level) or intelligence (on the psychological level);
- 4) analyses typically use sophisticated quantitative techniques not easily understood by educational administrators;
- 5) much emphasis is put on questions of reliability (internal validity) and statistical significance, with little or no attention to the social significance or system-replicability of the findings;
- 6) conclusions drawn from the research seldom are couched in terms that make it easy for the administrator to understand what actions should be taken.

### 3.2.1 When Policy Research Can/Should Not Be Done

But in some circumstances this is the kind of research that planners should do; it often is the only kind of research they can do. Unless there is a political commitment to change of the educational system, by some group or groups with sufficient power to have some effect, it makes little sense in the Getting Ready phase to carry research past Cell 1. That is, if the Detection research of the planner suggests that this is not an auspicious moment for change, it makes little sense to invest in the expensive and politically compromising research of Cells 2, 3 and 4, let alone to begin to design research for the Doing Change phase.

The circumstances in which further research for change would seem inadvisable may be summarized as follows. First, if in fact the system is working well, then there is no need to do research on how to change it. That seems an improbable circumstance in most countries, but key decision-makers may believe the system works well. Second, following from this and noted in the paragraph above, there must be political commitment to change. Third, the political climate and process of the country in question has to be one that will tolerate critical research of the kind that is proposed in this catalog. If the level of political conflict has gone beyond that stage in which men and women will still attend to reasoned arguments in evaluating their positions, then research of the kind needed for planning is of no utility.

The lack of political commitment to change is a fairly common occurrence, even in those countries whose educational systems suffer a great many deficiencies. In authoritarian political systems there may be little willingness to review "reforms" made at an earlier stage in the development of

the dictatorship. In democratic regimes, the cycle of elections often means that elected officials, with a chance of not being re-elected, begin to lose power about half-way through their term of office. Their possible interest in change is not backed up by the ability to garner support for proposals from other political actors. In these circumstances, the researcher is advised to take up conventional research.

Although this research is of little use to administrators, it is not a total waste. First, given attention to technical excellence, and to the development of research designs that capture aspects of the functioning of the system and its relationships with its environment, it can provide much that will be useful when opportunities for change do emerge. Some day the cycle of history will present circumstances auspicious for a Reform. At that time, it would be helpful to have available the results of conventional research done earlier.<sup>38</sup> Second, not all the information needed by the planner involves direct action on the system. Basic statistical information, for example, is of great importance for Detection in all phases. It also is critical for developing mathematical models to simulate the system. Third, even though sub-optimizing, research on innovative changes in elements of the system can be helpful in the development of a fund of ideas for new structures, that can be used when the right moment arrives, and which in the interim can be applied in some "experimental" schools or classrooms. Fourth, conventional research can go a long way toward describing the structure of the system, and its relationships with its environment. This contributes greatly to being able to reach the right administrators with results of planning later on. Finally, after passing through a hectic Reform period and Consolidation is accomplished, there is a quiet period in which the planner can analyze his experiences. He can design research

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<sup>38</sup>This is, effectively, the situation that favored reform in Chile. See McGinn and Schiefelbein, "Contribution of Planning to Educational Reform: A Case Study of Chile 1965-1970," Development Discussion Paper No. 72, HIID, June 1979.

to develop more effective models of the system; to look for better ways of educating; to build up his network of relationships with administrators, and policy-makers; and to prepare himself for the next round of change.

### 3.2.2 Independent, Critical Research

Can an independent researcher, one not connected with the government apparatus, do research that contributes to educational planning? The question is not trivial, but rather is one often debated by Ministries of Education faced with a choice of commissioning research with external agencies, or creating their own in-house capacity to conduct research.

Obviously, most if not all conventional research can be done by external agencies, and in fact most of it is. Perhaps for that reason university research in developing countries is seen as having so little impact on government decision-making. The experience of a number of non-Ministry research centers (many not connected with universities) is that although they do research of very high quality, addressed to what they see as critical problems, their reports seldom are taken seriously (let alone read) by educational decision-makers. And yet, this research eventually does contribute to the ability of the planner to do the kinds of studies needed, given the beginning of a process of change. Other papers in this collection<sup>39</sup> indicate the wealth of information available to those beginning planning in a developing country (in this case, two very poor countries), information generated principally by conventional research done outside the Ministry of Education. Some of the research in Cell 1 may already have

<sup>39</sup> Davis, "Information for Planning, and Analysis Capacity in Afghanistan," and McGinn, "Data Sources and Information Available in Paraguay," Harvard Graduate School of Education, Center for Studies in Education and Development.

been done by outside groups.

