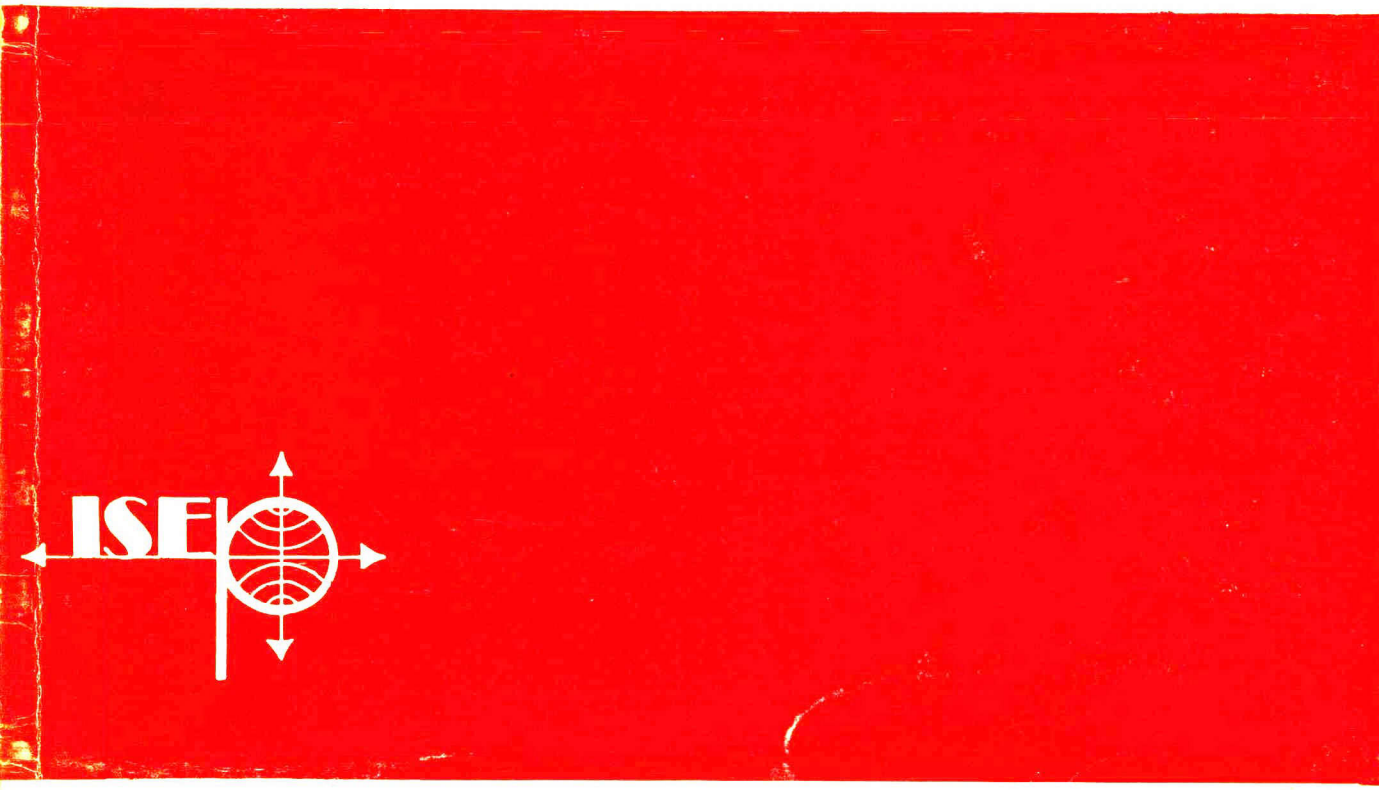
# EDUCATIONAL PLANNING

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# EDUCATIONAL PLANNING

Journal of the International Society of Educational Planners

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**EDUCATIONAL PLANNING AND THE FUTURES PERSPECTIVE – VIEWS FROM NORTH AMERICA**

Guest Editor: Maureen M. Webster

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**Maureen M. Webster* — Guest Editor**

# EDITORIAL

In 1970-71 I had occasion to study the ways in which some elements of the alternative futures perspectives were being implanted in the activities and discussions of planners within the Organisation for Economic Co-operation and Development. The OECD is the largest grouping of industrialized market economy countries, comprising 19 European nations, the United States and Japan, all of them participating regularly in the educational planning programs of the Organisation. Around 1970 there was clear evidence of increasing attention to alternative futures, not just in the areas of science and technology but in education. In science-technology the impetus came from serious concerns about the depletion of world resources and the costs of economic growth. In education, attention to alternative futures reached prominent attention in 1969 meetings and in the basic documents prepared for the 1970 Paris Conference on Policies for Educational Growth.

As I studied the lengthy discussion reports and talked to people engaged in planning and in futures studies at that time, I came to the following conclusion: Planners and futurists differ in their institutional base, their positions in relation to policy making, their perceived influence and accountability, the audiences they address, and the techniques and approaches they use in studying the future of education. There is some healthy skepticism on the part of planners about whether futurists can make a usable contribution to the practical problems of planning and on the part of futurists about the adequacy of traditional planning for examining issues in light of alternative futures. Yet traditional viewpoints in planning are undergoing significant change, and futures research is becoming increasingly planning and policy oriented. There was then, as now, some shared hope that perhaps, if we set our minds to it, we could generate the kinds of education, policies, planning, and action that just might avoid or mitigate some of the dismal consequences of the growth-is-progress, more-is-better assumptions that seem too long to have undergirded planning and policies (or the *laisser-faire* base of explicit planning and policy-making).

Five years later, in June 1975, the International Society of Educational Planners attested the readiness of educational planners to examine their roles and activities in light of the futures perspective. Under the leadership of then-President Tom Olson, the theme chosen for the annual meeting in San Francisco was "Planning for Alternative Futures: The Long and Short of It." We were in good company. The past few years have seen increased attention to futures studies among the ranks of political scientists, historians, sociologists, anthropologists and others, and the new focus has been legitimated by several professional organizations. In common with the members of other professional associations, ISEP members take a variety of stances concerning the incursion of futures studies into their professional bailiwick. These stances cover the spectrum from enthusiasm, through mild interest to indifference or unmitigated skepticism.

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### The "Futures Perspective"

Whatever the perceived merits or demerits of protagonist positions, attention to alternative futures and to the potential intended and unintended consequences of our present actions is essential for those who would exercise the planning profession responsibly. But, what is this "alternative futures perspective" ("futures perspective" for short) that we refer to so easily? Given the propensity of traditional planning to deal with the future in largely extrapolative terms (imposing past and present upon the future) or as a uni-dimensional variation of the present (some aspects of society conceived to change, all others assumed constant), it is well to review the characteristics of the futures perspective. The futures perspective is characterized by particular ways of viewing time and society, by broad and eclectic approaches and methods, and by attention to stakeholders and the nature of participation in the planning process.

As to time, it is not just a matter of looking ahead for an extra-long period of years. Much so-called "perspective planning," involving 15-20 more year time horizons, does not utilize the futures perspective. For a time horizon (the number of years ahead that we attend to) is not the same thing as a time perspective (the way in which we view the future, or the present as seen from the future). The futures perspective requires that we attend to *alternatives*–to alternative assumptions, ends and means. It requires us to examine alternative plausible futures that might be rendered more or less possible by our planning and action; to identify unintended as well as intended consequences for others of achieving the goals that seem desirable to us; to analyze alternative strategies and tactics for achieving any desired future; and to anticipate the variety of potential consequences of our strategies, tactics, and short-run planning. Perhaps most fundamentally, it asks of us that we look hard at our basic premises about the nature of man and the world and consider implications and alternatives for the future.

In the field of educational planning, the futures perspective implies that we not just attend to alternatives in and for education, but also consider the *societal context* in more comprehensive fashion than is usual in educational planning. This means that we must confront the *interdependencies* of societal/educational issues rather than holding constant those changing dimensions that we do not choose to deal with. Among other things, this requires much greater attention to societal considerations beyond the economic growth/manpower needs concerns which were so heavily emphasized in educational planning internationally in the 1950s and 1960s.

The futures perspective postulates a *questive approach* rather than a prescriptive approach to the future: a readiness to keep the future "open," to leave some choices among desirable alternatives for generations to come, rather than colonizing the future by deterministic planning. This approach has implications both for planning methods and the nature of participation in the planning process. As to methods, the approach involves readiness to engage in forecasting as well as futures-casting–a mental movement back and forth across the territory of the future. This approach legitimates and systematically utilizes human imagination, inventiveness and informed judgments in addition to the more traditional social science forecasting techniques.

Imagination, inventiveness and informed judgment are not the prerogative of "experts" or "professional planners" alone. It is thus no accident that the futures perspective is frequently associated with citizen involvement activities and *participatory planning*–though such activities and planning do not, of themselves, necessarily imply the use of the

futures perspective. There are many reasons for considering issues of participation in educational planning, among them the principles of constitutional democracy and the kinds of militant demands prevalent in the 1960s for participation in decision-making. The rationale for concern with citizen participation here, however, arises from the questions raised by the futures perspective. At the macro level, they involve fundamental quality-of-life issues: What future? Whose future? What goals? Whose goals? Whether in society generally or in the domain of education in particular, the ways in which such questions are addressed and answered touch the lives of all of us and of our children. Addressing them cannot be the prerogative or the responsibility solely of "experts" or "professionals" in planning or politics or education. The right and the responsibility to engage in the process of addressing these questions lies broadly in the polity, because the resultant choices, decisions, policies and actions invent the future for all of us. This is not to argue that there are no activities or functions which may be appropriately located in professional planning groups; but it does suggest that we must try to discover anew what those professional activities and functions might be if we are to adopt an alternative futures perspective in planning.

**Contributors to this Journal Issue**

The papers in the present volume all, in some measure, challenge us to examine anew the ways in which we regard the future in our planning activities and the nature of the roles, activities and functions of professional planners should they seek to adopt a futures perspective in their work.

The contributors all participated in some significant way in ISEP's 1975 San Francisco Conference–whether in presentations at the plenary sessions or in the conduct of the sets of workshops on applications of futures thinking in educational planning.

The first four articles are written by people who, if asked their profession, would not call themselves planners. Each, however, has a strong interest in and stake in educational planning; a strong claim, built upon his research status and social action, to speak about the issues addressed; and the courage to present his views to critically disposed audiences of professional planners.

In the first article, *Willis Harman* elaborates on "The Societal Context of U.S. Public Education in the Next Quarter Century". He argues that the most likely future for the United States contains a number of crises during the next decade, that these crises are intractable unless we confront the need to build a new social paradigm to facilitate systemic transformation and the emergence of trans-industrial society. Both the contemporary problems and the incipient crises are reflected in our major educational institutions. Hence the need for strategies of educational reform that will support the basic changes needed. In addressing this difficult and complex topic, Dr. Harman draws upon the major research efforts at the Stanford Research Institute since the 1960s to study alternative societal futures.

Personal experience is the hallmark of the second paper in a somewhat different way. *Hendrik Gideonse* offers us a case study of "The Contribution of the Futures Perspective to Management." In this article he reflects upon his experiences with the federal government and in educational administration at the institutional level. From the time of his involvement with U.S.O.E. in the creation of futures-oriented educational policy research centres, through his ongoing experience as Dean of a college of education, he

avers that "the futures perspective is a kind of dispositional baggage I carry about with me". His serious appraisal of his continuing experience is shared here with our readership.

In the remaining two long articles, contributors focus upon some of the methods associated with futures studies that are being used in educational planning. *Michael Folk* directs attention to "Some Futures Prediction Techniques and their Implications for Educational Planners". He offers a critical appraisal of four of the many techniques employed in futures studies: simulation, extrapolation, Delphi and cross-impact matrix. *Warren Ziegler* and *Grace Healy*, on the other hand, are concerned with futures invention rather than futures prediction. In "The Planner as Teacher and Learner" they describe elements of the futures-invention approach to policy planning and its implications for the roles and activities of educational planners and their clients.

In contrast to the writers named above, those who contributed to the symposia on *Applications of the Futures Perspective at State and Local Levels* are all professionals in educational planning agencies. Their reports suggest some of the variety of interpretation, focus, and flavour that characterizes attempts to translate some elements of the futures perspective into practical planning operations. Clearly, the applications have some elements in common: attention to future alternatives, use of "new" methods, emphasis upon broad participation. But it is equally clear that there are wide variations in the elements of the futures perspective emphasized, as well as in the ways that different groups choose to inject concern for alternative futures into the educational planning arena. Thus, *George Peek* tells us that in Ontario the "approach starts, not with attempting to define education in the future, but with attempting to introduce the future into education". This from-the-student-level-up approach contrasts sharply with Quebec where professional planners are developing within the Ministry of Education "a planning approach based upon empirical data and the elaboration of new alternatives drawn from futures work". The Dallas project described by *Gerald King* made heavy use of Delphi procedures to generate systematic judgments by a wide range of selected people concerning alternative goals and practices for the secondary school of the future. The Palo Alto experience, described by *Rudolph Johnson* and *Thomas McCollough*, adopted quite different procedures, involving "any-and-all comers" as participants. Whatever the starting point or range of procedures, several other districts share the findings of the Palo Alto group: that the introduction of a futures-oriented approach has "made the District planning-conscious, future-conscious, and participation-conscious in fresh and inventive ways".

Lest it be thought that the contributions to this issue sprung ready-made from the San Francisco meetings, let me acknowledge that, although we built upon those foundations, scarcely any of our contributors was free of harassment by the editor. It says much for their tolerance and their interest in the issues and in ISEP that they were generous of time and patience in amending, abridging, elaborating on portions of their work and in allowing editorial license in preparing the published papers. I thank them for their cooperation, and I thank my colleagues at EPRC/Syracuse (Nancy Osgood, Bernard Kaplan, and Sheila Huff, in particular) for their inputs to editorial discussions on several of the contributions to this issue of the Journal.

Willis W. Harman*

# THE SOCIETAL CONTEXT OF U.S. PUBLIC EDUCATION IN THE NEXT QUARTER CENTURY

## Introduction

The issues of American public education and educational reform are not separate and distinct from the conditions, problems, and changes of the larger society; rather, they usually reflect the concerns of the larger society. Thus, when thinking about the ways we need to reform our systems of schooling if we are to be more capable of dealing with the needs of the next decade and beyond, it is imperative to consider future changes in the larger society—for these will surely have their impact on the schools.

There are two types of question that are particularly useful to ask about such future changes in the societal context of the schools. First: What sorts of future changes seem *most likely*? These generate the issues that for good or ill will probably have to be confronted. By anticipating them, the schools may be able to rise above the "crisis reaction" mode of policy making. Second: What sorts of future changes seem *most desirable*? These include issues that arise when the likely changes are ones that we would like to avoid and issues that are always there to challenge us when we think of "what ought to be" rather than "what is".

In making this sort of inquiry, it is also imperative that we step beyond what could be called "status quo thinking" and really grapple with fundamental alterations in the social fabric that might be necessary if a desirable future is to be achieved. Only by so doing can we hope to respond adequately to the challenge of promoting truly meaningful reform of our schools.

If there is a felt crisis in American education, it is probably symptomatic of a deeper crisis in modern industrial society. Many see current criticism of the schools as part of a more general disaffection with the fruits of the industrial era. If this is true, then it is important that programs of reform avoid superficial remedies and view educational issues in the context of broader, whole-system changes. This is the thesis pursued in the present article. We start with some assertions regarding the meaning of contemporary societal challenges and change. On the basis of these assertions, a scenario is described for the medium-term future (i.e., the next 10-30 years)—one which is certainly possible, perhaps probable. The arguments presented are based upon a program of alternative futures research started by the U.S. Office of Education in 1967 and continued since with support from various sources.[1]

There are, of course, alternative interpretations of present societal developments, and there are alternative future histories and scenarios which could be generated and examined. None of the basic assertions made is demonstrable; all are challengeable. Their purpose is to induce questions, thereby raising awareness, and to provide a conceptual framework into which observations can be placed and tested so that the picture may become more or less plausible.

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Similarly, the purpose of the scenario presented is not to predict the future but to make explicit a set of assumptions about the future. Recognizing the uncertainty inherent in any assertions about the future, it is prudent to test policy alternatives not only against the expected future, but also against other future developments which might occur. To this end, some of the forces favouring educational reform are identified in the scenario outlines as well as some constraints which will tend to make educational change difficult. The product, it is hoped, is a framework that may facilitate a more fruitful dialogue regarding contemporary educational issues and problems.

### "Systemic Crisis" v. "Post-Industrial" Perspectives

The argument elaborated below builds upon the basic premise that the free-enterprise system and the industrialization mode on which its success if overwhelmingly based appear to be in trouble. There is enough evidence of this to suggest—though not to demonstrate conclusively—that the system may be in serious jeopardy and that the crisis may be a fundamental one.

In stating this, we are quite aware that the case for crisis is not proven—in fact, cannot be proven until after it is too late to do anything about it. Powerful arguments have been advanced for a more optimistic view. Herman Kahn, for instance, presents an impressive case for a "post-industrial perspective". In this perspective, within the next century "the more desperate and seemingly eternal problems of human poverty will have largely been solved or greatly alleviated, . . . most misery will derive from the anxieties and ambiguities of wealth and luxury, not from physical suffering due to scarcities, . . . [and] the post-industrial economy should be close to a humanistic utopia by most historical standards"—if we just do not falter or lose our nerve now. Problems of "spaceship earth" limitations, resource depletion and shortages, rich-poor gaps, increasing pollution and supposed deterioration of "quality of life" are, in this perspective, surmountable when approached with "technological progress . . . the systematic internalization of relevant external costs . . . the normal use of the price and other market mechanisms . . . and some degree of public regulation and international cooperation".[2] Given new technology and capital investment, there will be an economic surplus for dealing with problems and crises, and "if we are reasonably prudent and flexible we will not have to contend with any really serious shortages in the medium run, and the long run looks even better". In other words, according to Kahn, there is no systemic crisis—just a *crisis of will.*

In sharp contrast to the "post-industrial" image of the present and the future, it is argued here that there is a systemic crisis and a need for systemic transformation if the fundamental humane values underlying the democratic free-enterprise system are to be preserved. There is also not only a crisis of will, but a *crisis of perception*—of seeing and understanding the need so that the transformation can be as non-disruptive and non-destructive as possible.

The nature and dimensions of this systemic crisis will be difficult for us to see—not simply because the societal system is complex, but also because we have a large psychic investment in not seeing it. The phenomenon of "massive denial" is well known in psychotherapy: an emotionally disturbed person will resist and avoid the very knowledge he most needs to resolve his problems. A similar situation probably exists in society. There is suggestive evidence both in anthropology and in history that a society tends to hide from itself knowledge which is superficially threatening to the status quo but which

may be badly needed for resolution of the society's most fundamental problems. There are multiple signs that industrially advanced societies may be approaching a societal "nervous breakdown" and that accurate perception of the unworkability of our old ways is extremely threatening and largely resisted.

Besides the post-industrial and the systemic-crisis perspectives, there are a number of other views. Some of the pessimists, such as Robert Heilbroner, see the need for a systemic transformation and do not think we will make it.[3] Some of the "humanistic optimists" (in contrast to the "technological optimists" like Kahn) see the need for a transformation but perceive it happening smoothly, without serious disruption—Charles Reich[4] and George Leonard,[5] for example.

### Systemic Dilemmas of Industrialized Society

*Basic Dilemma: The Industrial Era Paradigm*

The democratic-capitalist-scientific-technological-industrial-business-government system, as it has evolved in the United States and other advanced countries, has been a fantastic success by material standards. However, its successes now constitute our most serious and fundamental dilemma. This is because:

(a) *the basic premises that have dominated the industrial era* (including emphasis on individualism and free-enterprise material progress, social responsibility mainly the concern of government, few restraints on capital accumulation, etc.),

(b) *and that involve striving toward a set of fundamental subgoals* (including efficiency, productivity, continued growth of production and consumption, and continued growth of technological and manipulative power),

(c) *have resulted in processes and states* (e.g., extreme division of labour and specialization, cybernation, stimulated consumption, planned obsolescence and waste, exploitation of common resources) *which*

(d) *end up counteracting human ends* (e.g., enriching work roles, resource conservation, environmental enhancement, equitable distribution of the earth's resources).

As a consequence, there is a growing challenge (from consumers, minorities, environmentalists, workers, civil libertarians, and other citizen groups) to the legitimacy of basic system goals and institutions. A massive loss of faith and general malaise are accompanied by economic instability and seriously reduced legitimacy of established authority.

This concise statement may seem to be a gross oversimplification. But simplifications are useful if they lead to new and useful orderings of observations and data. A number of current social analyses are along the above lines. This central dilemma has led Galbraith[6] to call for a "new socialism", Heilbroner[7] to call for "state capitalism", and Skinner and others[8] to propose the need for new and powerful behaviour-shaping technologies to solve the problems. Daly[9] and Boulding[10] argue that we need an end to growth addiction and the development of a steady-state economy—but the majority opinion among economists seems to be that continued growth is essential for the solving of our immediate problems.

*Four Systemic Dilemmas*

The major problems of contemporary society are deeply rooted in the basic industrial-era paradigm outlined above—the whole pattern of perceiving and believing, of valuing

and acting associated with that era's view of reality. Four systemic dilemmas that are likely to be unresolvable without major system transformation concern problems of growth, control, distribution, and work-roles.

1. *The Growth Dilemma.* The environmental and social costs of continued exponential growth in energy and materials usage and economic growth in the forms we have known appear to be unacceptably high. But the costs of stopping that growth also appear to be unacceptably high. In the latter case the costs take the form of economic decline, unemployment, and the further alienation of those with low incomes whose "slice of the economic pie" stops increasing.

2. *The Control Dilemma.* It is a truism that practically all contemporary societal problems are the result of past technological successes. Thus the society is beginning to demand "technology assessment" (which is a euphemism for anticipatory control), to reduce future negative social and environmental impacts of new technologies. Put bluntly, we are talking about intervening in the early stages of technological research and development to control what technologies are developed and applied. On the one hand, such interference in the free enterprise system seems imperative; on the other hand, it clearly puts in jeopardy certain basic characteristics of the private market system as it has been known in the past.

3. *The Distribution Dilemma.* Industrialization is power, and power has a natural tendency to aggregate. Those with little power are less able to acquire more, or even to protect what they have. "Them as has, gets," as the saying goes. The gap between the rich and the poor inexorably widens. Stability of the planetary order cannot be achieved when some millions are starving and other millions are compulsively consuming and wasting; yet within our industrial system there is no suitable mechanism (or even philosophy) for redistribution. The problem cannot be resolved by making the poor nations more productive along the lines of industrial development, because the planet could not support all the peoples of the world consuming and polluting at the U.S. level. On the other hand, it certainly seems unlikely that the advanced nations will voluntarily reduce their material standard of living to redistribute wealth to the rest of the world. The market mechanism does not of itself include consideration of severe inequities in distribution, just as it does not consider future generations or social and environmental costs.

4. *The Work-roles Dilemma.* This may be the most serious problem area of all, because we have so effectively concealed from ourselves its frightening dimensions. Industrial society is increasingly unable to supply an adequate number of meaningful social roles.

Legitimated social roles in an industrialized society tend to be job-centred: having a job, being married to someone who has a job, being a student preparing for a job. But the number of jobs provided by the system is only artificially and with great strain brought close to the number of contributive roles needed. (Estimates of "real unemployment" range from 25% to 35% of the potential work force—taking into account nonworking women who desire jobs, the young and the elderly who are squeezed out, the despairing who no longer seek work, disguised featherbedding and makework, and "holding institutions" such as reform schools and mental institutions). The ability of new technology to create more jobs is limited by "new scarcity" considerations, discussed below.

If unemployment were only an economic problem, it could be handled with some sort of income maintenance program. But unemployment is also, and more fundamentally, a psychological-cultural problem. Increasing numbers of people are defined out of the mainstream, labeled as having little or nothing to offer in what are taken to be the primary activities of the society, and come to accept for themselves the damning self-image of being superfluous. In a modern society where productiveness comes from occupying a position in a productive organization, the individual without the organization is unproductive and ineffective; unemployment and underemployment endanger effective citizenship and self-respect.

*"The New Scarcity"*

These four dilemmas appear to be unresolvable without systemic change. They represent tradeoffs that grow steadily more intolerable, or situations that steadily worsen. The first three—the dilemmas of growth, control, and distribution relate closely to what may be called a "new scarcity" which is not being adequately dealt with using the "old economics". Where scarcity (of food, potable water, construction materials, clothing materials, etc.) has existed in the past, it has been successfully considered as remediable by advancing frontiers and improving technology. In some senses it has thus been all but eliminated in the advanced nations. The "new scarcity" is of a different sort. It arises from *simultaneously* approaching the finite planetary limits of (a) natural storehouses of fossil fuels and strategic minerals, (b) natural fresh water, (c) food-productive land, (d) habitable surface area, (e) the ability of the natural environment to absorb the waste products of industrialized society, and (f) the ability of natural ecological systems to absorb interventions without risking ecological catastrophes that threaten human-life-support capabilities (where the needs for human life include aesthetic as well as physiological demands). These must be considered together because they are interdependent.

The fourth dilemma—the inherent shortage of work-roles in the present system—has provoked anxiety for the past half century, but it has been partly disguised and artificially alleviated by wars and preparations for war. It was forecast as a key problem of the future in Donald Michael's work, "Cybernation: The Silent Conquest".[11] For a time it seemed that this might have been a fallacious cry of "wolf" and that technology really would generate more jobs than it displaced. But the "new scarcity" changed that. As Margaret Mead has put it succinctly, "The unadorned truth is that we do not need now, and will not need later, much of the marginal labour—the very young, the very old, the very uneducated, and the very stupid".[12] To say nothing of the very specifically trained —in aerospace and automobiles, for instance.

The work-roles dilemma interacts particularly with the growth dilemma. The primary barrier to doing otherwise reasonable things about energy and resource conservation and environmental protection is the fear that these actions might eliminate jobs. The overall consequence is vacillation or paralysis.

### Changing Images of Man and Society

The image of man held by a society affects the way a society deals with problems of distribution, control, work-roles, growth and scarcity (and with other aspects of societal life, such as the educational system and its goals). The dilemmas we have discussed are apparently unresolvable in the industrial-era paradigm, with its technological imperative, its ascription of high value to system goals of efficiency, productivity, growth and con-

sumption, and its underlying views of "economic man" and the "good society". Our analysis suggests that if the dilemmas are to be resolved, a whole-system transformation seems to be needed, and the industrial-era paradigm must give way to another. The matrix (Figure 1) attempts to indicate the interrelatedness of the four dilemmas and the cultural crisis, and suggests that the five areas taken together are resolvable, given a new paradigm.

Are there any indications of durable changes in basic values and beliefs which would support systemic transformation and the ultimate emergence of a viable trans-industrial society? We submit that currently in our society there are such indications of a shift in basic assumptions: an awareness of the need for a new social paradigm together with an emerging image of man which would support societal transformation. Indicators of forces pushing for a transcendental image of man may be identified in observable cultural changes and in contemporary developments within science. Space constraints here allow only a brief treatment of these topics; they are discussed and documented more fully elsewhere.[13]

Survey and poll data, cultural indicators such as organizations joined, books read, incidence of "consciousness-expanding" activities such as yoga, meditation, biofeedback —these offer indications of changing values and attitudes in the direction of a "new naturalism", and a growing interest in the spiritual, mystical, transcendental, supra-rational, and esoteric.

But the case for emerging and durable changes in values and beliefs does not rest solely on the growth of "new transcendentalist" movements. If there were nothing else to point to, these might be dismissed as mere manifestations of religious cultism such as often accompany periods of traumatic change. What cannot be readily dismissed, however, are the new emphases and findings in science which tend to support the spontaneous belief-system changes of a more popular sort.

One such development has been the discovery of the existence of a host of measurable physiological and physical correlates to inner, private, subjective experience: rapid eye movement, galvanic skin response, muscle tensions, electric and magnetic fields around the body, EEG components, etc. These new probes and tools are being used to explore "altered states of consciousness", and have already borne fruit in important research findings. Thus science has legitimated the systematic exploration of those realms of human experience in which our deepest value commitments have their source and which had heretofore been left to religion and the humanities. A variety of new and effective teaching techniques are already resulting therefrom.

Even more revolutionary in its implications is the evidence that a whole range of so-called "psychic" experience—from telepathic and clairvoyant perception to psychokinesis and mystical consciousness—may be a universally latent capacity of man, seldom observed because it is almost totally repressed.

The scientific frontier developments are important. But more significant perhaps than the specific research findings is the new emphasis in science itself. For, wherever the nature of man has been probed deeply, in Eastern or Western traditions, the paramount fact emerging is the duality of our experience. Mankind is found to be both physical and spiritual, both aspects being "real" and neither fully describable in terms of the other. Scientific and religious metaphors are complementary, as are the wave and

Figure 1 A MATRIX ATTEMPT TO DISPLAY THE INTERRELATING NATURE OF THE SOCIETY'S FUNDAMENTAL DILEMMAS AND HENCE THE REQUIREMENT OF WHOLE SYSTEMIC CHANGE FOR EVENTUAL RESOLUTION

| Fundamental Dilemma | Nature of Resolution | Requirements for Resolution | Resolution would contribute to |
|---|---|---|---|
| Growth | Movement toward a "frugal society." | Ecological ethic.<br>Resolution of the work dilemma. | Resolution of distribution dilemma<br>Easing of resource, environmental problems, hence of technology control. |
| Work-roles | Commitment to "full and valued participation" as a fundamental political right;<br>institutionalization of a "learning-and-planning" society. | Self-realization ethic.<br>Meaningful "central project." | Resolution of growth dilemma.<br>Resolution of distribution dilemma. |
| Distribution | More equitable distribution of the earth's resources.<br>Overlapping supranational institutions forming a planetary regulatory system (with important roles being played by private-sector and voluntary-sector institutions). | Ecological ethic.<br>Movement toward a "frugal society" in the rich nations.<br>Resolution of the work dilemma. | Reduction of world tensions, nuclear threat.<br>World stability. |
| Control | Multi-level citizen participation network for technology assessment and control. | Ecological ethic (to reduce tendency to approach problems in adversary mode).<br>Consensual goals centring on a new central project. | Resolution of growth dilemma. |
| Cultural crisis (alienation, lack of agreed-upon goals, low trust in instit.). | New "central project" centring on a revised image of man, a "new transcendentalism".<br>Progress toward resolution of the four dilemmas above | Whole-systemic change. | Resolution of all four dilemmas. |

particle metaphors for light; neither displaces the otther. The emerging image of man derives none of the conclusions of science in its contemporary form, but rather expands its boundaries. It restores, in a way, the balance between the Middle Ages' preoccupation with the noumenal and the industrial era's preoccupation with the phenomenal.

The issues involved here are crucial ones. Indeed, if the analysis is accurate, we may be experiencing the beginning of an institutional and cultural transformation as profound in its consequences as the Industrial Revolution, and simultaneously, a conceptual revolution as shaking as the Copernican Revolution.

History gives us little reason to take comfort in the prospect of fundamental and rapid social change–little reason to think we can escape without the accompanying threat of economic decline and social disruption considerably greater than anything we have experienced or care to imagine. If, in fact, a fundamental and rapid change in basic perceptions and values does occur, such a chaotic period seems inevitable as the powerful momentum of the industrial era is turned in a new direction and as the different members and institutions of the society respond at different speeds. Thus, although the scenario to be sketched below is in the end a hopeful and constructive one, it makes no assumption about orderly transformation. A great deal depends upon a correct understanding of the nature of, and the need for, the transformation which is upon us.

### A Scenario of Systemic Transformation

Thus far, we have set forth our assumptions and analysis concerning major contemporary societal dilemmas, their intractability unless they are approached through whole-system transformation, and the indicators of an emerging transcendental image of man which could support systemic transformation. And we have suggested that resistance to change, or "massive denial" by industrial society with regard to its dilemmas will have to be confronted in any transformation process.

In line with our analysis, what might be the future-history of the next decade? This section of the paper offers a scenario of societal transformation. The subsequent section seeks to identify forces likely to support or impede educational reform in line with that scenario.

Our "most likely" scenario postulates for the next five to ten years a succession of crises: energy and materials shortages, environmental deterioration, ecological catastrophes, famines and plagues in the poorer nations, worldwide continuing inflation, economic decline, exposés of political corruption, revolutionary episodes, terrorism and sabotage. These will be most accurately interpreted as symptoms and indicators of the transformation going on at a more subterranean level. They may seem to have apparent and separate causes, but they are more fundamentally related to a massive social wrenching taking place–something like the century of irrational religious wars and disruptions that characterized the Reformation period in Europe (but compressed into a decade).

Because these events are not generally understood as the labour pains of a rebirth, there will be violent differences of opinion as to the responses to make. In the beginning, a decreasing majority will argue for an extension of past trends and patterns. Their arguments will follow these lines: Although there may be temporary needs for controls, governmental regulation in general is to be avoided and free-enterprise competition and the market mechanism relied upon as in the past. Rising materials and fuel prices will

automatically take care of mineral and energy shortages. Peoples' desire for clean air and pleasant environments will result in the costs of environmental cleanup being included in the price of potentially polluting goods and services. Technology can be counted on to create more jobs than it replaces. People are always insisting that the present crisis is uniquely apocalyptic, and then some new technological development shows us how wrong we were. Such will be one view, but events will gradually demonstrate that the challenges are more fundamental than was thought.

Meanwhile two other modes of political thought will gradually gain strength. One is a "new socialism", urging the need for more and more centralized planning and control over those decisions which in a period of smaller organizations and a frontier economy were adequately made in the marketplace. The other is a humanist-environmentalist reaction, calling for abandonment of the growth addiction, aiming at drastically lowered economic and technological growth and increased emphasis on quality of life, conservation of natural environments, and a more person-centred society. As time goes on, it will become clear that economic decline and depression will take care of limiting growth, and the real task is to keep the economic structure from falling apart completely.

Strife will become the order of the day. Domestically, strikes and demonstrations punctuated by frequent episodes of violence will make the keeping of internal order a national task of the highest priority. Internationally, competitiveness over scarce resources, particularly food, will result in persistent tensions and outbreaks of armed conflict and frequent acts of terrorism including nuclear blackmail by revolutionary groups who have gained access to the requisite technology. The multinational corporations will be among the few forces tending to hold together the shattered remains of a once nearly unified world economy.

#### Characteristics of a "Workable" Trans-industrial Society

Slowly and painfully the construction of the new order will begin. Gradually it will become apparant that the trans-industrial society to be "workable" (in terms of being able to achieve its own avowed goals) will have to possess certain characteristics, in particular:

(a) If it is to be reached through a transition that is not completely disruptive, it must build upon the past. Most existing institutions (e.g., multinational corporations, the Congress, the stock market, the advertising industry, the military establishment) will remain with more or less the same external form, although their operative goals may be significantly different from past goals.

(b) Although it must be an equilibrium society in some sense, to adapt to the limits imposed by the "new scarcity", it must also be open to myriad innovations, flexible and adaptable, and it must celebrate diversity. Probably its vitality will come partly from having strong public, private, and voluntary sectors.

(c) It must eliminate structured social and environmental irresponsibility. That is, the overall incentive system (economic, community approval, enculturated mores, etc.) must foster ecologically wholesome behaviour, in the broadest sense. Thus, for example, the "consume and waste" ethic of the old industrial society will seem criminal. This will be a frugal society, with incentives built in to recycle everything and to keep even that recycling at a minimum by encouraging durability of goods.

(d) It must be a "learning and planning society," with each person assured the right to be a full and valued participant ("beyond full employment").

(e) It must be guided by an "ecological ethic" emphasizing the total community of all life-in-nature and a "self-realization ethic" placing the highest value on development of selfhood and declaring that an appropriate function of all social institutions is the creation of an environment that will foster such development. (These two ethics are complementary, not inconsistent.)

(f) Large private-sector institutions must be recognized as quasi-public and responsible to the public affected by their actions. Outputs of the private sector must be widely recognized to be not only goods and services but also meaningful work opportunities.

(g) The society must have discovered an inspiring "central project". This will be along the lines of aware participation in the evolutionary process and in the building of an ever more humane society. Emphasis on technological achievement will remain, but directed by the new guiding ethic toward the ends of increasing human awareness, inner freedom, and self-determination. The ideal of democratic and free-enterprise institutions will be reaffirmed as most congenial to the promotion of these evolutionary goals. However, the objectives they pursue in practice will be very different from those of the "consumption and growth" era of the late industrial period.

The above scenario may seem a fantasy. As we noted earlier, others who have studied the future come to different conclusions. Daniel Bell and Herman Kahn, for example, foresee no such abrupt transition as we have portrayed and envision a post-industrial society that amounts to a continuation of Kahn's "basic long-term multifold trend" that has characterized the past several centuries. We would urge again consideration of *alternative* paths to the future and the testing of strategies against more than one alternative future context.

### Forces Fostering and Impeding Educational Reform

Based upon consideration of alternative future contexts (the above scenario being included as one of the plausible futures) and upon a set of issues that seem common to a variety of the more plausible alternative futures, we may derive perspective concerning forces that foster and impede educational reform, as well as suggestions for appropriate strategies of reform.

It is convenient to distinguish between current and future forces impeding and facilitating reform because a variety of forces are expected to come into play in the future which at present are only beginning to become apparent.

#### *Current Forces Promoting Reform*

It is hard to identify the most potent of the current forces promoting reform, although each "expert" has his or her own views. Certainly the spate of recent books portraying discontent with the schools and in the schools is one such force.[14]

More telling, however, are the arguments that the schools as presently structured were designed with an earlier societal context in mind, but that today's changed and changing societal context requires reform. Coleman[15] has documented how some of the functions that schools once performed have become outdated while other functions require emphasis. In particular, in a knowledge-rich society the function of passing on vicarious

knowledge has become far less important than it once was. On the other hand, while youth are maturing earlier, opportunities to find meaningful social roles have decreased; thus the function of providing such roles is more important in the schools.

But even more fundamentally, if the society is in process of constructing a fundamentally revised social order, the function of preparing for that order requires reform of the educating system.

Not only does the changed societal context bring needs for reform, the changed clientèle increasingly demand it. In the United States we are now in something like the seventh generation of universal elementary schooling and the third of universal secondary schooling. Economic levels are up, as are nutritional levels. These successes of the American economic and educational systems result in students being less concerned with what Maslow has termed "deficiency needs", and more concerned with "self-actualization" or "being" needs.[16]

A somewhat perverse force promoting school reform stems from the twin problems of declining enrollment and tightening school finance already being faced by most districts. Such "problems" can also be seen as opportunities, although this often requires real courage. For instance, consideration of the fact that fully 80% of most district expenditures in California go toward personnel costs is suggestive of structural reforms that would use the school staff and community resources more efficiently, even if that meant an appreciable cutting down on the size of the most costly staff persons in the school. Although such a strategy might presently seem infeasible, several of the forces for change that appear likely to operate within five years might make it feasible.

Lastly, it is worth while noting that attempts to solve societal problems through the schools will continue. The arguments that poverty, racial discrimination, and like problems can be cured by schooling continue to be persuasive to many in spite of the disillusionments of the past decade. Such arguments will probably continue to be a force for reform—and we shall probably continue to be disappointed.

*Future Forces that would promote Change*

Perhaps the most tangible force for change in the schools that has a strong likelihood of occurring within the next five years would result from a successful class-action law suit challenging the seniority aspect of tenure laws. Legal theories for such a suit are currently being developed and appear quite feasible. Also, the emerging "human potential" and student liberation/student rights movements can be expected to exert pressures for reform, especially as both of these movements appear to be developing explicit political strategies of influence.

These movements, together with the declining enrollment/financial squeeze/teacher surplus issues might lead to an increasing perception of the schools, structured as they are now, as being overly "fat" and resistant to needed change.

In the longer term, however, events of the larger society are likely to provide a more profound set of forces for change in the schools. As the earlier discussion indicated, it is not unlikely that the future will bring a series of related crises. The "new scarcity" will bring its set of difficulties, and the stability of the economic system will likely be severely threatened, as will the viability of the entire political system as it finds itself unable to cope with the increasingly difficult societal problems. A widening of perceptions that the

industrial era is at its end would then create strong demands that the schools educate their students toward new emerging values and provide new types of knowledge that would then be considered urgently needed.

Finally, there are the new educational approaches and techniques that are emerging from studies of "altered states of consciousness" research and from the "new image of man" with its dramatically expanded understanding of human potentiality. To cite but one example, the Bulgarian psychologist, Georgi Lozanov, has combined the ancient techniques of yoga and the modern techniques of suggestion to create a whole new "suggestopedic" method of instruction.[17] When applied to conventional intermediate school curricula, it is claimed that the method yields equivalent cognitive gains in a fraction of the student time expended, and with the added gains of improved attitudes toward learning, almost zero truancy, and vastly more relaxed conditions in the classroom.

*Forces Inhibiting Reform*

Several forces that will tend to impede educational reform may be identified.

*Lack of Flexibility, Lack of Money, and Lack of Needed Research.* These are some of the aspects of the context of education that are not conducive to reform.

Two factors especially contribute to the lack of flexibility. Demographic influences are yielding declining enrollments in most schools, so that it is difficult with existing tenure regulations to hire new teachers. The growth of teacher unionization and the increasingly common comprehensive contract contribute to the difficulty of experimentation and structural change.

Lack of money shows up in various ways. The declining school age population leads to lowered revenues and to retrenchment. Very little discretionary money is available except for early childhood education, and there is little public sympathy for compensatory educational efforts aimed at adolescents. Money is lacking for innovation and for in-service training.

There are important gaps in our research knowledge, particularly in the area of education of disadvantaged adolescents.

*Structural Problems of the Educational System.* Various aspects of the structure of the educational system tend to impede reform—in particular, inadequate linkages of schools of education to the schools, inadequate technical support for in-service training, and rigidity of departmental structures. Schools of education are relatively unprepared to support on any broad scale new approaches and new techniques in education. With limited freedom to hire new faculty, they are not likely to improve in this respect. Schools of education will probably continue to direct their efforts primarily to highly publicized model programs of limited enrollment and limited long-run impact. Finally, the existing compartmentalization of instruction in secondary schools acts as a strong inhibition to the integration of knowledge or to any newer and more suitable re-compartmentalization of knowledge.

*Significant Barriers to Innovative Approaches.* Alternative schools approaches, although in some respects very promising, encounter difficulties because of lack of adequate and societally approved output measures. Cross-age teaching, another innovation with many attractive aspects, encounters rigidities in the school structure and is

threatening to some teachers both from economic and ego aspects. Work-study programs and community-based learning innovations also run into difficulties. The existing system has limited ability to absorb and integrate very many students into "real world" situations; and in general there is a lack of match between the insights and goals of school, business, and community persons.

*Threatening Aspects of the Societal Climate.* If the scenario described earlier is anywhere near the mark, the general confusion and intermittent disruptive crisis atmosphere of the next decade will tend to make the society less able and likely to undertake ordered reform (at a time when it needs it most). For one thing, it will be difficult to obtain consensus as to what should be done in a period of heightened intergroup tensions. Levels of felt economic and political threat will be high, and suspicions will distort and impede communication and experimentation. These threatening aspects of the post-industrial transition will tend to create a climate that it not conductive to reform.

### Toward a Strategy for Reform of Education

As emphasized earlier, the issues of American public education and educational reform are not separate and distinct from the conditions, problems, and changes of the larger society. In brief, the effects of the societal context on the schools may be viewed in three ways: (a) as components of societal problems (e.g., campus disorders as part of general dissension, segregated schools as a consequence of segregated housing); (b) as demands made on education as a result of societal problems (e.g., education of the disadvantaged, ecological education); and (c) as intra-system stress related to social change (e.g., conflict over professionalization, tenure, unionization, etc.; controversy over behaviour-shaping versus freeing-to-grow approaches).

There are at least five necessary characteristics of a strategy for reform consistent with the foregoing discussion.

(1) *A realistic reform strategy must be a time-phased strategy.* If the earlier argument that society is passing through a major transition is deemed plausible, this strongly suggests the need for a time-phased strategy. Citizen perceptions of the situation will be changing rapidly; despair and optimism will fluctuate erratically; economic and political factors will be in flux. Any reform that could be accomplished now would soon be obsolete. The reform that might be needed a decade from now would not be politically or practically feasible in the very near future.