Research by independent groups could also contribute to the planning-change process in Cells 2 and 10. Independent studies, using high science techniques that define educational problems and causes in the same way as do planners with the Ministry, could play a critical role in mobilization of support for programs of change. In the American experience, there are a number of examples of the use of independent researchers to develop a "scientific" rationale for change in education, sometimes with unexpected consequences.<sup>40</sup> In Cell 11 it may be politically convenient for the "hatchet" job to be done by someone outside the Ministry of Education, especially if the program to be eliminated is strongly supported within the Ministry.

Independent research could also have some more substantive, direct impact on decisions made within the Ministry. This seems likely in Cells 3 and 7. In these cases, most Ministries are unlikely to have the technical competence to do the variety of things that could be done to assess which programs are best given objectives and constraints. Especially given limited time, the Ministry could rely on outside groups to supply the necessary personnel to develop models and designs for research. The use of an outside group in these particular stages provides the Ministry with an opportunity both to get good research done and to repudiate any results or recommendations that are not consistent with the process they are following.

Independent participation in research projects in other stages seems

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<sup>40</sup>The Coleman Study and the later evaluation of Project Headstart are notable examples. See Coleman (1972).

unlikely, and unfeasible, however. What is required is long and intensive involvement in the operation of the system--independent researchers are unlikely either to know or be allowed to find out about what "really takes place" (except, of course, as they can use that information for an expose). Topics in problems of implementation seem to be likely to hold little interest for most academic researchers; Ministries of Education are likely to have the staff competencies to do the studies required.

### 3.3 Implications for Training

The "normative" approach to planning, used as an ideal type in this presentation, is essentially conservative. That is, it would be most helpful in situations where planned change was intended to improve or expand the existing educational system, rather than contribute to the development of one that was radically different. The critical decisions to be made are based on projections from the past; supporting research is designed to avoid errors of commission (with less attention to omission). The features of the dominant science paradigm contribute to conserving what is best in the present, while looking to the future.

An essential part of this conservative approach to educational planning is the centralization of decision-making. Planning, to be meaningful, must be linked directly with centers of power, so that decisions are carried out. If previous normative planning ventures have met failure, it is because planners (many times imported from outside the society) chose to ignore the importance of the political context for decision-making in that

society. If rational planning is to make any sense, there must be some expectation that the recommendations it presents will be put into practice. If the recommendations of planners are to be taken only as one more piece of information to be considered by decision-makers, then the planner's analyses are by definition incomplete. If they are incomplete, the power of the argument for rationalism is lost. Or, in other words, if the deterministic model on which normative planning is based is to be taken seriously, recommendations must be treated as the best or only correct actions to be taken. Centralization of decision-making is then a logical consequence: if we have the correct answers in hand we need not consult peripheral agencies.

In fact, almost all normative educational planning has been done in the context of centralization of authority and decision-making. This emerges clearly in a perusal of national educational plans, in textbooks on educational planning, and in the information requirements for planning proposed by international lending agencies. Participation in decision-making is sometimes stated as a goal, but not taken seriously. There are some governments that have decentralized routine aspects of educational administration (such as supervision, school construction), but these same governments maintain tight control over policy formulation.

I argued, in the presentation of certain stages in the planning process, that research could be used for manipulative purposes, to obtain support for proposed changes as well as intellectual justification for them. Manipulation may be necessary from the perspective of the center, as peripheral

groups are less likely to share allegiances or to be willing to sacrifice local needs for national goals. Manipulation--using big science with computers, large data samples, sophisticated mathematical models--is more feasible for the central government. If a planning agency is going to pursue a normative definition of planning, they should then consider the training needs of their staff in terms of manipulative skills.