(2) *The strategy needs to be anticipatory and flexible.* Major realignments in society are implicit in the transformation described—particularly with regard to the role of work in the life of the individual, the place of work roles in the "central project" of the society, and the goals of commerce and industry. As these change, violent stresses and strains will tug at the educational system. Anticipating the directions of such changes will aid in weathering some rough transition storms. For example, if the anticipated depression materializes, the natural tendency might be to concentrate on narrow vocational training to prepare students for a tight job market. However, if the economic crisis is understood as a temporary concomitant of systemic change, this suggests that it would be more appropriate to encourage broad understanding of the societal crisis, development of self-awareness, and self-initiated and self-appropriated learning. A recent article by Harrison and Westerman[18] suggests that we may already be in such a situation. They cite data indicating that public school teachers are reinforcing behavioural charac-

teristics they perceive necessary for economic success in present society, but which the teachers personally do not believe are the best characteristics for children to develop.

(3) *The strategy needs to reflect changing functions of the schools.* Broadly speaking, schools might be viewed as having the following functions:

- guardianship
- fostering acquisition of knowledge and skills
- sorting, labelling, gatekeeping
- socialization and enculturation
- desocialization, promoting transcendence of a particular time- and space-bound culture, Socratic self-knowledge.

The first and second of these are probably of decreasing importance; the fifth is of increasing importance—for reasons suggested earlier. The sorting-and-labelling functions will be open to continuing criticism, partly because it tends to interfere with the educational functions of the school (by promoting excessive competitiveness, for example), but more importantly because it is perceived as one of society's main ways of protecting the privileges of the middle classes from challenges by the underclass.

(4) *The strategy may have to include some rearrangement of responsibilities among other social institutions.* Responsibility for education may become less and less a monopoly of the schools. Providing an educating environment may become a more diffused responsibility, shared by an assortment of social institutions, especially as lifelong learning becomes recognized as an essential attribute of an advanced society. The whole distribution of education in space and time will probably be undergoing change. As a consequence, quite new relationships between schools and other institutions may be required.

Consistent with the diffusion of responsibility for education is the requirement that the schooling of the future be made up of diverse paths, using diverse approaches, but oriented toward common and varying ends. As these requirements are difficult to meet through centralized techniques of planning and control, the strategy should emphasize decentralized mechanisms of reform.

(5) *The strategy should include legitimated roles for youth.* It may be that youth are better able to perceive the needs of the future than are most older persons.[19] Certainly most young persons feel left out of meaningful participation in the governance of their education. Furthermore, the society cannot at present provide enough satisfactory and legitimated roles to go around, and the elderly and youthful are the easiest persons to squeeze out. While the lack of meaningful work roles cannot be altered short of some overall systemic change in the society which the schools alone are impotent to bring about, there is much that school reform could do to help this problem. Strategies like the Canadian Local Incentives Program (making funds available for small groups who initiate socially desirable projects), sponsored not only by the government, but also by the private sector, may be useful small steps in the right direction. At the very least, strategies for school reform should explicitly include and encourage the formation of *ad hoc* groups of persons—both young and old, both "teacher" and "student"—who would simultaneously carry out the agenda of reform and the mission of self-education.

### Plans, Planners and Alternative Futures

Plans and policies for development and/or change in education need explicitly to anticipate the future–both that which is believed likely and that which is deemed desirable. In this paper, we have argued that the *most likely* future for the United States contains a number of crises during the next decade, that these crises are intractable given the underlying premises of our industrial system, and that a fundamental systemic dilemma exists which must be faced and resolved if other dilemmas are to be overcome and a *desirable* future is to be achieved. We have argued that a workable post-crisis society seems possible to achieve, given contemporary forces that suggest the emergence of a new image of man and society–a new paradigm which will facilitate systemic transformation and the emergence of a trans-industrial society.

Both the contemporary problems and incipient crises are reflected in our major educational institutions. So, too, any fundamental approach to resolution of systemic problems incorporates implications for basic strategies of educational planning and reform. The latter part of the paper sketched some characteristics of reform strategies in line with our analysis.

Educational planners and policy-makers all make assumptions about the future in their work. The challenge offered here is to explicate, develop and examine these in broader, more holistic fashion and in longer time perspectives than is often the case. Alternative sets of assumptions, alternative scenarios, and alternative interpretations of educational implications could be developed. We have set forth those we find most compelling on the basis of our own research and reflection. The intent has been to offer a perspective and a framework into which observations can be placed and tested and which may facilitate a more fruitful dialogue concerning contemporary educational issues and problems in the context of present and future society.

#### REFERENCES


1. W.W. Harman, *The Nature of Our Changing Society: Implications for Schools.* Eugene, Oregon: ERIC Clearinghouse on Educational Administration, 1969; W.W. Harman, *Alternative Futures and Educational Policy.* Menlo Park, California: Stanford Research Institute, Educational Policy Research Center, February 1970. Memorandum Report No. 6; W.W. Harman, R. Ryne, and O.W. Markley, "The Forecasting of Plausible Alternative Future Histories: Methods, Results, and Educational Policy Implications", *Long-Range Policy Planning in Education.* Paris: Organisation for Economic Co-operation and Development, 1973.
2. For a succinct statement of Kahn's perspective, the reader is referred to: Herman Kahn and William Brown, "A World Turning Point–and a Better Prospect for the Future" and Herman Kahn, "Things are Going Rather Well: A State-of-the-World Message", *The Futurist*, Vol. 9, No. 6, December 1975, pp. 284-292.
3. R.L. Heilbroner, *An Inquiry Into the Human Prospect.* New York: W.W. Norton, 1974.
4. Charles Reich, *The Greening of America.* New York: Bantam, 1971.
5. George Leonard, *Education and Ecstacy.* New York: Dell, 1969; and George Leonard, *Transformation.* New York: Dell, 1973.
6. John Kenneth Galbraith, *Economics and the Public Purpose.* Boston: Houghton-Mifflin, 1973.
7. Heilbroner, *op cit.*
8. B.F. Skinner, *Beyond Freedom and Dignity.* New York: Knopf, 1971.
9. H. Daly, ed., *Toward a Steady-State Economy.* San Francisco: W.H. Freeman, 1973.
10. Kenneth E. Boulding, "The Economics of the Coming Spaceship Earth", in Daly, *op. cit.*
11. Donald Michael, "Cybernation: The Silent Conquest", *Automation: Implications for the Future,* Morris Philipson, ed. New York: Vintage Press, 1962, pp. 78-130.

12. Margaret Mead, *Culture and Commitment: A Study of the Generation Gap.* Garden City, N.Y.: Natural History Press, 1970.
13. Willis W. Harman, "Context for Education in the Seventies", *Needs of Elementary and Secondary Education for the Seventies. A Compendium of Policy Papers.* Compiled by The General Subcommittee on Education, 91st Congress, 1st session. Washington, D.C.: United States Government Publishing Office, March 1970, pp. 351-363. (Includes bibliography.)
14. Examples: *The Reform of Secondary Education.* A Report of the National Commission on the Reform of Secondary Education. B. Frank Brown, Chairman. New York: McGraw-Hill, 1973; C. Jencks *et al.*, *Inequality: A Reassessment of the Effect of Family and Schooling in America.* New York: Basic Books, 1972; Charles E. Silberman, *Crisis in the Classroom: The Remaking of American Education.* New York: Random, 1970.
15. United States President's Science Advisory Committee Panel on Youth (J. Coleman, Chairman), *Youth, Transition to Adulthood.* Report. Chicago, Illinois: University of Chicago Press, 1974.
16. A. Maslow, *The Further Reaches of Human Nature.* New York: Viking Press, 1972.
17. G. Lozonov, *Suggestology.* Sofia, Bulgaria, 1971. Montreal, Canada: Gordon Gowan, forthcoming.
18. A. Harrison, Jr. and J. Westerman, "Ideal Child and Successful Student: Are They the Same?", *Phi Delta Kappan*, May 1974, pp. 635-636.
19. Mead, *op. cit.*

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# THE CONTRIBUTION OF THE FUTURES PERSPECTIVE TO MANAGEMENT: A CASE STUDY

Some years ago Robert Bickner wrote a brief but provocative piece titled "After the Future, What? " The answer is now clear to me. After the future is the present; the prime reason we study futures is to follow our inquiries with action in the present.

Some of us are more predisposed to ponder over the future than others–to view present actions in light of their long-term consequences or our long-term aims. In my case, I came to and continue to be guided by the 'futures perspective' out of a particular constellation of experiences which included teaching at the college level, a research planning and evaluation post with the federal government, and experiences in educational administration at the institutional level. The futures perspective is a kind of dispositional baggage I carry about with me. This paper is an attempt to share with others some of the failures and successes in its application.

## Personal History

My own personal history sets the context for my involvement in futures and the uses to which I have been putting that involvement in recent years. Upon completion of a degree in the history and philosophy of education I taught for a brief period in the education foundations area (incidentally learning something of academic self-imposed constraints on the energies and inclinations of the innovative-minded) and then found myself in Washington, D.C. My assignments in the capital served to assure that within five years of completing my doctorate I would undergo a multiple transformation–from budding political scientist to legislative aide, from historian to futurist, and from philosopher to policy analyst.

I became involved in futures in the summer of 1965. It was a quite simple and innocent beginning. In June of that year I was asked to assume responsibility for directing and coordinating planning for the newly combined research units of the U.S. Office of Education.

One of the commonly accepted propositions at that time was the long time gap which existed between the discovery of new knowledge or the invention of new techniques and their eventual application in practice. Paul Mort's studies had convinced us all that it took fifty years for knowledge to enter practice in the field of education.

As a result of this conventional wisdom my colleagues and I found ourselves asking what turned out to be a tantalizingly elusive question: If we were prepared to make conscious, directed decisions about investments in educational research, and if it took fifty years for research to have an impact on practice, and if one of the relevant variables in applying knowledge or adopting innovations is the fit of either to a given set of societal or professional needs, then how could we hope to increase the prospective usefulness of our proposed decision-making in educational research without knowing something

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about that future state of affairs? Out of that question, framed much more precisely now than then, began my involvement in futures research which, before my departure from the Washington scene, culminated in the creation of two national centres for the study of alternative educational futures for the United States and their implications for current policy development.

### Substantive Areas of Futures Research

It is important to identify briefly some of the substantive areas which tend to characterize futures research most fully.

*Resources and Environment.* One of the important areas takes as its focus the earth's resources, their utilization and the consequences of that utilization. Whether the identifying label is "environment," "ecology," or "spaceship earth", all of the comprehensive ongoing futures work reflects these concerns in central fashion. The focus may be on the finiteness of earth's resources, or the inadequacy of the earth's resource-generating subsystems (e.g., those producing food, fibre, etc.) to meet projected demands, or the fact that resource utilization has consequences which extend far beyond immediate costs and benefits.

*Population.* Closely related to the environment/resources/ecology topic is population. Everyone is aware that there are problems attendant upon unchecked population growth. The tremendous strain on world food supplies, the locus of greatest stress in underdeveloped areas of the world, the pressures on industrial production and governmental structure, and the repercussions in the international community are all dimensions of this problem.

*Economic and Political Structures.* A third substantive area of importance is the economy/polity. I mean by this linked abstraction the forms and structures of our economic systems, the forms and structures of our governments, and the interrelationships between the two.

Modern economic systems, for example, find themselves crippled by the consequences of their success—a success which in the West has rested upon the premises of private gain for private risk, material goods, and growth. Increasingly, we find these economies centrally managed, either *de jure* or *de facto*. The increasing need and desire for natural resources to fuel our economies now adds controversial new elements to international relations. The recent expeience with the economics and politics of oil resources will almost surely be repeated with respect to other natural resource. The multi-national corporation is a new creature with which to reckon. And the tremendously complex interlinkages between various sectors of national and international economies raise profound questions of purpose, authority, control, and responsibility.

If the premises on which our economies have been built now raise new and troubling questions for us, we can find equally provocative ones concerning government. With very few exceptions, the governments of free societies labour under increasing difficulty. Parliamentary and presidential democracies alike seem increasingly unable to handle the complex problems facing us as we cope with new and unfamiliar complexities of technology and its consequences, environmental/ecological questions, the allocation of resources among competing groups of stakeholders in non-expanding frames of reference, and unstable economies subject to essentially new kinds and sources of power and influence.

*Technology.* A fourth category of importance in futures research focuses on technology. Technological change has far-reaching consequences—qualitative as well as quantitative. For example, a car is faster than a horse and, for individual users, more versatile than rail or plane. But cars also contribute directly to suburban sprawl and changes in sexual mores, and their ubiquity leads people in the mass away from other forms of transportation. Electronics have transformed the globe. Jet travel, satellite communication, television have all increased the speed and the range of communication.

Moreover, high technology requires continuous caution. Complex equipment is easily sabotaged. The elimination or reduction of essential components can have far-reaching effects socially, politically, and economically.

The area of technology is of particular interest because it is one in which futures research methodologies with fairly high predictive power have been developed. It appears to be possible for panels of exprts to develop reasonably convincing forecasts of technological breakthroughs, given various assumptions about the availability of developmental support and the like. This means that we can anticipate certain kinds of developments within reasonable time frames and begin to consider likely consequences.

*Social Forecasting.* A fifth substantive area is social forecasting. The focus here is on interpersonal and inter group relations, the family, work, leisure, crime and violence, concepts of life and death, privacy, and so on. Clearly, this domain is heavily interrelated with the other areas. Technological advance in medicine, for example, preserves the lives of infants and extends the life of the aged, thereby contributing to, if not causing, population growth. Population growth, in turn, must be considered in light of finite resources and the projected consequences of the consumption ethic which currently drives our national and international economies. The prospect of limitations on natural resources has profound implications for altering the nature of work away from production of goods to the delivery of services. Work itself is a concept requiring redefinition in view of the "make-work" character of much of it, technological advance, and widespread disaffection with the current industrial employment environment.

#### Characteristics of Futures Research

There is a second way to characterize futures work—a way which cuts across the substantive areas identified above. This second approach addresses features which are common to work in futures and which allow one to know and recognize that it is indeed futures research one is looking at. The concepts I sketch below, again very briefly, are the ones which strike me as most important and most characteristic.

*Change.* Either implicitly or explicitly, the futures perspective relates to change. The underlying assumption is that social, political, economic, technological, or environmental factors will or can or may be different than they are now or than they were. Futures work is an attempt to develop prospective understanding of what those changes are or what their direction might be.

*Invention.* Equally implicit in the concept of change and our attempt to understand it is the notion that the future—the one that ultimately comes about—will have been in some sense invented; that it to say, it is something that will come about as a consequence of our choices to act or not to act and the complex interweaving of the consequences of those acts. Futures are studied so that our present-day choices may be altered to invent more desirable futures or prevent undesirable ones from coming into existence.

*Alternatives and Choice.* A third key element of futures work is that the object of study is plural—"futures"—and always framed in the context of choice. From the perspective of the present, the future is plural—a set of possible alternatives, not a single inevitable state. I could have been writing something else today; you could be reading something else. Richard Nixon could have cleaned house in righteous indignation over betrayal of the public trust on the part of the people working in his campaign, but he did not. We can individually reduce our material consumption and try to act consistently in ways better calculated to utilize and distribute access to resources, and so on. Each of our actions or inactions will take us, individually and collectively, to different places. To the extent that real alternative courses of action exist, we exercise choice, and those choices shape what will become different realities. Viewed before becoming reality, the future stands as alternative possible worlds of considerable number and variety.

*Value Issues.* A fourth characteristic of futures work is the prominence of value issues. Where there are alternatives and choices, human values must be taken into account. We strive for different ends; we advocate different means. Accordingly, we can expect the full play of values and value conflict to emerge in the development, analysis, and action contexts of futures work.

*Stakeholders.* The relation to values and the reality of choice underscores the idea that various individuals and groups will have a stake in what happens in the future, and, indeed, how futures studies (which may guide present-day action) are undertaken. A fifth key element of futures work, therefore, is attention to stakeholders and their concerns. While the concept 'stakeholders' is easy to state, its application to futures studies is complex. Sometimes it is as actor, sometimes as consumer, sometimes as interested public citizen, sometimes as parent, sometimes as taxpayer, and so on.

*Time Frames.* A sixth characteristic of futures research may be found in the time frames employed. Futures work aims at ten-, twenty-, and thirty-year frames of reference. It is not planning *per se*, but a conscious attempt to stand forth far enough to view things in broader perspectives with an eye to perceiving options, choices, and consequences that may be obscured from us in shorter time frames of reference.

*Systems and Interlinkage.* Finally, futures work is characterized by attention to systems and interlinkage. That concern need not always be expressed in any hard "systems approach" sense. But futures work does attempt to look at things holistically. It explores relations, contexts, imbeddedness, primary, secondary and tertiary consequences, and interrelations in an attempt to gain a rich understanding of what might be.

### Two Conclusions from Futures Research

Out of my five years of intensive involvement in futures research I have drawn two broad conclusions.

First, specific studies on futures, while interesting and provocative, have impressed me less than one global conception that I find compelling—a view which has primarily found articulation in the work of Willis Harman and his associates. That conclusion is expressed in the saying: "We can't get there from here".

Harman has discussed his proposition in several places.[1] Basically, it is the idea that our contemporary problems are the results of our successes and our successes are themselves an outgrowth of premises and beliefs about man and nature held for half a millenium. The premises which have guided Western civilization are based upon a series of per-

ceived dichotomies between man and nature, mind and matter, male and female, rationality and subjectiveness; upon the application of the scientific method; and upon assumptions of growth. Harman's view is that before we can begin to solve the problems currently confronting us, we will have to undergo a radical change in our basic paradigm and beliefs about the nature of man and and the universe—a change similar in scale to that of the Copernican era. He finds indicators of increased awareness of systemic dilemmas inherent in Western development and of emerging new values that would support a "New Copernican Revolution". I share his views. It is for me the most compelling and all-compassing conclusion to come out of my exposure to futures research.

My second broad conclusion is that the most powerful practical impact of futures research is to be found in the effect of internalizing and operationalizing the characteristics of futures research in our day-to-day work. To the extend that we actualize in all our professional efforts concepts like 'systems', 'long time frames', 'stakeholders', 'values', 'alternatives', 'invention', and 'change', we really begin to feel the effect of the futures orientation.

**The Impact of Futures: The Washington Experience**

As noted before, I acquired the futures perspective as a consequence of my responsibilities in Washington. As I have discussed more fully elsewhere,[2] my Washington experience with futures was a profound failure.

A prime reason for the lack of impact of the futures perspective in the U.S. Office of Education was the incompatibility of the operating incentives for key officials there with the patterns and habits of thought characteristic of the futures perspective.

Of first importance in explaining this incompatibility is the psychological time frame within which, consciously or unconsciously, key government officials operate. My tenure, for example, lasted six and a half years. During that short period of time twelve different people served in the two positions immediately above me in the hierarchy. The average tenure of an Assistant Secretary in Washington is no better; while incumbents average 23 months in the job, the average tenure of duly appointed and acting appointed is almost identical to that of my superiors in the USOE.

With each new person comes a new set of priorities, a profound desire to accomplish something significant, and a period of substantial upheaval. This condition mitigates against the kind of work aimed at patient exploration of the linkages between policy options; identification of likely primary, secondary, and tertiary outcomes of these options; attention to consequences over long periods of time and to alterations in the context surrounding implemented policies which are likely to occur and which are equally likely to drastically alter program consequences.

Another explanation for the failure of the futures perspective to affect Washington policy lies in the general lack of understanding of what futures research is, how it could come to affect policy, and its implications for the way in which the federal government views its role in the generation and implementation of national policy. These matters are complex and could be a subject of extensive discussion in their own right. Suffice it to say here that the idea of futures research as being most important for the processes of thought and policy development which it engenders rather than for the specific answers which it might provide, is not appreciated at all. Couple this misunderstanding with the arrogance of bright young policy analysts who are here today and gone to-

morrow pursuing their misbegotten beliefs that there are indeed objective answers to essentially subjective, political issues and the picture becomes even more clear. The finishing touches can then be added by noting the captivating temptation to believe in Washington, that the capital is where policy is really supposed to be "made" for the rest of the nation (as contrasted with "explored", "facilitated", or "illuminated"). One of the clear messages arising from futures research applied to social and domestic problems is the need to cope more effectively with the emerging pluralism of our society. It is not surprising that such a message would be inaudible to an agency which behaves on the basis of almost exactly contradictory assumptions.

Finally, a fourth reason why national educational policies remained unaffected by futures work sponsored by USOE was that USOE was not where educational policy was in fact being made. Such policy was, in fact, being made in the staff offices of the U.S. Department of Health, Education, and Welfare (HEW), in the Office of Management and Budget and its predecessor agency, and in the Office of Science and Technology. In addition, the assumption that policy development could be a rational process was contradicted by reality; policy development was far more often a matter of squeaky wheels, personality, and sheer political opportunism (not always partisan in character, either).

### Entering Into a Deanship—A Case Study

Five years removed from the Washington experience described above, and given the opportunity to reflect upon my more recent experience, I am now prepared to conclude that the futures perspective I acquired in Washington has had considerable influence on the exercise of my responsibilities as Dean of a College of Education and Home Economics.

Now that I am four years into the experience, it is clear to me that I have been applying the futures perspective to my administrative responsibilities. I have, in fact, internalized more of that perspective than I had realized. It is only with the passage of time that I have become able to raise the futures characteristics, in Jerome Bruner's terms, from the enactive to the symbolic level.

When I began my deanship, the first thing I did was to spend four weeks interviewing each and every faculty member. My immediate objective was to give them an opportunity to share their thoughts and feelings about the college, their role in it, what needed to be done, and how they might contribute. It was a quick and, as it turned out, quite total immersion into the then current state of affairs in the institution.

I learned several things. There was a widespread perception that the College had no clear sense of goal or mission, and that its management, in terms of governance and data, left a great deal to be desired. Individuals and units within the institution reported a deep sense of isolation from one another and from the professional and school communities "out there". The College was badly overworked and undersupported. As a consequence, morale was low and distrust widespread. (One fact may go a long way to explain much of the above: I was the sixth different person to occupy the Dean's chair in as many years. This was a fact, reinforced by my Washington experience, which led me to publicly commit myself to a minimum of five years in the post.)

Looking back on my first four years in the deanship, I can offer specific examples of areas of experience which were influenced by the futures perspective and associated concepts and concerns.

*Setting Goals*

As a first example of the usefulness of the futures perspectives in my work as Dean, consider goal-setting for the College. Key futures concepts applicable here included 'stakeholders', 'values', and 'time frames'.

What was done? In a sense, the very first step was acknowledging the faculty as key stakeholders through the process of individual interviews. When it became clear that it was not a case of the College failing to achieve its goals, but rather of its not having articulated any goals, the next step in a continuing process of goal definition was conceived and undertaken.

Seventeen task forces were established, each of them composed of one-third faculty, one-third students, and one-third representatives from the Cincinnati community and area school systems. Each task force was asked to take a broad category like "learning" or "evaluation" or "client populations" and decide what three basic assumptions the College should hold respecting that topic. Each was then asked to tease out implications of the College's adopting the basic assumptions it had identified.

The task forces completed their work over a two month period. Copies of their reports were widely distributed. A synthesis was drafted and considered by the faculty for a month. The outcome was the unanimous adoption by the faculty of the task force synthesis as a " Statement of Philosophy" for the College. The philsophy spoke to such points as cultural pluralism, evaluation, alternative routes to learning, the concept of modelling, the College as part of a larger community and as a community in its own right, and so on.

In that fashion our broad goals and missions were defined. A more concrete example of the definition of curricular goals affords another instance of the application of futures concepts.

*Defining General Education Objectives*

One of the outcomes of the adoption of the Statement of Philosophy was the redesign of all programs of study in the College. While the College of Education and Home Economics is not responsible for teaching the courses through which students are expected to meet general education requirements, our certification responsibility does gives us authority, should we choose to exercise it, to define general education objectives and take whatever steps we can to help our students achieve them.

In undertaking the complete revision of its curriculum, the College decided to organize a working group to focus on general education. As with the other redesign groups, membership on the committee was drawn from the ranks of faculty, students, teachers, and the lay public. Drafts of the committee's work were circulated to interested parties, including community groups in education and the other colleges in the University that offer instruction in general education areas. Feedback was considered. Far more often than not, responses resulted in significant modification. This process resulted in the identification of eight broad objectives covering communication, patterns of human inquiry, problem solving and decision making, values, dimensions of our society, creativity, world view, and learning.

In retrospect, what is significant about this achievement in the context of the present analysis is that scattered throughout the more detailed statements of general education

objectives are key futures concepts including 'time frames', 'alternatives', 'values', 'stakeholders', 'systems', and 'futures'. The statement of general education objectives is now used as a basis for advising undergraduate students in course selection beyond the College and as a frame of reference for organizing the instruction for which we are directly responsible so that we, too, whenever possible, directly support the achievement of general education objectives.

*New Governance Structures*

The development of new governance structures for the College closely followed in time and process the definition of our broad goals and missions. Key futures concepts applicable here were 'stakeholders', 'systems', 'alternatives', 'values', 'change', and 'invention'.

There was dissatisfaction with College governance prior to our goal setting exercise. As the general shape of our goals began to emerge, the existing governance bodies began in turn to crystallize the need for new models. The then-existing Faculty Council prepared a proposal for consideration at the same faculty meeting at which the Statement of Philosophy was formally adopted. The faculty authorized the formation of a study group to work during the summer of 1972 to study College governance in the light of newly defined goals and to report back recommendations for consideration by the faculty no later than the start of the fall quarter.

Key principles of 'stakeholders' and 'system' again prevailed. The study group involved undergraduate and graduate students, tenured and non-tenured faculty, a department head and the dean, and persons representative of the larger university and client school systems. The charge made it clear that the group was to develop a comprehensive set of recommendations embracing the several functions of governance called for or implied by the Statements of Philosophy.

The study group's recommendations, later adopted by the faculty, articulated the functions of policy making, policy administration and implementation, and evaluation, and situated them in appropriate parts of a revised governance structure. All parts of the College community were assured roles in governance and special provisions were made for the regular participation of persons representing the broader Cincinnati community and client school systems. The roles of key actors and groups were defined and multiple routes of access to key decisions were assured. Thus we established the ground rules, arenas and mechanisms for continuing dialogue and interaction concerning the goals and operations of the College.

*Search for Resources*

Recall that one critical condition facing the College was extreme faculty overload. This was the consequence of under-budgeting for the College during the period of rapid growth in the mid- and later 'sixties. The problem was exacerbated by the effects of inflation, the stabilization of enrollment patterns in higher education, and the rapidly altering picture in supply/demand patterns for teachers. In our search for resources, the futures conccepts that have proven particularly powerful have been 'stakeholders', 'alternatives', 'systems', and 'time frames'.

The 'stakeholder' concept, for example, found expression in the mobilization of interest and concern on the part of students and faculty. This was done by sharing budgetary data never before made available and by full involvement of governance bodies in consideration about budget and budget priorities.

Students and faculty were not the only stakeholders, however. The Ohio Department of Education, by virtue of its responsibility for the certification of teachers and its approval of teacher education programs throughout Ohio, also had an important stake in the quality of our programs and, therefore, in the resources available to us. Derivatively, because of the authority of the State, the University itself had a stake in the adequacy of the resources available to the College. If our programs proved unacceptable, the University stood to lose not only status, but, more importantly, significant financial resources in the form of tuition and State subsidy. Still another group of stakeholders, somewhat more inchoate but no less important, was to be found in the greater Cincinnati community whose children and schools were served by the graduates of our programs.

All of these stakeholders were involved in different ways and to different extents in the slow process of developing, justifying, and ultimately securing significant decisions affecting the allocation of resources to the College. Members of the College, for example, were involved in an extensive and time-consuming process of analyzing how our resources were in fact expended. This analysis later became the foundation for the development of cost models for our teacher education programs which culminated, not in decisions to add more dollars, but in policy decisions to limit student enrollments in our programs. The State, as a stakeholder, was involved through the process of accreditation review. Our self-study in connection with the review and their on-site assessment produced confirming judgment of the inadequacy of our resources. They gave the University notice and time to correct budgetary and other deficiencies. The involvement of the broader Cincinnati community helped create a local environment of watchfulness and general support as the University struggled to find ways to deal with the budgetary inadequacies which had been allowed to develop over the years.

The concepts of 'time frames' and 'alternatives' also came into play. In a sense, working differently with diverse groups of stakeholders who hold a common interest is already a manifestation of the concept of 'alternatives'. But in the systematic consideration of short-range, middle-range, and long-range requirements, the generation of alternative routes found further expression.

For example, in the very short run, during a University financial crisis in 1972-3, and despite the under-budgeted condition of the College, we were directed to take a budget cut totaling six percent. Our response was to terminate two degree programs. In the middle range, we pursued a strategy of resource justification. The vehicle was the detailed analysis of the resource requirements for various kinds of instruction relative to the amount of that instruction required by our students. This strategy was successfully used as the basis for establishing enrollment limitations designed to meet the budgetary concerns raised by the State in connection with their accreditation visit.

Our long-range strategy embraced two courses of action. One was pursued in connection with a major state-wide teacher redesign project aimed at upgrading the institutional standards for approving teacher education programs in the State. That project, itself one of the most exciting innovations in the development of public policy I have ever encountered, happened to be taking place at the same time that all the programs offered by the College were undergoing complete redesign to bring them into congruence with the Statement of Philosophy. As it turned out, I was centrally involved in Ohio's Teacher Redesign Project as a member of a special interest sub-group representing deans and department heads of education. In addition, faculty members and students participated

in regional gatherings which focused on the same issues. The confluence of state redesign and college redesign afforded us an opportunity to represent, in the process of reformulating State standards, emergent resource requirements that our own redesign efforts were revealing. Where we were able to be persuasive, those requirements found their way into standards language thus helping to assure the availability of needed resources by 1980, when accreditation standards external to colleges and universities reached their full effect.

The second long-range strategy was to make myself available to efforts in the University aimed at rendering more rational the management and allocation of resources. As part of that activity, I chaired University-wide task forces and governance committees aimed at legitimizing long-range planning the systematic review of the total University budget, and the development of more usable and more accurate information about faculty effort and academic demands relating to that effort. These activities, though heavily time-consuming in the short run, were justified on the grounds that anything designed to increase the rationality, understanding, and openness of budgeting and resource allocation practices in the University would ultimately redound to our benefit.

Another alternative route to resource seeking we explored was the availability of federal and foundation funds. Our experience, on balance, has convinced us that the talk abroad in the nation of the need for institutional reform is largely rhetorical. The operating policies of both government and private sources of funds are much more in league with the *status quo* and "innovation as addition" and, therefore, against fundamental attempts to restructure institutions and to innovate through the reallocation of existing resources.

Our search for resources has left me with a second-order conclusion about stakeholders which is of special significance to educational planners. Operating institutions, those that deliver services directly to individuals as clients, must also be considered stakeholders. Policy makers at levels above that of operating institutions–those who make policies or establish programs that will directly affect operating institutions–must understand that an essential resource for such institutions, besides money and people, is freedom of movement. This is the kind of freedom that will allow institutions to take the steps they need to take, that will allow them to make program purposes their own, that will act as the critical incentive and catalyst for the achievement of desired objectives.

In a sense what I am saying is that institutions are sometimes like people. To gain commitment from them, they must have a chance to buy into an activity or purpose. Our experience, however, has been that all sorts of constraints exist, some deliberate and perhaps justified and others inadvertent, which oppose the possibility of institutions making things their own. The freedom I am talking about is a freedom directly linked to responsibility. It would be the kind of freedom that would allow institutions to buy into the goals, yet decide for themselves how to reach them. It is a freedom with a correlative responsibility that says the institution will be accountable to the appropriate level of policy authority for the results they achieve.

Unfortunately, the kind of trust implied by such an approach to policy achievement does not seem to exist in education. While the legislative passage of a program implies a level of trust in operating institutions to achieve results, the administrative regulation of the program communicates, in large measure, the exact opposite of trust. The prophecy that is thereby fulfilled militates against institutional commitment from organizations and

the absolutely essential willingness and trust necessary for effective cooperation of different kinds and levels of institutions. Too often, I fear, state, national, and institutional planners and policy makers forget that unit autonomy and freedom is an important requisite for productive achievement.

*Personnel*

Key futures concepts applicable to the personnel domain are 'stakeholders', 'time frames', 'change', and 'invention'. People in an organization are, of course, a resource. But people also constitute the end of our profession, to say nothing of the notion that as individuals they are also the prime reference point for constitutional liberal democracy. Thus, we are all ends as well as means.

The personnel domain has proved to be the most puzzling to me as a futurist. It is the area in which, for a long time, I felt that futures research had the least to contribute. A year ago, for example, I addressed a group of educational foundations and curriculum faculty on this topic. In the contrast between what I had to say then and what I have to say now lies much of the impact that the futures perspective has had on my approach to my work.

A year ago I noted my surprise at how much more of my time was taken up with personnel and related matters than I had expected. Part of the twenty-five and more percent of my time going into the personnel area was a result of the absence of clear policy, the unique characteristics of academics as individuals, the general malaise affecting all institutions of our society, affirmative action, demands from both students and administration for accountability, and in more recent years, economic stress. Amidst all these pressures and circumstances, I wondered how it would be possible to get better states of affairs when there were so few supportive and so many inhibiting structures.

My view a year ago was that the personnel area was one in which the conflict between the present and the future seemed to be most dynamic, and I concluded at that time that "issues pertaining to personnel, in my experience, have been the ones respecting which work on futures has been least helpful and impactful". Since then I have come to suspect that in so concluding, I was revealing the extent to which I was a victim of what Edward T. Hall has called "the silent language".[3] That is, the message to be found in Harman's analysis of the New Copernican Revolution, his suggestion that new paradigms are called for, was intellectually visible to me, but its full import was not yet deeply understood.

Since then I have undergone a significant change of mind. I now see the impact of futures on the personnel domain in the following emergent way. The dualities or dichotomies (mind/matter, male/female, man/environment, work/play, quantity/quality, etc.) that have brought humankind its successes but which now constitute our problems, have their greatest immediate reality and are most provocative in all those areas we call "personnel". The separation of work from family, the difficulty of the same people performing formative (shaping to desired ends) and summative (judgmental) evaluation functions, the propensities for secrecy as against the desire for openness–all these are manifestations of old style, old paradigm thinking. And the sets of assumptions underlying these problems are deeply ingrained mental, conceptual, and emotional habits. Challenges to any of them shock people and many would prefer to avoid reexamining their basic assumptions. Still others will respond to such challenges in ways which, while still definitely old-style paradigm, have considerable, albeit negative, effect–because the behaviour generated out of the new-style paradigm actually becomes ammunition for the old-style rifles.

Thus what a year ago appeared to me to be the irrelevance of the futures perspective to personnel problems, I now understand as the profound resistance of individual human beings to the full implications of the weighty requirements of paradigmatic change in human affairs. The effect of the futures analysis is so minimal because the consequences are so far-reaching and the resistance so great. The protest is loud and the rejection firm because unconsciously we cannot afford to hear the message.

Out of this understanding I now draw several related conclusions. One is that changing myself is the most difficult task in responding to futures research. A second is that it will be equally difficult for others. A third is that progress will be slow. And a fourth is that we are all in it together. It is OK wherever each of us happens to be, and I am going to try to help myself and others get to new places where our options increase and, with more choices, the meaning of life increases. Patience is as important as purpose, process as important as achievement, and–remembering the title of Edward T. Hall's book–"we are all a little deaf".

### Implications for the Training of Planners

Having come this far I ought not to miss the opportunity to comment briefly on what I think this discussion means for a quite specific educational problem: namely, how educational planners should be trained. It might easily be assumed from the kind of experience I have had that "baptism under fire" is the only viable approach to the training of educational planners. I do not agree.

Acquiring a futures perspective, for example, is important, but it does not have to be done on the job. Furthermore, it ought to be possible to become familiar with the realities of planning as an activity through systematic exposure to real or simulated case studies, perhaps even with role-playing built in, to help planners learn to cope with both politics and administration, with goals and data, with manager/planner role relations, with the tyranny of overlap among tomorrow's demands, today's realities and shouldering the blame for yesterday's mistakes–a multi-layered phenomenon the parts of which must be kept separate lest programs never get beyond the past and present. Further, the cases ought to be constructed so that the essential element of time is build in and budding planners are confronted with the consequences of the reality of missed deadlines, the impact of unanticipated surprises, the phenomena of increasing or decreasing resistance, the effects of changed personnel in mid-cycle, and the like.

A second major recommendation about the education of planners would be to equip them with the skills requisite to getting their line management superiors to take real responsibility for the function and ultimate impact of the planners' work by being able to sell the managers on (or otherwise get them to thoroughly modify) the approaches, criteria, assumed decision needs, and the like. Planning is virtually useless apart from the predisposition of line managers to use the results. That means close attention to the real needs of line managers, not just to the needs planners think the managers ought to be responding to. Being able to work "into the skins", as it were, of their immediate clients is an interpersonal and inter-role skill that few training programs pay very much attention to. I believe such skills are critical to the effectiveness of planners, executive officers, those who develop and maintain the management information systems and, indeed, all those who perform vital professional support roles to line management.

### Some implications for Curriculum

I have already considered briefly the College experience in orienting general education objectives to concepts characteristic of futures work. I return to this topic because it is proving as difficult to accomplish as achieving an impact in the area of personnel—and for the same reasons, I believe.

Projecting futures cannot tell us what the future will be, but awareness of the range of plausible alternatives can lead us to a number of conclusions about what kinds of skills would best equip our children and our grandchildren for the lives they might lead. Perhaps more important, the value choices illumined by our studies and analyses should lead us to make firmer commitments as to the kind of future world each of us seeks and why, and to order our personal and professional commitments to those ends.

My own examination of futures persuades me that we need to reexamine the very purpose of education and, therefore, curriculum and the way it is employed in schools and colleges to achieve those purposes. We need to educate people who can understand complex systems, who can apply the perspectives of many disciplines to incredibly complicated problems and opportunities. We need to educate people who are comfortable in several cultures and who will not press for homogenization. We need to develop in young people the capacity for thinking in 10-, 15-, and 20-year time frames so that the long causal chains of technological, ecological and social impact are ever more frequently applied in anticipatory fashion in the conceptualization and implementation of private and public policy. We need to increase dramatically our intra- and inter-personal skill levels. We need to build the capacity to recognize, clarify and resolve value differences. We need to develop problem solvers capable of decision making *and* action. We need to educate to the delicate balance between individuality and dependence, between individual initiative and responsibility, and to the essential relation of each of us to all the rest of us.

Many, I am sure, will buy into goals and objectives like these. Yet we continue to organize curriculum largely in terms of the disciplines. We analyze when we should be synthesizing. We chop things into bits and pieces and cram them into fifty-minute pigeonholes when we should be letting them flow, looking at their holism, examining the continuity, and relating it to the real lives, the real options, and the futures of real children, young people, and adults.

If, in the end, I sound a little preachy in this analysis, so be it, because for me, these are moral issues. The objective is our children's lives, and our responsibility is to equip them accordingly.[4]

#### REFERENCES

1. See, for example: Willis Harman, "Context for Education in the Seventies," in *Needs of Elementary and Secondary Education for the Seventies*. General Subcommittee on Education, House of Representatives, 91st Congress, First Session, March 1970. Also: Willis Harman, "Consumerism Legitimacy and Transformation", Address before the Association of American Colleges, January 14, 1975. And: Willis Harman, "The Nature of Our Changing Society", in *Management of Change and Conflict*. John Thomas and Warren Bennis, eds. New York: Penguin Books, 1972.
2. Hendrik D. Gideonse, "USOE and the Futures Perspective", in *The Potential of Educational Futures*. Michael Marien and Warren L. Ziegler, eds. Worthington, Ohio: Charles A. Jones Publishing Company, 1972. The section of the present paper on "The Washington Experience" draws from this 1972 Appraisal.

3. Edward Twitchell Hall, *The Silent Language*. Garden City, N.Y.: Doubleday, 1959.
4. Postscript: On Restructuring the Here and Now: It happened that the Friday night before I delivered a version of this paper at the ISEP conference I was the object of nearly eight hours of intense and often painful directed inquiry from a young woman and man. They were deeply concerned about the negative effects and pressures attendant upon affiliation with bigness, bureaucracy, and organizations. In their eyes, clearly, I was giving aid and comfort to the oppressor by improving the hold of large institutions over the lives of individuals. In my own experience, their perceptions of the effects that large organizations often have on the people in them are pretty close to the mark.

   Many events and continuing threads of conversation have contributed to my emerging awareness that concepts like "paradigm change" are not simply intellectual objects to bandy about. In the context of glimpses available to all of us of what the future might hold, there are guidelines for restructuring lives and roles here and now, means of creating the possibility of more desirable futures at some later point in time. If it is true that "we can't get there from here", then we must change the here where we find ourselves.

Michael Folk*

# A CRITIQUE OF SOME FUTURES PREDICTION TECHNIQUES AND THEIR IMPLICATIONS FOR EDUCATIONAL PLANNERS

## Introduction

Over the past two decades a large number of techniques have been developed in the area of forecasting and futures studies. They may be used as predictive techniques or heuristic devices or both. Whatever the emphasis, they merit critical examination by educational planners so that their merits and limitations may be well understood. Such concepts as the 'futures perspective', 'planning as pedagogy', and 'futures invention' are often associated with the use of futures techniques as pedagogical or heuristic devices.[1] This category of techniques or utilization practices merits review, but it is outside our concern in this paper. The focus here is upon techniques devised and developed to produce objective information about the future.

Unfortunately, research which concentrates on futures thinking tends to leave important questions unanswered about the viability of futures techniques themselves as instruments for producing information about the future. What precisely are the purposes of the individual techniques? How do they really work? What is the nature of the information they produce? Is it numerical? Is it anecdotal? What assumptions must be made about the nature of the information used by the techniques? Such questions can and should be posed by all of us who use information about the future in planning and action.

The techniques to be discussed below are examples from a range of techniques either being used or peddled as useful in forecasting the future. The purpose of this paper is to share with readers the fruits of some experiences in working with several of these techniques. The concern is not to present an expert analysis—no claim is made to expertise. But it is intended that the review will promote a better understanding of the types of techniques likely to be encountered as one becomes involved in futures forecasting.

Four exemplary techniques will be examined below. They are: simulation, extrapolation, Delphi and cross-impact matrix. The first two are fairly standard, fairly well understood techniques; the latter two are less well understood because they are relatively new and unorthodox.

Each of the techniques will be examined in turn, with attention to advantages, uses, modifications, critique, and implications for planners. The individual discussions of techniques will be followed by a comparative review and a summary of conclusions for planners.

## Simulations

Simulation refers to a technique based on some model of a system—in our case a model of an educational system or a system with a major educational component. Our ability

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to simulate a particular system depends largely upon (1) the measurability of characteristics of the system, and (2) the degree to which the interrelationships among the components of the system are describable (i.e. the degree to which they can be modelled).

If these conditions are satisfied, then it should be possible to either (1) plug known measures of the system's characteristics into the model so that it does indeed simulate the behaviour of the system, or (2) plug hypothetical data into the model to get an idea of what the system would look like if the conditions represented by the data were to obtain.

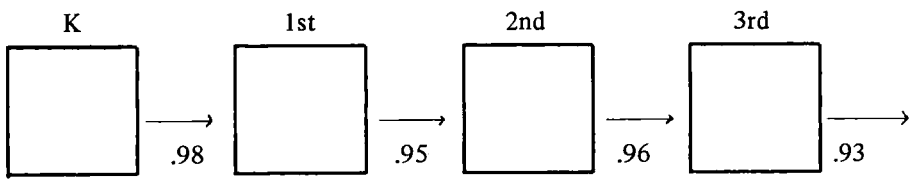
Some models are static in the sense that they may be used to simulate a system's behaviour at a particular time, but not over time. For instance, scheduling models for preparing classroom timetables, transportation routes, etc., are used for optimizing a particular procedure, such as classroom allocation. Or they may be used to determine the effect of alternative policies or allocation of resources. These types of models do not themselves predict the future or set of futures–but they may help to flesh out the implications for the future of the occurrence of alternative policies or other changes.