### 3.3.1 Skills for Normative Planning

The range of skills that one must have, in order to do educational planning, are broad, as indicated by the variety of kinds of research problems and data that the planner may confront in the various cycles of decision-making and change in an organization. Many of those skills, especially technical skills with respect to data management, cost analysis, projection techniques and the like, have been treated elsewhere. I would like to emphasize four kinds of skills that often do not receive much attention in the training of planners. Each of these would be important for planners in the normative mode.

- 1) Problem identification. Essential for normative planners concerned about the implementation of their recommendations, is the ability to identify those problems that are likely to generate the expenditure of political energy, the "hot issues" that are likely to arouse society and disturb the educational system. As noted earlier, this means use of social science research techniques to identify not only malfunctions in the system, but also to estimate the extent to which various groups within the educational system and in the society in general are likely to become exercised

about those malfunctions. Few if any programs for training educational planners now include attention to development of this kind of analytical skill.

2) Organizational analysis. The planner needs to be able to assess the competence of critical actors in the educational system (in most cases the Ministry of Education), and to devise ways of intervening in the system to raise the level of competence where necessary. In cells 4, 5, 8, and 12 especially, the planner--if he is concerned about implementation--needs to be able to overcome weaknesses of the current staff. The brevity with which research issues in these cells were treated indicates how short is our knowledge of how to proceed. We do know that planners cannot be backroom technicians, that they must be skilled in interpersonal relations, that they must have some facility in analyzing the political environment within the Ministry, and that they must be able to devise actions for improving relations or overcoming unfavorable climates.

3) Science as Theater. If planners are going to do normative planning, in a centralized bureaucracy, relying on manipulation to secure compliance with their planning solutions, then it is important to know how to conduct and present the results of their research so as to have maximum effect. The first step, in learning to do this well, is to de-mythologize the planner's science as a value-free procedure that enables him to identify the truth. That is, students of planning already trained in the scientific method will need to be "de-programmed", their "false consciousness" replaced with a more realistic understanding of what their methods can, in fact, do. This

should mean a more conscious study of the epistemological bases of the rational approach to planning, as well as study of the sociology of knowledge and related fields, that help us to understand the non-rational roles of science. I would also recommend explicit attention to ethical problems inherent in the use of manipulation.

4) Decision and control. Concern for implementation should lead planners to development of better procedures for detecting problems in the execution of orders. This will involve both a better understanding of the process of transmission of information down through the system, as well as the creation of feedback mechanisms in order to keep the center informed of what actually is being done.

### 3.3.2 Skills for Situational Planning

But normative planning is not the only approach possible. Although we do not yet fully understand how situational planning can and should be done, it seems reasonable to assume that we know enough to try it as an ideal-type alternative to the rationalist approach. We can attempt to develop a planning system in which future options are not closed off but opened up, in which we maintain or increase our freedom with respect to what objectives can be pursued and how to go after them.

Among the skills that planners would need to do this are:

1) Sharpening of issues. A major difficulty in educational planning is understanding the problems faced by the system. Normative planning tends to close rapidly on a definition of the problem, running the risk of masking more serious issues. Planners, using technical tools, could however, help relevant audiences to sharpen their perception of issues, by clearer definition of objectives and development of more sensitive indicators.

Dialectical Delphis, charrettes, and other confrontation techniques may prove to be the means to help the various actors define their positions.

2) Definition of interest groups. A related task to the above is the identification of those groups that often are ignored in the political calculus because they do not wield much power, but which can contribute to the improvement of a solution for change. The major research problem, is, I believe, understanding how educational policies affect various existing and yet-to-be-defined groups.

3) Science as Clarification. The technical skills of planning can be used to clarify educational policies and their consequences, as well as to justify them. Although most planners would agree that their function is to provide decision-makers with a wide variety of alternatives from which to choose, in fact the methods used in the normative approach (and the time pressures under which planners work) too often encourage the planner to develop a reduced set of proposals for consideration by the administrator, often presenting only their preferred alternative. Those training to be planners need help in the development of their ability to dream new futures, and their ability to conceptualize those dreams in ways meaningful to educational administrators.

4) Commitment Through Shared Purpose. The objective of the situational planner should be movement toward a social system in which all participants share an increasingly wide set of values, and an increasingly deep understanding of the nature of their relationships to each other. Research that serves to raise levels of consciousness, of individuals and of groups, of purposes as well as of actions and consequences, contributes to the development of commitment through shared purpose.

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