The other type of model we have in mind is a more truly predictive one. It is designed to simulate movement through time into the future. It acts out the future, in a sense. The model is told: "Here are the ways things are interrelated, and here are the initial conditions", then it is turned loose to act out the next five, ten, twenty, or one hundred years without outside intervention or tinkering. It may, in the course of its operation, call upon models of the first kind to answer certain questions, but the essential feature of the second type of model is its capacity to operate through time, and that is why it interests us here.

One type of model which steps through time is a markov process model, and this is what we will look at in depth. The distinguishing characteristic of this kind of model is that the next state of the system in the future is completely dependent upon the present state and, theoretically at least, independent of the way in which the present state developed. The way the system moves from one state to the next is described by a set of equations involving so-called "transition probabilities", or "transition ratios".

Consider an example (Figure 1). The state of a school system in year t might be described by the number of students at each grade level in year t, plus the number of potential students not enrolled. Based on past experience, some policy assumption, or some other criterion, we have a set of ratios–one for each grade level–describing the proportion of students expected to move from each grade to the next higher one. These are the transition ratios. Transition ratios might also describe the proportion of students who drop out of the system, who drop in, who skip grades, etc.

Figure 1 SIMPLIFIED FLOW MODEL



If you know the number of persons in all categories of the present state of the school system, plus the number of persons who will enter the picture each year in the future (i.e. primarily the number of new eligible first graders), then theoretically you can determine the likely states of the system for each of many years into the future.

*Advantages of Simulation*

Briefly, the advantages of simulation include the following: (1) It allows observation of a system without having to make the system itself operate. (2) Thus, it may allow analytic treatment of the system, which might otherwise be too expensive or even impossible. (3) It forces us to make a formal definition of the system which, however inadequate, could very well result in our better understanding the nature of the system.

*Uses of Simulation*

The types of uses of simulation models, such as the flow model, understandably are concentrated on aspects of educational systems which lend themselves to measurement. Costs, people, classrooms, and hours are common measures used, and they are used to predict budget levels, enrollments, resource allocation needs, and such.

There are two different ways to look at the output of a flow simulation. One is to look at the raw numbers. You might say, "Given the conditions of the model, we can expect about 5,000 first graders in our system in ten years". The other way is to look at relative numbers by comparing different hypothetical simulations. "Under set of conditions A we can expect 5,000 first graders, but under conditions B we can expect 4,000". The second way produces not only raw numbers, whose reliability might be suspect; it also produces relative numbers which tell us something about the dynamics of the system with respect to the future.

Who uses simulations? At the national and international levels there is a great deal of research on simulation, especially in Europe. Out of the Organisation For Economic Co-operation and Development (OECD) and its member countries have come some very interesting markov-like models.[2] Cicely Watson, in an earlier issue of this Journal, sheds light on uses of models by Canadian school boards, universities, and agencies of both K–12 educational systems and higher education systems.[3] There was some serious use of quantitative models at all levels polled, but not many were of the nature we have in mind–long range predictive models. On the other hand, at least one of each type of institution was using student flow models for enrollment prediction. Perhaps more importantly, Watson found that the use of quantitative models was increasing, but judged that continued growth would depend upon the adoption of more quantitative modes of thought.

*Critique of Simulation Models*

One of the virtues of simulations is that they force people to come up with hard data about the system under study. On the other hand, this kind of data is not always easy to come by, particularly with regard to the future. You might be able to know the transition ratio of ninth graders this year to eighth graders last year, but it is not always easy to predict that ratio accurately for the future. And by the iterative nature of the model, errors can be compounded with each iteration. For instance, a consistent error of 1% in a transition ratio could easily result in a final error of 10% after ten iterations. An error of 3% could compound to one of 40%.

A model of a complex system which includes all conceivable details can be overly influenced by relatively unimportant factors, particularly when data regarding these factors are questionable. In many cases, a model which leaves out minor influences, but includes all of the half-a-dozen or os major influences, will be a more stable and accurate predictor of the future. While a model should be complete enough to include all major parts of a system, it should not be so complex as to include linkages and data whose validity is highly speculative.

There is the mystique of the calculations themselves, and here the seductive role of the superfast, superexact computer comes in. The dispatch and finality with which the computer generates data leads us often to attribute to it more credibility than it really deserves.

The whole question of measurability has to be confronted. The so-called McNamara fallacy, coined by Daniel Yankelovich, is described in this quote from *Supermoney*:

> The first step is to measure whatever can easily be measured. This is okay as far as it goes. The second step is to disregard that which can't be measured or give it an arbitrary quantitative value. This is artificial and misleading. The third step is to presume that what can't be measured easily really isn't very important. This is blindness. The fourth step is to say that what can't be easily measured really doesn't exist. This is suicide.[4]

As far as we can tell, there are a few instances in which futures prediction models have operated explicitly on a basis like Yankelovich's step four, but it is not uncommon for model builders simply to ignore those factors which cannot be measured. As quantitative prediction gains wider acceptance, the danger of this happening will certainly increase.

*Conclusions for Planners*

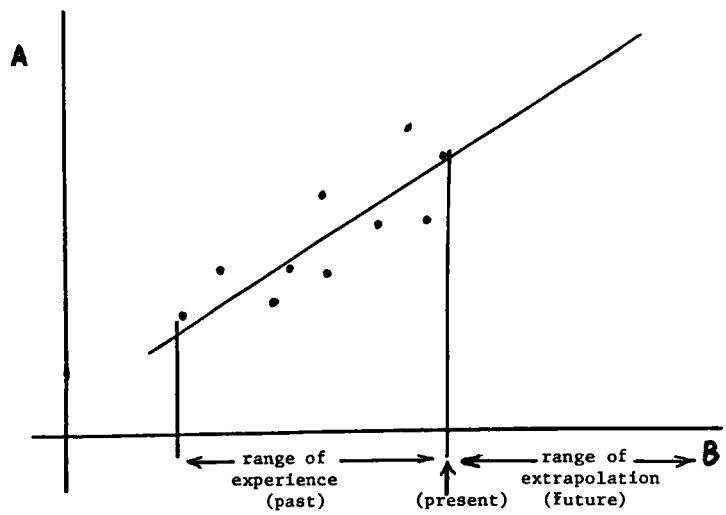
- Beware of models which are overly complex, but do look for models that are fairly complete–in the sense of including all major factors.
- If possible, participate in designing the models, for your own edification and to assure that the model represents what you think it does.
- You can have more confidence in models of stable systems since a stable system is based on a less complex dynamic than an unstable one, even if the actual number of variables in the two systems might be the same.
- To take advantage of simulation of hypothetical conditions, you yourself must do the thinking–you yourself must specify the policy alternatives you want to evaluate. This means that your own goals and priorities should clear before running this kind of simulation.

### Trend Extrapolation[5]

The next futures prediction technique to be discussed involves looking at an historical trend or combination of trends and applying statistical techniques to determine where the trend will take us. The simplest example is illustrated by Figure 2. Given a set of points, a line is drawn through the points. The line might be drawn simply by eyeballing the points to determine a best fit, as was done here. Or the best fit might be found by some statistical technique, such as the so-called least squares fit. You see the term "regression line" applied to this kind of line.

Statistical projections generally are accompanied by additional information which can be used to judge the degree of confidence one can have in them. In the case of least squares regression, three useful measures may be identified. (1) The residual variation—a summary measure of the variability of all the different points from the actual line. If it is large, this is an indication that many of the points do not fall close to the line. If it is small, then most of the points are close to the line. (2) The ratio of "explained" variance to toal variation ($r^2$). A large $r^2$ indicates that one variable has been relatively successful in predicting the other. (3) The standard error of estimate—a statistic indicating the closeness of the relationship between the variables. The standard error is used in determining the "statistical significance" and "confidence interval" for the estimate of the slope of the line.

Figure 2 REGRESSION LINE




The example in Figure 2 shows how a quantity varies with a single describing variable. Other cases involve the determination of the dependence of one quantity upon a combination of variables. This is called multi-variate extrapolation.

Trends in historical relationships show "patterns of association", and these patterns are interpreted by statisticians, planners, or policy-makers as revealing certain kinds of relationships. Some are seen as causal, "If variable A has such and such a value, then this *causes* B to have a certain value". Sometimes one variable is seen as predicting another but not as causing it, "A varies in some regular fashion with B, but if A were arbitrarily changed there is no assurance that B would likewise change". And in some cases the associations are simply noted, with no causal or predictive interpretation made. They may stimulate a search for explanations, but they are not by themselves interpreted as predictive or causal.

Of course, trend extrapolation is not restricted to straight lines. For instance, it is very common to describe the variation of one variable in terms of the log of another variable.

Trends involving exponential growth often are treated this way. Cycles are not uncommon, nor are ogives. But in the area of educational planning, the exponential and straight-line projections are easily the most common.

*Advantages of Extrapolation*

Advantages of extrapolation include the following: (1) Standard methods of extrapolation are well-defined, so they provide unambiguous interpretations about the nature of relationships among the data. That is, of course, unambiguous if the people doing the interpreting understand the methods. (2) Extrapolation is often used to identify stable and unstable patterns. (3) If the trend is correctly identified, it provides a precise indicator of future quantities. (4) Extrapolations are relatively simple, compared with much more complex methods like the flow simulations.

*Uses of Extrapolation*

Extrapolation represents the most widely used vehicle for futures prediction. A straight line can be drawn through any set of points. One finds the same kinds of uses as with flow models, only extrapolation is more common.

Some kinds of extrapolation can be made with a great deal of confidence. For instance, the number of ten-year-old children in 1980 is likely to be close to the number of five-year-olds today. We can predict quite accurately how many of today's five-year-olds will die off between now and then. The number of ten-year-olds in 1990, however, is much more difficult to guess, mainly because we cannot predict fertility (in particular, the number that will be vorn in 1980) as well as we can mortality.

Planners often do pay attention to highly reliable trends, and even to trend shifts, but there are some amazing examples of cases in which they ignored trends. For instance, seven years ago it was quite clear that there was going to be less need for teachers in the United States than had previously been thought, simply because fewer children were being born than expected. Until enrollments actually started going down, however, practically nobody did anything about it. Even now, faced with a nationwide crisis in teacher unemployment, surprisingly little is being done about the problem.

On the other hand, there are also examples of cases in which planners diligently altered major plans in response to extrapolative predictions, only to have the predictions be further from the mark than would have been the assumption of the *status quo.*

*Critique of Extrapolation*

The foremost problem with trend extrapolation concerns the nature of the trend being extrapolated. Almost always an *a priori* assumption is made either that the trend is linear or that it is exponential. Consider the trend line in Figure 3. Are we more justified in extending the line in precisely the same direction or should it bend up or down?

Which of the two patterns illustrated in Figure 4 would you feel more comfortable extending in a linear fashion–(A) or (B)? In the case of (A), there is in a sense twice as much varying going on as in (B). In (B) only the horizontal values vary considerably, but in (A) both horizontal and vertical dimensions show a lot of variations. An extrapolation of (A) takes you into unknown territory on *both* dimensions. You would certainly want to ask whether there might be some sort of ceiling limiting the growth of (A).

Figure 3 ALTERNATIVE EXTENSIONS OF A TREND LINE
(Adapted from Tufte)

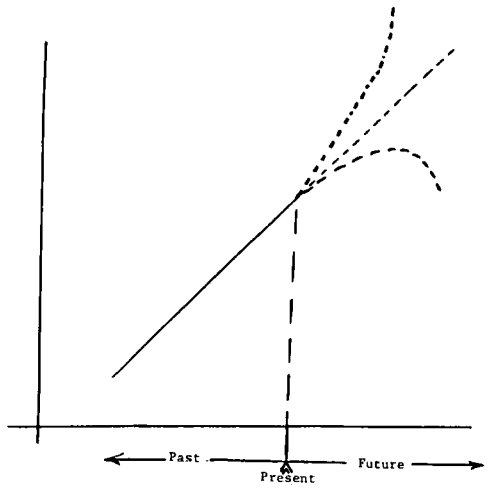
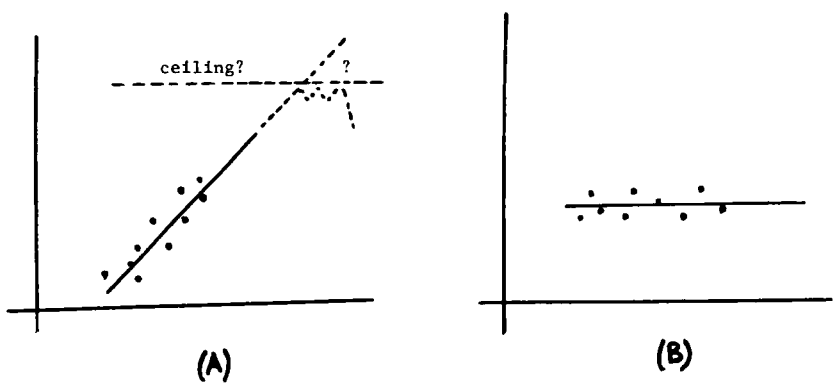
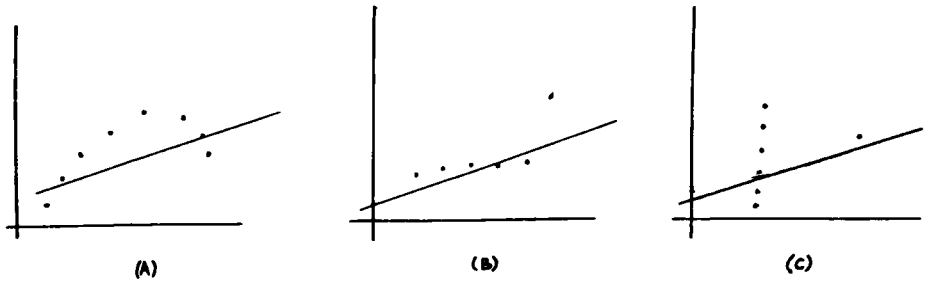



Figure 4 LINEAR EXTENSIONS OF TWO PATTERNS




Sometimes it would be much more instructive if we could be given two graphs instead of one when we are presented with data: the scatterplot without the trend line, and the scatterplot with the trend line. Consider the three rather extreme examples in Figure 5. Obviously the scatterplots reveal very different patterns, but if regression lines were drawn through each, they would all be about the same.

Figure 5 THREE DIFFERENT SCATTER PLOTS YIELDING SAME REGRESSION LINE (Adapted from Tufte)




*Conclusions for Planners*

- Use extrapolation by all means, but examine closely the possible interpretations. Recognize that there are alternative extrapolations for the same set of data points.
- Look at the standard error as a measure of the stability of the trend. It also indicates the "closeness" of the relationship.
- Look for limiting situations.
- Be explicit about how you are interpreting the indicated relationship.
- Relate the trends to non-qualified properties of the system, and ask whether the two can reasonably coexist.

**Delphi**

In a typical delphi, participants are sent a series of questionnaires through the mail. Each questionnaire has two components: information or data for participants, and inquiries to which participants respond (see Figure 6). In the first round, they are asked for their judgments about some aspect of the future. For instance, they might be asked to list a set of goals they have for the future; the goals might be related to a particular institution or segment of society. They might also be asked to indicate how strongly they feel about the goals, when they think the goals are likely to be satisfied, if ever, with what probability they are likely to be satisfied by a certain time, etc. Often participants are given a list of events as well, and asked to answer questions similar to those about the goals.

Figure 6 MODEL OF A TYPICAL DELPHI

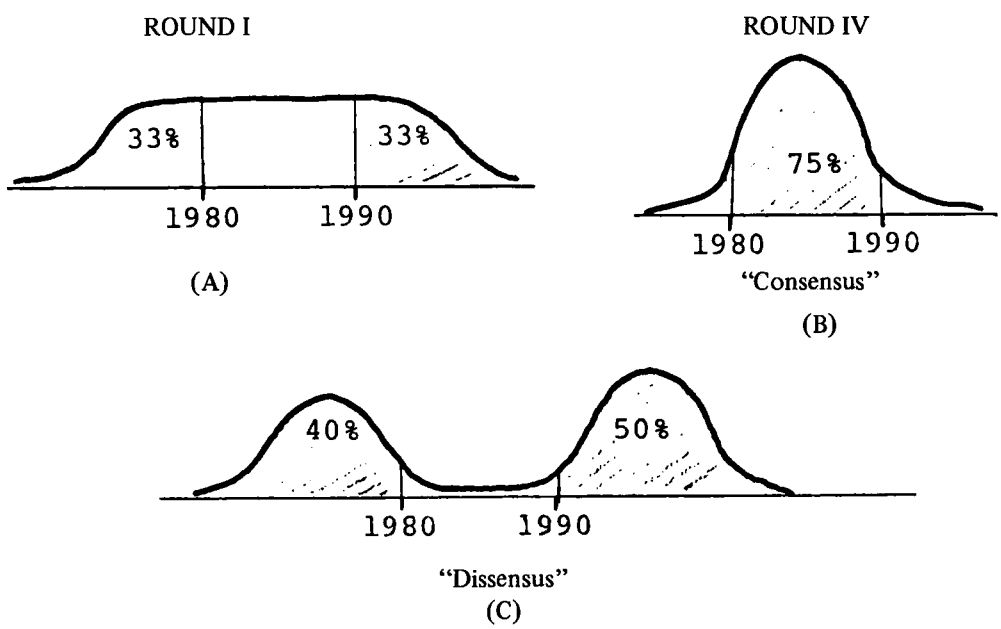
| | ROUND I | ROUND II | ROUND III | ETC. |
|---|---|---|---|---|
| Data: | Possible Future Events | Probabilities, Dates, Interquartile Ranges, etc. (from Round I Responses) | Revised Probabilities, Explanations, etc. (From Round II Responses) | |
| Inquiry: | Goals? Probabilities of Occurrence? When? etc. | Revisions<br><br>Explanations | More information More revisions Questions on Strategy, etc. | |

The responses to the first questionnaire are collated and synthesized, and the data are displayed in some fashion. Then these results are sent back to the respondents in a second questionnaire. Having seen where and how their earlier responses deviated from those of the group, participants are allowed in the second questionnaire to revise their earlier estimates. Sometimes, those participants whose estimates fell significantly far from those of the group as a whole are asked to justify their deviant positions.

The explanations, plus the revised estimates, are collated and sent back to the participants in yet another questionnaire, and the process is repeated some prespecified number of times. Most delphis involve from three to five rounds. This is the skeleton delphi. Most delphis introduce new types of questions in successive rounds, some involve somewhat complicated analyses of data between rounds, and other alternatives are often incorporated. Indeed, the word 'delphi' has in many cases been applied to polling schemes far removed from the traditional delphi described here.

The product of a delphi study is usually the achievement of consensus (whatever that means) about each of the criteria, for each of the goals or events. For instance, in round one a third of the participants might have thought event A would occur by 1980, and a third thought it would occur after 1990. This is illustrated in Figure 7A. In round four three-quarters of the persons might have expected it to happen about 1985 (Figure 7B). That would be interpreted as movement toward consensus between rounds one and four. If consensus were not reached, perhaps there occurred a polarization of opinions instead, as illustrated in Figure 7C. That would be considered almost as good as consensus, but not quite, since ambiguous information is much harder to deal with.

Figure 7 CONSENSUS VS. DISSENSUS AS AN OUTCOME OF A DELPHI



The important thing is that over the course of the study a certain clarity emerges on the future event, a clarity which did not exist prior to the study. The study has produced "knowledge" about the future.

*Advantages of Delphi*

This listing of some of the most often mentioned advantages of delphi is adapted from Sackman.[6] (1) Delphi fosters interactive group problem-solving through iterative polling. (2) By preserving anonymity of individual responses, it avoids undesirable psychological factors "such as specious persuasion, unwillingness to abandon publicly expressed opinions, and the bandwagon effect of majority opinion". (3) It can be applied in almost any area in which "expert" opinion is available. (4) It tends to produce a convergence of group opinion. (5) It produces a statistical response. (6) It takes relatively little time to plan, administer, and interpret. (7) It costs very little. (8) It is very simple for the respondent to understand. (9) It seems useful in generating "long-range forecasts of expected technological and societal developments", providing a basis for planning in regard to the future.

*Uses of Delphi*

The uses of delphi range over a number of areas, from defense planning to education. They tend to involve forecasts about technological, societal, and political developments; the invention of a device or chemical or technique that will solve some problem; the modification of some dominant social custom or goal; the passage of a certain type of legislation. These tend to be subjects of delphis.

Many delphis also involve suggestions of possible strategies for dealing with the forecasted developments–strategies for increasing the likelihood of occurrence of developments seen as favourable, and of decreasing the likelihood of developments seen as unfavourable.

In theory, one can get from a delphi a picture of what some aspect of the future might be like, some notion of how likely that future is, and some suggestions as to how to work effectively for or against it.

An important characteristic of delphi forecasts is that they tend to involve phenomena which are not easily quantified, ones which are often described as occurred events rather than measures of some quantity. This is not entirely the case, however. Events described by estimates of total population or length of the average lifespan are not uncommon; but because these can be quantified, and historical trends for them can be established, people tend to rely more heavily on various kinds of mathematical extrapolation to describe them.

The field of education is one of the most popular ones for delphi-like studies. One might speculate on why this is so. Perhaps the types of information gathered by educators lend themselves to delphi-like polling. Perhaps educators are more concerned about the long-range future than others. Perhaps many educators feel either inadequate or distrustful when dealing with more quantitative types of data and analysis.

Some different forms of delphi have been suggested above. Some other variations may be identified here.

*Focus Delphi.* This form of the delphi divides the respondent population into interest groups, in recognition of the fact that differing goals and priorities among the different groups often lead to a natural dissensus, and that it might be much more useful to discover the differences among the various groups' perceptions about the future than to try to establish consensus. In this form, the instrument is used less as a forecasting device than as a way of understanding competing factions in a common enterprise, and also as a pedagogical device to help participants become aware of the range of perceptions with regard to the future.

*Information-based Delphi.* In this form, participants are given tables, charts, and other information as a data base from which to make judgments. In some cases extrapolations are provided which they may agree or disagree with; in others they are asked to do their own extrapolations.

*Value assessment Delphi.* In this form, respondents are asked to give value judgments about goals and priorities for the future, and in later rounds are allowed to reassess and examine the values basis for their own thinking. As with focus delphi, less emphasis is on forecasting than on enabling respondents to think creatively about the future. (This should not be confused with the more traditional delphis in which trends and shifts in held values are among the forecasted developments.)

*Data-generating Delphi.* This refers to the use of delphi to generate "hard" data to be used as input to more mathematically exact forecasting tools, such as the cross-impact matrix, to be discussed next.

*Avoiding the Mails.* In particular, two types of delphi which do not involve mailing questionnaires have become popular. One is the delphi conducted at a meeting or conference. In these the pedagogical benefits to the participants tend to outweigh any particular findings. The other is "delphi conferencing," which involves equipping each expert with his own console for communicating with a computer. The computer collates group responses and feeds back the results to the participants.

*Critique of Delphi*

The best critique that we have seen of delphi is the 1974 RAND Report by Harold Sackman, called *Delphi Assessment: Expert Opinion, Forecasting, and Group Processes.* Sackman and his colleagues surveyed most of the major documents on delphi, a literature characterized by an unusually meager amount of serious critical analysis. Much of Sackman's assessment will be summarized here. We strongly recommend that any person who wishes to use delphi make a point of first reading Sackman's full report.

First, there are a number of questions one could ask about the practicality of delphi. Even if one accepts delphi in theory as a useful tool, how closely does an actual delphi resemble the theoretical one?

At the formulation stage, how careful is the designer to minimize biases in the questionnaires, to get on top of what is known already in the area he is investigating, to assure that respondents' opinions are based on at least a passing acquaintance with the current state of the art? How carefully are questionnaire items constructed to avoid multiple interpretations, to allow meaningful answers? What sort of pilot analysis of the item pool is conducted to assure that the final set of items is in some sense the most productive?

And what about the respondents? How is an expert distinguished from a non-expert, and how systematically (or randomly) are the experts chosen? Is any thought given to the level of statistical precision that can be expected from the chosen sample?

Delphis are characterized by a high dropout rate. How are dropouts handled? How does the length of intervals between rounds affect the final results? To what degree does the feedback unduly encourage conformist or dissenting behaviour in successive rounds?

What about analysis and interpretations of findings? How useful (or misleading) are purely descriptive results, as compared with the addition of figures on statistical error and detailed measures of dispersion? How might the manner of presentation of the results lead the uninformed to accept the results as more statistically valid than they really are? How carefully does the final analysis stress the procedural, administrative, statistical, and experimental limitations of the study?

Sackman's report examines delphi in the light of key standards of questionnaire design in the field of social science. He uses the American Psychological Association's "Standards for Educational and Psychological Tests and Manuals". He points out that delphi is an unconventional instrument with unconventional ends, but that this does not exempt it from basic minimum standards applicable to all social science. The result of his analysis is the contention that delphi studies tend to neglect virtually every major area of professional standards for questionnaire design, administration, and validation.

As far as unique features of delphi are concerned, Sackman is no more charitable in this area than in the other. He is not alone here. Tim Weaver, a former colleague at the Educational Policy Research Center in Syracuse, posed serious questions about the use of simplistic descriptions for events which probably represented complex and poorly understood phenomena.[7] He questioned the need for and the desirability of consensus-forcing procedures, and he questioned whether the advantages of maintaining anonymity really were worth the sacrifice of a face-to-face confrontation which would assure the exchange of assumptions, arguments, and conclusions.

A final point, which we might call the proof of the pudding, has to do with the credibility of delphi among persons in major decision-making positions. Do the results of a delphi influence people's actions? This may be the most important question for planners, although it is an impossible question to answer for certain. We know of no instances in which the results of a delphi have had a noticeable affect on policy or even individual actions. However, we do know of very many instances in which delphis have proven effective heuristic vehicles for participants and for those who administered them, for exploring otherwise seemingly inaccessible futures. In our opinion, that is the area in which the potential and the limits to delphi lie.

*Conclusions about Delphi*

In our opinion, if you are thinking about using delphi,

- Be sure to do it yourself, rather than getting an outside party to do it—you'll learn much more.
- Acquaint yourself with the alternative versions of delphi, particularly those which de-emphasize the role of experts, the need for consensus, and the generation of hard information. Lean towards those which seek to reveal people's perceptions of the

future, right or wrong, and to improve people's capacities to think about the future.

- Acquaint yourself with the critical literature about delphi, so that you will not be disappointed with the outcomes.

### Cross Impact Matrix[8]

The cross impact matrix (CIM) is a technique for describing and analyzing interactions among possible future events. Actually, there are many forms of CIM, but they all work essentially the same way. Input consists of estimates concerning the likelihood of occurrence of events, data on possible trends, and estimates of the impact that the occurrence of each event will have on the probability of occurrence of the others. The The output consists of an "adjusted probability" for each event, calculated on the basis of a formula which uses the trend data, conditional probability data, and the impact.

Figure 8 A FIVE-EVENT CROSS IMPACT MATRIX

| Event No. | EVENTS Effect of | Probability | Estimated Year of Occurrence | IMPACTS Effect on Event No. 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|
| 1= | Laws requiring negotiation between school boards & teacher unions | .7 | 1978 | – | 10 | 5 | 4 | 1 |
| 22 | All teachers in unions | .9 | 1976 | 9 | – | 6 | 9 | 4 |
| 3 | Most students in unions | .3 | 2000 | 0 | 2 | – | 8 | 9 |
| 4 | Voucher plan mandatory half of states | .4 | 1980 | 6 | 8 | – | – | 1 |
| 5 | 20% increase in enrollment in "new schools" | .8 | 1980 | -5 | -7 | 6 | 10 | – |

For instance, a five-event matrix might be displayed as shown in Figure 8. The estimated impacts are displayed in matrix form on a scale from -10 to +10, where -10 indicates that the occurrence of the event in the corresponding row would have the strongest possible negative influence on the event in the corresponding column; a +10 indicates the strongest positive influence; a zero indicates no influence; and so forth. Output (or "final probabilities") is achieved by conducting a series of runs and averaging the results, where for each run: (1) an event is chosen at random, and it is "decided" on the basis of its probability whether it has occurred; (2) the probabilities of the remaining events are adjusted according to the formula and whether or not the chosen event occurred; (3) another event is chosen from among the remaining; and (4) the process is repeated until all the events are exhausted.

From the data generated in the process, final probabilities for the events are calculated. Many runs need to be made to account for possible differences in the order of occurrences of the events. After a number of runs, all starting with the same input

data, reasonably close estimates of the "true" final probabilities can be derived. If the computer is in an interactive mode, then this whole process can be repeated in real time, with adjustments made in the input data which could conceivably be controlled by certain actions, to test the effects of alternative actions.

The first, and perhaps for the participants the most valuable, part of the CIM exercise involves determining the inputs. This is the stage when the participants are forced to examine very carefully the events which are most important to consider, all the complex interactions among the events, and the likelihood and importance of each event within the whole environment.

The next part of the exercise involves mathematical manipulations of the inputs. For a ten-event matrix a minimum of about thirty thousand calculations are required to determine the final probabilities; thus the computer is needed even for a single run.

*Uses of the Cross-Impact Matrix*

The CIM comes into use in futures research normally only after some closure has been reached on a manageable set of goals and events characterizing a range of alternative futures. That is, after generating a list of future developments (e.g., using delphi) more or less independently from each other, there is a need to take into account their relative importance and their influence on one another. CIM is a tool for doing this.

Because of its complexity, because it is relatively new, and possibly for other reasons, CIM has not enjoyed the widespread acceptance of techniques such as delphi. It tends to show up on the tail end of futures exercises, which is understandable because the events list and corresponding data have to be generated before the analysis can be run.

CIM has been used primarily in the areas of industrial and governmental planning. We know of instances at the state, national, and international level of the use of the CIM for forecasting and planning. In some instances, education has been a component of the exercises--that is, a subset of the goals and events covered could be considered either as educational or educationally relevant. It is hard to tell whether the future will show an increase in the use of the cross impact matrix for strictly educational futures work. It is a possibility, but until now there have only been a few applications and they have been small-scale.

*Alterations in CIM*

The proliferation of alternative versions of CIM can be accounted for by the fact that the basic model raises a number of difficult questions. Some innovations have incorporated Bayesian methods for revising subjective estimates. This is an important and proper move in our opinion. Other versions have experimented with improvements in ways to handle the probability linkages. And some researchers have figures out ways to incorporate hard extrapolative trend data into the analysis.

A very radical alteration is Sandow's cross-purpose matrix, which uses the cross-impact form, but without the mathematics.[9] It results in a very effective heuristic exercise.

*Critique of CIM*

As with simulation, nobody would consider the use of CIM were it not for the availability of sophisticated computing machines, and therein lies one of the major problems with

CIM. That is, the computer does its work so efficiently that there is a tendency for the user to focus only on the computer-generated output and forget some very tenuous links between the interactions among events in reality and the interactions defined by the formula the computer uses. Even if this were not the case, the complexity of the manipulations of the data make the process almost impossible for most users to follow.

Another problem relates to the garbage-in-garbage-out principle. CIM deals almost exclusively with subjectively generated forecasting data, which are impossible to verify. Who knows what the data really mean? For instance, the initial probabilities have virtually no grounding in our scientific definitions of probability, yet they are treated as though they were very rigorously arrived at.

*Conclusions on CIM*

The many questionable characteristics of methods like CIM make it foolish to think of them as producing anything but the roughest estimates. They can provide a useful framework for thinking about the future, and they can serve as a stimulus for raising questions that might not otherwise occur, but they do not provide new knowledge about the future.

If you are thinking about using CIM, we do not advise you to do it yourself; get someone else's program and use it for what it is worth. Use it to raise issues, to question established truths, and to stimulate thinking about consequences of alternative courses of action. Do not use it for producing knowledge about the future.

**Comparison of Techniques**

The brief comparison which follows touches on three criteria that are important to planners in deciding which technique to use for a particular problem. They are: purpose, reliability, and validity. Other criteria, such as cost, must certainly be considered before a decision is made, but they will not be examined here.

*Purpose*

Since delphi and CIM are designed for gathering and analyzing poorly quantified trends and interactions, the information they produce should not be considered quantitatively exact. Scenario generation and brainstorming do not necessarily rely upon hard data, and are in many instances amenable to CIM and delphi-like techniques. As heuristic tools, they can be useful in freeing up the mind to think about the future from different perspectives. Techniques such as these can also be useful for determining perceptions of one or more sub-populations on a range of questions about future events.

Simulation and extrapolation are useful when system structure and system levels are a concern. Delphi and CIM pay little attention to these. Simulation is more appropriate than extrapolation when the major causal relationships are known. Extrapolation is perhaps more appropriate when relationships have been established on an associational basis only. Extrapolations are also appropriately used within models which involve established causal relationships.

*Reliability*

Strictly speaking, all four techniques have been shown to be reliable when properly administered. That is, they produce consistent results according to the rules which govern them. That is:

- Delphi produces consensus. That is, in later rounds, participants tend to be more in agreement than in earlier rounds.
- CIM tends toward the same results if it is run enough times for each game.
- Simulations produce stochastically consistent results within specifiable limits when properly constructed. (It is worth raising the question whether a particular model does lead to such consistency, however).
- Trend extrapolation, being deterministic (as we have discussed it above), always produces the same results for the same data.

*Validity*

Validity refers to the degree to which an instrument measures what it is supposed to measure. It is on the criterion of validity that the responsible futurist-planner must part ways with many other futurists. Some futurists are essentially dreamers and creators of imaginary worlds, whose prime concern is with freeing up the imagination. Futurist-planners must go beyond this. In addition to the exercise of imagination with regard to the future, the planner is responsible for actions he must take in pursuit of the imagined world, actions which will have tangible effects upon people.

To our knowledge, every attempt to determine the validity of cross impact and delphi has been methodologically weak. In some cases the exercises were conducted by strong proponents of the methods themselves. In any case, validity of these methods is difficult to test because they deal exclusively with the future, and they describe systems which are only vaguely understood. Consequently, although CIM and delphi have not been proved to be invalid, there is little reason to believe they might be valid.

We must conclude that responsible planners must seek verification of information beyond that which is generated by these two techniques, or admit that they are acting largely on a belief in the veracity of the group of participants and the validity of the "physics" of the future implied by the techniques.

Simulations have been shown to be valid either when they involve quite simple systems, or when good input data can be obtained. Educational system simulations sometimes do and sometimes do not meet these criteria, so one must examine individual cases to decide whether they might be valid. We know of no follow-up studies of forecasts made by predictive simulations involving education.

As for extrapolation, again we cannot name any systematic follow-up studies, but certainly there have been some. For instance, it is well known that the U.S. Office of Education enrollment predictions erred consistently on the low side during the 1950s and 1960s—probably because the growth was exponential rather than linear.[10] Validity can be tested (assuming consistency of the environment of events which affect the trend) by taking part of the data to build the model, then comparing the resultant model with the remaining data.

Hence, simulation and extrapolation do offer the possibility of some measure of validity, but it depends upon individual situations. The planner must subject each situation to his own scrutiny to determine whether it produces information in which he can have confidence.

### Implications for Planners

No technique is without its merits when used with care and with understanding of its purposes, advantages and constraints. In conclusion, we offer planners these summary guidelines based upon the above discussion:

- Find the time to review the critical literature and the supportive literature on any technique you intend to use.
- Be involved in the development, administration, and analysis stages of any instrument that you use.
- Assure that model builders and model users work together; good communication between them is vital to the quality of information produced for planning.
- Pay particular attention to data-gathering needs. The best technique or statistic is only as good as the information it utilizes.
- Be aware of the pedagogical value, to you and to other participants in the planning process (a) of being involved throughout the process of instrument development, administration, and data analysis, and (b) of utilizing the various techniques as devices to test alternative sets of assumptions.

### REFERENCES


1. These concepts have been developed particularly at the Educational Policy Research Center at Syracuse (EPRC/Syracuse) where they are elaborated in the work of Ziegler, Webster, and Sandow. On the pedagogical use of futures approaches and techniques, see, for example: Stuart A. Sandow, "The Pedagogy of Planning: Defining Sufficient Futures," *Futures*, December 1971. Warren L. Ziegler, "Planning as Action: Techniques of Inventive Planning Workshops," *Participatory Planning in Education*. Paris, France: OECD, 1974.
2. Organisation for Economic Co-operation and Development, *Mathematical Models for the Education Sector: A Survey*. Paris: OECD, 1974.
3. Cicely Watson, "Canadian Experience in Application of Quantitative Models for Decision-Making," *Educational Planning*, (New Series), Vol. 1 No. 1, May 1974.
4. Adam Smith, *Supermoney*. New York: Random, 1972.
5. Much of the material in this section on extrapolation is based upon: Edward Tufte, *Data Analysis For Politics and Policy*. Englewood Cliffs, N.J.: Prentice-Hall, 1974.
6. H. Sackman, *Delphi Assessment: Expert Opinion, Forecasting, and Group Processes.* Santa Monica, California: RAND, April 1974. R-1283-PR.
7. W. Timothy Weaver, *Delphi, A Critical Review*. Syracuse, N.Y.: SURC, Educational Policy Research Center, February 1972. RR-7.
8. For a fuller discussion of the cross impact matrix, see: Michael Folk, *A Critical Look at Cross Impact Matrix*. Syracuse, N.Y.: SURC, Educational Policy Research Center, August 1971.
9. Delayne Hudspeth, Stuart Sandow and Donnelly Barclay, *A Long-Range Planning Tool for Education*. Albany, N.Y.: New York State Education Department, 1970.
10. Allen Hammond, *Mathematical Models in Education and Training*. Santa Monica, California: RAND, September 1970. RM-6357-PR.


### SELECTED ADDITIONAL SOURCES


11. On predictive reliability: Kenneth Boulding, "Predictive Reliability and the Future: The Need for Uncertainty," *The Future of Education*. Louis Rubin, ed., Boston Mass.: Allyn and Bacon, 1975.

12. On delphi and cross impact matrix, note the essays by Michael Folk, Stuart Sandow, and Timothy Weaver in *The Potential of Educational Futures*. Michael Marien and Warren Ziegler, eds. Worthington, Ohio: Charles A. Jones, 1972.
13. Journals which often have articles on projection, forecasting, and futures techniques include: *Planning for Higher Education,* Educational Facilities Laboratory, New York; *Futures,* IPC Science and Technology Press, Guildford, Surrey, U.K.; *Technological Forecasting and Social Change,* American Elsevier, New York.
14. The following organizations publish occasional reports of interest: RAND, Santa Monica, California, U.S.A.; The Ontario Institute for Studies in Education, Toronto, Ontario, Canada; Battelle Memorial Institute, Columbus, Ohio, U.S.A.; The Institute for the Future, Middletown, Connecticut, U.S.A.; and the Educational Policy Research Center at Syracuse, Syracuse, N.Y., U.S.A.

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# THE PLANNER AS TEACHER AND LEARNER

## Introduction

This paper describes briefly a new approach to policy planning and the ways in which planners might choose to employ this approach as an important adjunct to their typical roles as technical planners in educational and other organizations of complex human activities (e.g., community development, health care delivery, environmental/ecological concerns, urban and metropolitan complexes, state agencies, organizational change and development, etc.).

We call this new approach *futures-invention*. These words, however, do not adequately convey other essential features of the approach, such as: its participatory character; its concern for delineating alternative, desirable states of affairs in the future; its focus on moving from these futures back to the present in such a way that participants can devise practical strategies and develop collective commitments for action in the present; its serious concern for intersectoral analysis and comprehensive policy formation, and most important of all, its approach to these areas as matters for teaching and learning. Through futures-invention, non-experts acquire a set of competencies that facilitate effective participation in the definition and handling of problems which concern them.

Futures-invention does not purport to be a panacea for the range of problems which serious planners have confronted for many years. Nevertheless, since its inception in 1970, futures-invention has developed into an approach to the future in which all of the features described above (and the problems associated with them) are addressed openly and with the aim of continuous discovery and modification. Futures-invention has been developed and tested in multiple settings, with scores of organizational and community entities throughout the country, involving thousands of participants from all walks of life. These settings have reanged from a state-wide focus such as Washington, Florida and Colorado, to local communities such as Rochester, N.Y., Memphis, Tenn., Bowling Green Ky., Virginia Beach, Va., Langley Park, Md., etc.; from educational institutions and settings (Canisius College in Buffalo, N.Y., the Kansas City School District's Community Task Force on Desegregation, the Adult Basic Education Center in Syracuse, N.Y.) to a wide variety of public and private organizations (the health care delivery system of the Sisters of Mercy, Omaha Province, the League of Women Voters, Chambers of Commerce, a number of churches and their congregations, etc.).[1]

As a new approach to policy planning, futures-invention is not like technical planning, as most planners would understand that activity. Moreover, it is not a substitute for various technical planning methodologies as these have been developed over the years; and it is not our purpose to argue for that substitution.[2] It is our aim to convey briefly what futures-invention does, why it does it, and what implications this might have for planners as they consider the choice of planning instruments available to them and examine their own professional roles in a new context.

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### The Context for Futures-Invention

We would argue (and are not alone in adopting this position) that the world, the United States and the multiplicity of institutions, organizations, practices and beliefs through which human beings act out their lives are in a state of flux and transformation. Some persons who maintain this position, explicitly or by the effects of their analysis, are doomsday prophets; but we do not count ourselves among that group. Others might be called neo-primitivists: persons who, confronted with a complexity of events and forces, see modern societies gradually unravelling under the pressures of population growth, inequitable distribution of resources, goods and services, the unanticipated consequences of scientific and technological breakthroughs, etc. Under those conditions, they advocate a return to simpler settings, the good old days in which persons lived in close communal settings independent of other entities and not caring (or being able to care) about what was happening in the next city or state or across the world. Still other persons see a world in transformation so complex and interdependent that it must be managed by a technocratic elite who possess the competencies to employ fifth-generation computers and sophisticated operations research techniques within a worldview of cybernetic loops out of which will emerge some new, optimal equation for controlling and balancing the fears, hopes, aspirations and behaviour of billions of people.

The very language we have used in summarizing these different positions suggests one of the problems futures-invention highlights: the problem of technical vocabulary, of expert language. For, in an age of specialization (perhaps over-specialization) and proliferation of credentials, human beings, in their office of citizen, have been denied access to the ideas, the techniques and the understanding which form the arsenal of policy analysis and policy formulation. Within this context of societal transformation, futures-invention has attempted to render accessible to citizens of all walks of life, regardless of their levels of formal educational attainment, the tools of policy formation and its requirement for clear thinking, the management of complex information, the arraying of alternative choices, and the problems of making decisions and engaging in concerted actions.

We might say a bit more about this era of transformation. It is not only futurists, policy scientists, planners and government leaders who have developed sensitivities about this unprecedented age in human history. Our experience suggests that, however unsophisticated may be their language, most citizens are fully capable of expressing both their concerns and, at times, imaginative and effective approaches to addressing these concerns. One does not have to be a sociologist or psychologist to recognize that the traditional nuclear family is suffering serious strains under the blows of intergenerational conflict, changes in sexual mores, changes in female self-concept, and the like. Nor does one have to be a political scientist, public or education administrator to understand that what *we* call issues in educational accountability are paralleled by citizens' questions on all fronts about the effectiveness, credibility and integrity of many of our governance institutions, from the federal to the local level. Issues of pollution, environmental decay, the incarceration of old persons in enclaves set apart from the daily activities of living, producing, consuming, are not just matters for specialized concern. One has only to ask citizens about these and scores of other policy issues and problems, to uncover a wide range of opinion, perceptions, commitment and inventiveness with respect to these matters.

But, of course, we are not talking about opinion surveys. Futures-invention constitutes an attempt to involve citizens in very careful deliberation about some matter of

common concern which brings them together. Futures-invention uses the discovery method in the ongoing attempt to formulate the correct questions with which to query areas of human experience (like schooling, for example) so that participants can become clearer about the problems, their goals for the future, the limits and possibilities of their own action, and what might be done to modify that experience in desirable ways.

### The Assumptions of Futures-Invention

From what has been said so far, it should not be surprising to readers that we firmly believe that the future is too important to leave to the futurists, that policy planning is too important to leave to the political scientists, and that education is too important to leave to educators. That belief, however is not espoused with the aim of denigrating the substantial efforts of competent specialists to advance our knowledge about complex issues and sharpen the instruments for addressing these issues. Rather, the belief stems from our commitment to the human person (which, of course, includes the experts) and our experience in futures-invention which suggests that persons possess an extraordinarily powerful, untapped reservoir of imagination, intentionality and good common sense which, in modern times, we have very effectively delegitimized.

Futures-invention is a practice, a set of activities (summarized below) which rests on beliefs rather fundamental to Western culture and traceable all the way back to the ancient Greeks. The concepts of citizenship, of practical wisdom, of justice, were addressed by Aristotle in the *Ethics* and the *Politics* some twenty-five centuries ago. They have been readdressed at other points in our common Western heritage, most particularly by the U.S. Founding Fathers. Basic to those beliefs is a valuing of the human person through a nurturing of his/her competencies to choose right courses of action when allowed and enabled to make such choices. Paraphrasing John Stuart Mill in his classical essay, *On Liberty*: self-government is neither perfection nor panacea; but compared to all others, it is the best.

Those beliefs have been seriously challenged in this century. Philosophers have been replaced by planners, and the office of citizenship by the offices of bureaucracy. Futures-invention constitutes one way to develop among citizens the competencies to once again engage in inquiry about the concrete aspects of a just society and to engage in those collective actions to make its emergence more likely in a future of grave compexity.

### New Competencies for the Educational Planner

Long-standing agreements about whom and what education is for, when, where and how it should occur, are eroding. Perhaps as much as any other central domain of human activity, education feels the pressures of change and transformation. The arsenal of traditional planning techniques available to educators was not developed to counter such erosion. New questions must be asked, and all of us, including planners, should gear ourselves to learning how to ask them and of whom to ask them. Linear planning from past to future, whether at the local, state or national level, will no longer suffice by itself. An approach to policy formation which is solely preventive or adaptive is inadequate because futurists, other experts and citizens no longer agree on what the future (of education) will be like or should be like. As Kenneth Benne put it, "Education must be conceived . . . as empowering, supporting and equipping men and women to invent and reinvent their own futures".[3]

We contend that educational planners ought to assume new responsibilities. These emphasize the transfer of skills, knowledge and attitudes to the client groups such that

these persons may begin the activities of invention, inquiry and action about the fundamental issues of their concern. In short, a new role for educational planners as teachers and learners is called for. It is to bring their constituencies and client groups (e.g., administrators, teachers, parents, students, concerned citizens, etc.) to that point where: (a) they are able to understand their own concrete situations; (b) they become clearer about their own intentions to accept or change their situation; and (c) they begin to take the immeasurably difficult, but not impossible, actions with other persons of *inventing* and *discovering* new ways of actualizing these intentions.

The competencies required of the planner, then, are the same kind which he/she must facilitate in others, and they constitute a competency model of futures-invention for policy planning.[4] The compentencies involve:

1. A willingness and ability to engage in intentional action.
2. A willingness and ability to maintain and/or create the conditions for others to engage in intentional action.
3. A willingness and ability to maintain, discover or invent the collective institutions which facilitate creative integration both of differing intentions and of differing consequences and strategies.
4. A critical capacity to discover through collaborative action and reflection what are and should be matters of common concern.
5. A willingness and ability to test, extend and/or redefine the limits and boundaries to collaborative action through social invention.

1. *A willingness and ability to engage in intentional action* is the competency of human agency: that capacity, central to being a person, of having and knowing one's intentions and of acting on them in such a way as to bring them about. The mark of having and knowing one's intentions is expressing them in action. Moreover, the context for intentional action is social, always interpersonal.

These points are essential for understanding futures-invention as a policy planning model in which the planner is both teacher and learner. As a 'discovery', rather than a 'predictive' model, the futures-invention appraoch does not permit us to predict future events from a theory about how and why human beings behave. It will not permit prediction, for example, of policy goals and/or program strategies until participants in futures-invention have formulated these. To posit or assume specific, desirable futures for education as a basis for technical planning is to deprive client groups of their agency. It is to deny their capacity and the likelihood of their developing the competencies to engage in action to achieve their intentions. Students and teachers, teachers and administrators, planners and their clients, etc., may or may not share common intentions about the action of either group in relation to the other, or to some common enterprise.

Thus, the necessity for the first competency: the expression of human agency–to have and know one's intentions and to express them in action in an interpersonal realm.

2. *A willingness and ability to maintain and/or create the conditions for others to engage in intentional action* is the second competency. The agency of intentional action cannot be understood outside the social context comprised of other human agencies. Thus, one intentional action for persons must become that of developing the competency

to act in such a manner as will facilitate the action of others, including facilitating their capacity to reflect on their intentions, release their imaginations, and test out their intentions with others.

Clearly, the competency must enable persons to address the complex issue of reaffirming and/or discovering the conditions which promote the nurturing of human intentionality. The competency to engage in the kind of intentional actions which promote the conditions for other persons to do likewise must be learned in the local setting in which the meanings of actions are less likely to be mediated by national institutions. The practices will be characterized by expressions of intimacy, trust and caring among persons who respect the capacity of others to engage in intentional action.

As persons learn to respect the intentions of others, they are confronted with the problem of acknowledging the personhood of others with whose intentions they disagree, or, in the larger society, whose intentions they do not even know. These disagreements will occur in local, state and national settings. New modes of adjudication and negotiation will be required which are expressive of the intention to nurture and foster the agency of others. These will be enabling modes whose discovery and invention constitutes the third competency.

3. *A willingness and ability to maintain, discover or invent the collective institutions which facilitate creative integration both of differing intentions and of differing consequences and strategies.* Basically, this competency constitutes a set of practical intentions about modes of interaction among persons. Agreement must be sought on the desirability and possibility of enabling persons to negotiate the meanings of their interactions as expressive of their intentions. That agreement would be signalled by the emergence of a collective intention—one held in common by persons whose intentional actions have consequences for others. This collective intention would be to maintain, discover or invent collective institutions that are formative and exploratory rather than codified, routinized and bureaucratic. Clearly, the emergence of this competency in planners and their educational clients may call into question conventional organizational arrangements (schooling) for teaching and learning.

There are three particular characteristics of these intentionally enabling institutions. One would be the high level of sharing and trusting among those engaged in their formation. A second would be possession of a built-in educative activity, whereby other persons learn to practice their own social inventiveness rather than being suffocated by the inventiveness of an initial formative group. A third characteristic of these institutions would be an affirmation of their own obsolescence which is the negative of their formative character. This should not be construed as meaning change for the sake of change. Instead, this characteristic might be understood as the collective intention to increase rather than reduce the options available for future generations.

Experience suggests that there are limits to our intentional actions, limits imposed by both the habits and intentional actions of others. The fourth and fifth competencies address these limitations.

4. *A critical capacity to discover, through futures-invention, what are and should be matters of common concern* refers to the competency of reflective action. It is not an intentional doing but a thinking about that doing. It indicates a standing back from one's intentions to reflect upon their possibilities, their limits. In short, the issue at hand is

transferred from a personal concern to a matter of common concern. Matters of common concern are matters of judgment, not of fact. They are discovered through a critical examination of the extent to which intentions, consequences and strategies are understood to overlap or interface, and the extent to which such interfaces are mutually supportive or conflicting.

This competency is not the political skill to win. The domain of this competency is collaborative inquiry as distinguished from power politics, etc. Who gets what, when, where and how in the competition for scarce winnings does not signify the literacy of discovering what are and should be matters of common concern in the domain of education. Instead, we refer here to the competency for critical reflection about the "fit" of goals and strategies (the intention, the performance and the consequences) with other persons' goals and strategies.

In seeking a common ground for action, persons may discover both a collective intention of the enabling kind (the second competency) and invent a collective institution for adjudication and negotiations (the third competency). In addition, however, they may discover the limits in practice to the realization of their intentions. It is only by discovering and rendering quite explicit these limits that persons can ever hope to transcend them and invent educative programs and arrangements appropriate to their intended futures.

5. *A willingness and ability to test, extend and/or redefine the limits and boundaries to collaborative inquiry and action through social invention* is the fifth competency and is expressive of the first four. It involves engaging in a continuous and formative process of negotiating, sharing, discovering and inventing the meanings of collective action in a society characterized by a serious erosion of belief in the effectiveness of existing educational institutions to serve the intentions of persons about matters of common concern.

This is the competency to engage in social invention in the domain of policy planning. By social invention is meant bringing about what, to the persons so involved, did not exist previously. The competency of inventive action brings persons full circle, for it is the end which illuminates and informs the means of policy planning, and those means are the teaching and learning of discovery and invention.

Educational planners will have mastered this fifth competency when, as planners, as teachers and learners, they have devised practices through which their clients acquire the competencies described in this model.

### Application of the Model through Futures-Invention

Futures-invention, then, is an approach to the future which emphasizes its moral aspects. It is a set of reflective activities undertaken by persons who are prepared to essay answers to the question, "What should the future be like?" and to commit themselves, through action in the present, to bringing about the desired (intended) futures. The most popular device for futures-invention is a residential workshop, lasting three to five days (including overnight). Alternatively, under certain conditions, persons come together for a few hours each week over a period of months.

Four modes of reflective action are employed: (1) Participants work by themselves, as individuals, to explicate their intentional claims on the future (about the matter of common concern under consideration). (2) Participants work in small (three person) facilitating groups to help each other clarify these intentional claims (usually framed as

goals for a specific time period in the range of ten to fifty years). (3) Participants work together in policy teams (three to ten persons) in order to discover possible, collective agreements about their goals, strategies and actions. (4) Participants meet together in plenary sessions, to review and critique their work, to be introduced to the specific exercises (practices) of futures-invention, and to negotiate decisions in the present about their alternative choices for the future.

Reflective action is associated with a series of questions that are translated into a set of practical exercises. The exercises include: goal formulation, indicator invention, consequences forecasting, assumption identification, scenario construction, value shift assessment, futures history writing, tactics and strategy, action priorities, and collective action commitment. In a range of workshops there may be variations in the number and depth of exercises utilized. A basic set of questions and exercises is outlined below. The description is limited and is intended merely to give an indication of the activities in which the planner as teacher and learner would engage with clients.[5] Where examples are introduced, they are offered not as models, but simply as illustrations that may contribute to the clarity of the description.

### The Activities of Futures-Invention: Questions and Exercises

*Goal Formulation*

The first question posed is: What do you want to do? What do you want to make happen? What do you intend to bring about (in the future) which is new, a not-yet-occurred state of affairs, which you believe is good and desirable, and to which you commit yourself?

Participants address such questions in the exercise of goal formulation. They reflect individually on their intentions, within the context of the problem, issue or matter of common concern that brings them together in the first place. They move into a future—ten, twenty, thirty years hence. They select a time frame most conducive to exercising their imagination in the service of their intentions within the context and limits of the common topic or problem. In formulating their goals, participants do not ask at the outset questions concerning the probability, practicality, politicality, feasibility or fundability of their goals. (All of these are, however, considered before completion of the series of exercises.) Nor do participants generate vague statements about happiness, human development, justice, freedom or equality. Rather, each individual is enjoined to frame a concrete and specific goal in the general problem area, a goal which he/she intends to bring into existence. The goal might focus upon a particular group (e.g., children, elderly, the working class, etc.) or address a particular concern affecting an entire population.

After the individual exercise of goal formulation, participants work together in facilitation groups (usually of three persons). They question one another in order to become clearer about the ideas they have developed on their own. This pattern of individual reflection followed by discussion in facilitation groups and possible adjustment of individual goals is followed in the ensuing exercises on indicators and consequences. In each case, the objective is to clarify individual goals—not to debate (at this stage) their merits or demerits.

An illustration may help. An individual goal first stated as "decriminalization of victimless offenses" might be clarified in the facilitation process to read: "The treatment

outside of the judicial/legal system of victimless offenses, i.e., offenses that do not directly affect/harm others beyond the individual perpetrator (e.g., alcoholism)."

*Indicator Invention*

Goals are often stated so vaguely and in such general terms that nobody knows what is actually meant by them. They are often formulated in such a way that it would be difficult to tell how we would know if the goals were achieved.

An exercise employed to mitigate this difficulty is indicator invention. This is an exercise of reflection and imagination which persons undertake individually. They "locate themselves" in the future time when their goal has been achieved (e.g., 1990) and ask themselves: How do I know that my goal is achieved? What are the indicators of its achievement? Participants attempt to formulate, in specific and concrete terms, the indicators of the goal's occurrence. The indicators are "concrete" in the sense that they are about specific persons, places, institutions, organizations, behaviours, practices. They are signs of the reality of the goal. They stand for the goal's occurrence, but they are not the goal. Sometimes they have the specificity of numbers; sometimes they cannot be quantified, but still they can provide clues to what is actually happening, evidence of goal achievement.

Here again the intent is to become clearer and more specific about the goal. Indicators of achievement of the "decriminalization" goal mentioned above, for example, might include: "the routine appearance in city streets of medically equipped units for the direct and immediate treatment of victimless offenders (formerly incarcerated)".

*Consequence Forecasting*

Because a person is committed to a goal, because he/she believes it is good, the assumption is most often made that it will be good for other people. But experience tells us that the successful accomplishment of somebody's past goal has produced many of today's problems. Hence the question: Assuming that your goal is achieved and you know this, what are the consequences of its achievement?

In the exercise of consequences forecasting, participants assume that their goals have been achieved and are in operation fully and completely. They ask: What are the consequences, *positive and negative*–for individuals, institutions, action units, etc.? Consideration of the negative consequences, for others, of the attainment of a goal can and, in most cases, does lead to reconsideration and goal modification.

*Value-Shift Assessment*

Having clarified their goals through individual reflection and group facilitation, each person next examines his/her values in the future context. The questions are posed: How will you know that your goal will have been worth the effort once it has been achieved? In the future time of the goal's occurrence, will it be valued as it was at the time of its formulation?

The exercise utilized here is called value shift assessment. Participants move into the future time of goal achievement and address a basic set of questions in that 'future present moment': Who am I? What do I do? What are my wants, my failures, my values, my beliefs, etc.? They locate and describe themselves and their activities in the "present" of 1985, 1990, etc. The aim of this activity is to provide some sense of the reality of the future being invented. In some cases, this exercise may lead individuals to reexamine and modify or further clarify their goals.

*Policy Team Scenario Construction*

To this point, no collective agreements have been negotiated, no collective decisions have been made. Thus, persons are confronted with an array of individual, alternative futures generated by attempts to become specific and concrete and clear about goals. The next question addressed is: What are the grounds for agreement and disagreement about the alternative futures of individuals? The intent is to discover whether any participants share common intentions for the future. Those who appear to share common intentions form policy teams and negotiate the meanings of their goals/intentions, indicators, consequences and assumptions, in order to come to some agreement about collective intentions.

Each policy team undertakes the exercise of policy team scenario construction. The task is to construct a collective future in which team participants agree on their collective goal, its indicators and consequences (drawing upon past individual work as well as group discussion). An additional and important aspect of this exercise is the setting forth of assumptions–those basic claims about the nature of man and society without which we cannot understand the meaning of the goal.

*Futures-History Writing*

How did the goal's achievement come about? This question, addressed first individually and then in the policy groups, is an inversion of the more common question: What shall we do to achieve the goal? The usual technique for examining how we get there (the future) from here (the present) involves forward-running patterns of thinking. In this exercise, rather than starting with the present and moving into the future through forward planning, persons move out into the future time of goal achievement (e.g., 1990) and remember from the 'future-present moment' to the past (e.g., 1976) how their goals came into being.

In futures-history writing each individual seeks to tell a plausible and sufficient (but not necessary) story about how the goal came to be. Each policy group member describes major events occurring in each of several time periods preceding the accomplishment of the team goal. (For a 1990 goal, the sequential periods might be 1986-1990; 1983-1985; 1980-1982; 1979-1980; 1976-1977).

Having individually remembered the history of a group goal, policy team members together ask: Do we remember anything in common? Are there some common elements in the memories of the future generated by members of our policy team? The exercise of writing a *collective* futures-history builds upon individual work and group discussion. The history, written from the future and working backwards through time, identifies a number of remembered events for the specified time periods–including the time period only one year away from the present (e.g., 1977). The participants have almost returned to the present. The last recollected events for 1977, or the short-term future, provide the departure point for the next activity.

*Tactics and Strategy*

How do you get from here (the present) to there (the future)? The future at this point is only a year or two away. In each policy group an event from that part of the futures-history closest to the present (e.g., 1977) is taken as a possible strategy goal. That event becomes a goal which can be actualized by taking actions in the present. These actions are called tactics and their formulation calls upon the competencies, experience, resources

and settings (institutional, organizational) of the participants. The intended futures which participants have invented are translated into the arena of the concrete realities of their everyday lives.

The tactics are very specific. They represent what persons propose to do now in the present (e.g., in 1976) to begin their movement toward those futures they have invented. The pattern of reflection and activity involved here share some characteristics of earlier exercises: participants first work individually in identifying tactics; and they forecast consequences of their tactics, paying particular attention to negative consequences which might work to the detriment of the accomplishment of a strategy goal.

*Collective Action*

Through the activities of futures-invention, participants have attempted to fashion some agreements, some collective futures, some collective intentions. The collective character of their work is tested now in hard trade-offs. Participants address the question: What are we committed to do (what actions will be undertaken) in the here and now to begin the journey toward the futures we have constructed?

In the collective action exercise, participants share their tactics with each other (within the policy teams or in the entire group) in order to discover the quality of their collaborative intentions as these become revealed in the actions they agree to undertake together.

**Implications for Planners**

The completion of the activities of futures-invention is only the end of a beginning. Futures-invention is discovery, it is dialogue, it is persons teaching and learning from each other what they intend to do, how they intend to do it, and what the consequences of their action might be.

As planners learn to ask themselves and their clients the preceding questions in a way that renders the human predicaments and social conditions of an era in transformation accessible to clients, they will have assumed their responsibilities as teachers and learners.

Plans are neither to be made by experts to meet the needs (as viewed by experts) of the people affected by those plans, nor are they to be defined solely by relevant technical and economic conditions and requirements. Science, facts and technical knowledge do not tell us what we ought to do, nor do they set limits to our human possibilities unless we *choose* to accept these limits. "Hard" knowledge is not an end but a means for persons who take responsibility for collaborative participation in discovering and inventing alternatives to the present.

Here we suggest a collaborative and dialogic rather than a mechanistic model for planners. The approach does not of itself possess the "objective" or "value-free" forecasting and mathematical properties of conventional planning such as program budgeting, cost benefit and systems analysis, operations research, etc. (These may, however, be soundly utilized in the later stages of futures-invention.)

What has been described is one set of activities for innovation and planning which emphasizes discovery, learning by doing, action-inquiry and participation. This set of activities defines the roles of planner and client as involving the following principles:

1. Responsibility for defining the goals and tasks of an activity is lodged with the clients as learners.

2. Responsibility for evaluating the success or failure of an activity is lodged with the clients as learners, including defining the criteria, standards, indicators and procedures by which such judgments will be made.
3. Knowledge and information serve action. They are instrumental. As clients discover their goals and strategies, they employ knowledge in the service of their practical activities.
4. Clients reflect upon their innovative practice as they engage in it. There is continuous, critical interchange between what they do and what they think about their doing, so as to guide, refine, evaluate and modify the efficacy and desirability of their social inventions while they are making them.
5. Clients are enabled to discover and negotiate their intentions and commitments in cooperation with their colleagues, in their local institutions and action-settings. Critical reflection on the meanings, consequences and strategies developed by the clients is emphasized.
6. Planners serve as facilitators and enablers rather than conventional "technical" experts. Although planners have acquired a solid base of experience in the methodology, theirs is *an educative supportive activity* rather than an *elitist, technical assistance* activity. This means that:
7. Planners provide research, evaluation and feedback to the clients so that data generated are appropriated by the clients for their own action purposes; that is, new knowledge becomes immediately utilized in practical activities.

In short, some planners have discovered the inadequacies of techniques which do not enable their clients to participate with them in cooperative deliberation and experimentation. These planners are invited to adopt the new role of educational planner as teacher and learner and to consider the activities described above as one possible methodology for facilitating that role.

**REFERENCES**

1. Three documented case studies in which the activities of Futures-Invention have been utilized are available, August 1975. They are (1) *Langley Park: A Community in Search of Itself;* (2) *The Future of Adult Education in Colorado;* (3) *An educated Citizenry: Future Perspectives for the Orderly Development of Bowling Green*. Two case studies should be available, Spring 1976: *The Role of the Senior Citizen in Florida's Future; The Future of Citizen Participation in Washington.* These, as well as reference 4, may be obtained from: Publications Department, Educational Policy Research Center, Syracuse Research Corporation, Merrill Lane, Syracuse, New York 13210.
2. Warren Ziegler, "Planning as Action: Techniques of Inventive Planning Workshops", *Participatory Planning in Education*. Paris, France: Organisation for Economic Co-operation and Development, 1974.
3. Kenneth D. Benne, "Continuity and Discontinuity in Educational Development", *Journal of Educational Thought*, Vol. XI, December 1968, p. 147.
4. Warren Ziegler, "On Civic Literacy." Working Draft. Syracuse, N.Y.: Educational Policy Research Center, Syracuse University Research Corporation, July 1974.
5. For adequate description of Futures-Invention methodology, see: W. Ziegler, G. Healy, J. Ellsworth, "Futures-Invention: An Approach to Civic Literacy", *Methods and Materials in Continuing Education*. Canoga Park, Ca.: Klevins Publication, 1976.

Rudolph Johnston and Thomas McCollough*

# LONG-RANGE PARTICIPATORY PLANNING: EXPERIENCE IN THE PALO ALTO SCHOOL DISTRICT, CALIFORNIA

The Palo Alto Unified School District is just completing a cycle of planning activity generated by Project Redesign—a comprehensive long-range educational planning project which has made our District planning-conscious, future-conscious, and participation-conscious in fresh and inventive ways. This article describes the Project and discusses some of the lessons we have learned about futuring, participation and planning at the local school district level.

Project Redesign was initiated in 1972 by action of the Superintendent and the Board of Education to support the design and implementation of long-range participatory planning in the District. The emphasis on "long-range" planning reflected the expectation that the Project would produce recommendations to give direction for educational development for the decade or so ahead (a time perspective contrasting sharply with the more usual annual time-frame of the budgeting and operational activities equated with planning in many school districts). The emphasis on "participatory" planning affirmed a commitment to processes that would involve the entire school community (students, citizens, professionals). The only *a priori* constraints imposed were the budget level ($45,000-$60,000 a year) and a general time-frame of about thirty-six months for the Project. The planning director was to have no other operational responsibility, although he was to be a member of the Superintendent's cabinet.

In March 1973, the District was awarded a three-year grant by the National Institute of Education to document and interpret its experience with one aspect of the Project's planning process, the School/Community Input Teams—mini-planning commissions which were to become the chief organizational work units of the participatory planning process. That research concludes in July 1976, and will be reported in detail later this year.

To some, Project Redesign (no connection with a similarly named project in New York State) has seemed to be "sensible foolishness," a positive term described by March.[1] To some, it has been among the most creative and innovative planning projects at the local school district level in the country. To some, it has been a planning curiosity, interesting because so many rules of traditional school planning and innovation have been broken. To others, we are sure, it has seemed a long-winded exercise in futility. We shall not know for a while which label comes closest to describing the truth.

## Description of Activities

The history of Redesign since July 1972 is a development story, the major lines of which may be summarized in the following seven stages.

*Rudolph Johnson is Research Coordinator for Project Redesign; Thomas McCollough was Director of Project Redesign, and is now Director of Research, Evaluation and Organizational Development, Palo Alto Unified School District, California.

1. *Orientation* (July-September 1972). During this start-up time, the project office was opened and the director hired. This was a period of dialogue with staff, community, students and others across the nation about their perceptions of long-range planning. An informal study of reputed influentials was designed to help locate special interest groups, as well as community and professional leadership, and a preliminary set of findings and recommendations were reported.

2. *Convening Committee* (October 1972-January 1973). During the ensuing three months a committee of thirty citizens, students and professionals was charged by the Board of Education to invent a process and a management structure for the project. Subsequently, a Design Management Team of eleven members was appointed by the Board for a two-year rotating term to manage the planning process. Voluntary, multiple-client School/Community Input Teams (SCITs) were "invented" to conduct planning studies and make recommendations for changing the school system. Task Forces were charged to conduct a context analysis of current practices and needs. The Convening Committee published a fifteen-point set of ground rules, encompassing a value system for the project. The Committee's recommendations were adopted by the Board of Education. Figures 1 and 2 illustrate Redesign working relationships and planning cycle.

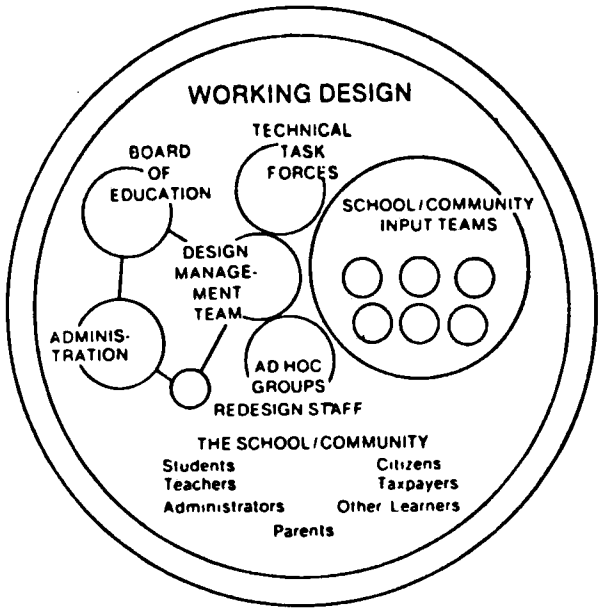
3. *Formation of the Design Management Team* (February-July 1973). The eleven-person Design Management Team (DMT) was formed, all prior documents studied, and decisions and procedures developed to form the Task Forces to undertake a context analysis of the District. The DMT met almost weekly for three years following their formation and published annually a detailed management plan of activities.

4. *Formation and Work of the Task Forces* (July-December 1973). Task Forces of volunteer staff, citizens and students were formed by the Design Management Team in the following areas: Decision-Making (formal and informal); School-Community Profile; Needs Assessment; Retrospective Data; Societal and Educational Futures; Curriculum. We also provided for an open-ended collection of informal wishes of individuals that we labelled "Dream Teams." Reports on each topic were published as part of the data base from which educational planning would begin.

A brief statement about the work of the Future Task Force and the Dream Teams may interest readers, for the focus and style of these groups are no doubt perceived as more unusual than others. The Task Force on Emerging Societal and Educational Futures examined the huge body of literature on futures studies. We benefited greatly from the contributions of two members of the group who had worked full-time on futures research at the Educational Policy Research Center of Stanford Research Institute since 1968. The many products of the committee's work include some alternative future scenarios for Palo Alto in 1985 and a multimedia presentation introducing alternative futures.

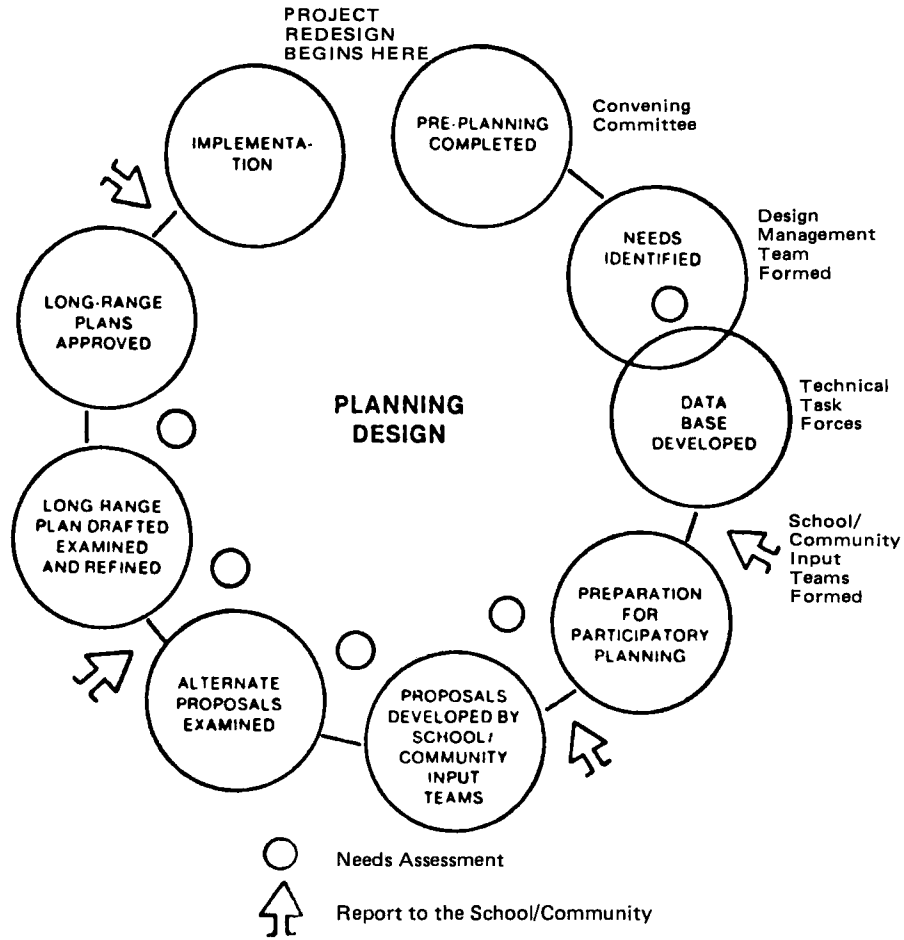
The Dream Team notion will also interest readers. Dr. Jim March, the organization theorist at Stanford, endorses careful, rational planning, but also suggests that institutional developers, planners and policy-makers develop the habit of "sensible foolishness" as they pursue change and new goals. From the beginning of Redesign we have tried to reserve a small corner for "sensible foolishness". After months of exploration the Dream Team notion caught on, and we had hundreds of people in the District "inventing the future", sending us recorded telephone messages or filled-out dream cards; or, in the case of children, drawing pictures or recording their hopes for schools of the future. Technically, this is called free "futures projections". Over the course of the Project, a series of reports describe our findings from these and other methods of inquiry.

Figure 1 REDESIGN WORKING RELATIONSHIPS




Notice that the Design Management Team reports to the Board of Education. The Redesign Director serves as a member of the Superintendent's Cabinet and as an "Executive Secretary" to the Design Management Team.

Figure 2 REDESIGN PLANNING CYCLE



5. *Formation and Work of the School/Community Input Teams (SCITs)* (January 1974-March 1975). In January 1974, five pilot School/Community Input Teams (SCITs) were mobilized. In July 1974 an additional five were initiated. General areas of study included: Secondary Education; the Early Adolescent; Alternatives in Elementary Education; Long-Range Finance; School/Community Relationships; Primary Education; Administrative Needs; Special Education and Support Services; Teacher-Learner Relationships. These groups conducted extensive literature searches, community and staff surveys, and their findings were published. The findings were then translated by the SCITs into "operating goals" for inclusion in a synthesis of a long-range plan.

During this period, a second needs assessment was conducted, reconfirming data from the first needs assessment. The Redesign staff also assisted in developing and conducting a budget priorities survey among citizens, staff and students.

Two hundred eighty-seven volunteers served as members of teams, task forces and committees. Thousands of students, citizens and staff members were surveyed as part of random samples from the entire school district.

6. *Synthesis of Findings and Recommendations* (April-October 1975). The Design Management Team supervised the synthesis of the Task Force and SCIT material. A preliminary "issues" paper was prepared and widely distributed as a first check on whether the synthesis was responsive to the findings and suggestions of the various work groups. Then an 80-page working draft of a long-range plan with five major goals and thirty-six operating goals was published and widely distributed in the school/community.

7. *Decision-Making and Implementation* (October 1975-July 1976). In October 1975, a process was created and approved by the Board of Education and the Superintendent involving three iterations of the recommended operating goals found in the plan. The agreement is that all operating goals will be publicly accepted, rejected or modified in the decision-making process. A first set of goals has been selected for consideration and approval in February.

A theoretical construct has been developed for interpreting the outcomes of the decision-making process, based upon three models: (1) the "Garbage Can" model of March;[2,3] (2) a Categories vs. Practices Model (symbolic interaction) recently suggested by John Meyer;[4] and (3) a rational planning model, describing Redesign as a collateral organization.

### Issues Arising in the Redesign Process

The above brief description of activities does not begin to describe the subtleties, the problems or the issues confronting this participatory planning project. We are presently evaluating in detail the assets and liabilities of our experience. At this time, several issues seem to be especially noteworthy. They concern the location of long-range planning in relation to day-to-day operations; volunteers vs. representatives or blue-ribbon committees; the time involved in participatory planning; problems in conceptualization; the nature of leadership; and the conventional wisdom vs. innovation in planning.

#### *Location of Long-Range Participatory Planning vis-a-vis Day-to-Day Operations of the District*

From the beginning, Project Redesign has operated independently of the day-to-day life of the school district. Some might argue that isolation is an invitation to failure because

the implementers and key decision-makers are not necessarily involved in developing the recommendations and therefore cannot "own" the decisions. Inviting volunteers to participate in developing plans exacerbates the problem. By granting rights to publish findings and position papers publicly without prior approval of the "system," a further invitation to alienation is made possible.

But these liabilities are also assets. Participants can work on the long-range plan because they are interested and want to work, not because they are asked or assigned to work. They can think and express freely ideas that are known to be counter to conventional wisdom or normative practices, without feeling hampered by prevailing opinion or the power structure. Many participants found that they were able to give voice to long-held, but largely ignored values or ideas.

We soon began to perceive Redesign as a collateral organization* (Zand),[5] in which members of the professional staff, students and community could come together in new, open relationships for learning, discussion and problem-solving. Participants were co-equal partners in the enterprise, no matter what their role at other times.

We reason that a planning operation located entirely within the formal organizational structure might have been able to proceed more quickly, particularly in the decision-making and implementation phase. A parallel collateral organization such as ours will require a longer period for absorption of its results, but it operates with a great deal more freedom and flexibility in the planning process.

Throughout, the Project was given continuous endorsement and legitimacy by both the Superintendent and the Board of Education. Such public credibility and support is absolutely necessary as the distance of the planning operation grows from the centre of power of the formal organization. Otherwise, the risks of being ignored would indeed be too great.

*Volunteers vs. Representatives or Blue-Ribbon Committees*

When it came time to form Task Forces and School/Community Input Teams, we advertised in the local newspaper, held open houses and sent letters to certificated and classified personnel inviting any-and-all comers to volunteer to work as long-range planners. Interestingly, many opinion leaders on the staff and in the community signed on, as well as many unknown "new faces". From time to time, specific recruiting was done to assure some balance between staff, citizens and student membership in the groups.

No claims were ever made that the groups were representative. Rather, we encouraged the teams to assure representativeness by making random samples of each client population in the district as they developed data. Too often "representatives" serving on committees do not in fact communicate with their sub-communities; they literally speak for themselves. Our general perception of Blue-Ribbon committees is that members are too often non-workers, but reactors to staff-generated input. We preferred an active working role for our membership, with staff serving in support roles.

We have carefully documented and continue to evaluate our experience with the several dozen work groups and the process that has enabled hundreds of people to have easy access to a highly visible, well-supported activity with obvious policy implications.

*Collateral organizations: a parallel, continuously co-existing organization used to supplement the existing formal organization.

Two forthcoming working papers will discuss our findings and the theoretical models developed to assess the quality and quantity of voluntary participation and factors affecting these.[6] Meantime, we note that two key factors in enabling the Project to function well are the participants' understanding of the planning role and the heterogeneity of the various groups.

*Demon Time*

In the first year and a half of the Project the most frequent question we heard was "What's taking so much time? " The question had a Kafka-like quality to us because we were literally working day and night; and preliminary evaluation suggested that the volunteer participants were contributing something like four to six hours per week, with increased student and teacher involvement during the summer. The pace was about all we could handle. Our experience confirms Mansbridge's suggestion that about three times as much time expenditure should be expected in participatory as compared with hierarchical group processes.[7]

Moreover, we made some time-consuming mistakes. For example, we planned an elaborate four-session orientation for new School/Community Planning Teams about futures, planning theory, and school district procedures. We now conclude that early orientation should have been very brief and that greater depth could be most effectively achieved only after the groups had been together for a while. Again, within working groups, we used time-consuming, consensual procedures of decision-making, such as seven or eight iterations of the long-range plan to achieve consensus within the Design Management Team. Another time-consuming operation turned out to be the construction of surveys by groups. Issues concerning content and structure of questions, the simultaneous need to learn survey techniques, and the problems, bargaining and emotions involved in heterogeneous work groups—all of these factors combined to render the creation of surveys taxing and time-consuming, even nerve-wracking.

In short, using volunteers and participatory techniques, the time frame for educational planning must be seen in terms of years, not months. At times progress seemed painfully slow, and our only comfort came from continuing encouragement from the Board and Administration, a deep conviction that what we were doing had significance, and that progress was slowly being made.

*Conceptual Struggles: Questions of Values*

It is one thing to work with participatory groups who share common values. It is another to work with groups who approach the task from differing positions—about schools, education and society in general. We have searched the literature in vain for a solid theory of educational values to aid the planner in hearing, understanding and interpreting the dissonance among various clients of the system. In default of such a theory, we have arrived at a preliminary matrix of core educational values derived from reflection upon our experience in Redesign.

Finding a workable construct for societal values seemed easier, probably because of the growing futurist literature and the expert help of several futurists living in the District. Very early in the Project we projected three alternative futures[8] and their related values as a way of understanding the culture in which schools are making future plans. We called the societal scenarios: "Status Quo Extended", "Cultural Transformation", and "Economic Disappointment".

Each of these alternative scenarios was examined in terms of dominant educational values, goals of education, governance, methods of instruction and curriculum. The result of the analysis was a position that, "No uniform way is best for all, and room should be made for options and flexibility for parents, students, and staff . . . . Whichever our path, students will require high degrees of social responsibility, as well as extraordinary scientific and technical skills to pull us through what is universally recognized to be a difficult societal future".

*Leadership*

The question put simply is: "How directive should the leadership of a participatory planning project be?" The convening committee of Project Redesign specified that the Director be supportive to the Design Management Team, who in turn could help to manage the process but was not to shape the content of the work teams.

The five pilot School/Community Input Teams began without leadership selected in advance, and without a pre-established task. They were to choose group coordinators and arrive at task definition after examining base data and the special interests and skills of the group, and after group members had a chance to get to know each other. Two problems emerged: general and great anxiety about the ambiguity; and weeks of time expended in the struggle to get group interaction problems ironed out.

Within two or three months all but one of the first five SCITs had arrived at a specific, well-defined task, elected a coordinator and began work in earnest. However, we reasoned that less initial ambiguity would be easier on all concerned and the second five SCITs were initiated with each team having a specified overall area of interest and a coordinator who had volunteered to start up the team and remain in the role if asked by the group. The addition of a little more structure enabled subsequent planning team start-ups to be more rapid and satisfactory to participants and management team alike. As a consequence of this Project, we have all learned about the nuances of "leadership from behind", as it is sometimes called.

*Convention Wisdom vs. Innovation: Planning as Learning*

When novices and non-educators begin study of a complicated subject such as teacher-learner relationships or education of the early adolescent, a period of time is necessary to collect, absorb, and work past the conventional wisdom on the subject. The catching-up sometimes bothered the professionals on the planning teams, who found themselves teaching, interpreting, arguing, or proposing recommendations out of their professional bias. The layman often recognized the "bias" and helped to reshape the professionals' view of a topic.

Our observation of this process is more positive than negative. We seemed to be watching the institution grow a little. The hypotheses in Donald Michael's book, *On Learning to Plan–and Planning to Learn,*[9] come very close to describing what we were feeling as we proceeded through the Project. We are strongly persuaded that the heterogeneity of the planning groups was an important factor in helping to evaluate the conventional wisdom encountered in the literature, the media, and the profession.

For example, one of the "newest" trends in education is the race to adopt competency-based education. Oregon, for example, has mandated it for every district in the state. Current conventional wisdom strongly supports this trend. Our debates

(often focused by students) revealed enormous conceptual holes in the technical aspects of operationalizing the basic idea. We believe our final recommendation about competency-based education is more realistic because of the input of our "tutored amateurs", namely, layment and students.

### The Draft 1976-1981 Plan and Beyond

This overview has described briefly the general characteristics of Project Redesign of the Palo Alto Unified School District. Over the past three to four years students, professionals and citizens in our District have been "learning to plan and planning to learn". One outcome of these endeavours is the Working Draft of a 1976-1981 Plan presently under examination by the administration and the Board of Education.[10] The opening section describes three likely alternative futures and their possible effects upon education, and summarizes trends closer to home, affecting the nearer future of Palo Alto. The latter include marginal growth in housing, continuing contraction of student enrollment, and tightening of financial resources—a local setting of potential conflict, particularly over the allocation of shrinking resources.

Neither the plausible societal futures nor the trends specific to Palo Alto suggest an easy road ahead. Nevertheless, aware of the future context for educational development and related issues and controversies in the District, the citizens, students and professionals who constitute the school community have high expectations for the School District. Their work (reported publicly in over thirty reports during the Project) is distilled into a set of five coherent goals to guide long-range thinking. Each one is accompanied by a set of specific proposals to attain those goals over the next five years. Whenever possible, the Plan includes the fiscal implications of each recommendation.

In studying contemporary educational practices in the District and elsewhere, planners are confronted with many conflicting points of view. We hold that these dilemmas need not stall goal formation and action, but should be recognized as part of the backdrop against which decisions are made. Thus, following the major goals section of our draft Plan, twelve themes are presented that illustrate some of the dilemmas and inconsistencies recognized by Redesign planners as they completed their work.

The operating goals specified in the Plan deal primarily with an orderly process of adjusting School District operation to more closely approximate the future needs and problems of the District as they are presently seen. What of the longer-run future? The last section of the draft Plan touches on three emerging ideas about education not yet ripe for including in an operational plan for Palo Alto. The first describes an entirely new way of looking at curriculum and outlines a future-oriented curriculum where major process skills cut across and meld with traditional subjects. The second idea describes the neighbourhood school as *the* civic centre of the future. And the third idea points to the possible emergence of a new educational psychology called transpersonal psychology.

Among the basic principles that comprise the Redesign philosophy of the future are these, The study of the future has relevance in the present in terms of decisions to be made now"; and "the school community should plan for whatever future it thinks desirable and work to make that future happen, but should be expected to interact with several emerging, divergent and simultaneous alternative societal futures". We have sought to translate these principles in developing the planning process. Long-range planning, as we see it, is an educational procedure concerned to assure that decisions made affecting

the future are well informed and derive from a planning process which assures the effective participation of affected publics. Project Redesign has made our District future-conscious, planning-conscious and participation-conscious in new and vital ways. It has set in motion processes that can facilitate continuing efforts to use participatory mechanisms and futures perspectives in long-range planning for education.

## REFERENCES


1. James G. March, "Model Bias in Social Action", *Review of Educational Research,* Vol. 42, No. 4, Fall 1972, p. 413.
2. Michael D. Cohen, James G. March and Johan P. Olsen, "A Garbage-Can Model of Organizational Choice," *Administrative Science Quarterly,* Vol. 17, No. 1, March 1972, pp. 1-25.
3. Michael D. Cohen and James G. March, *The American College President.* New York, N.Y.: McGraw-Hill, 1973.
4. John W. Meyer and Brian Rowan, *Notes on the Structure of Educational Organizations: Revised Version.* Paper prepared for presentation at the annual meeting of the American Sociological Association, San Francisco, California, August 1975. Dr. Meyer is from the Department of Sociology and the Stanford Center for Research and Development in Teaching, Stanford University.
5. Dale E. Zand, "Collateral Organization: A New Change Strategy", *Journal of Applied Behavioral Science,* Vol. 10, No. 1, 1974, pp. 63-89.
6. *Who Participates? A Field Study of Participation in Planning in a School District; and Educational Participation in the Context of U.S. Society.* Forthcoming working papers of Project Redesign, Palo Alto, Calif.
7. Jane J. Mansbridge, "Time, Emotion and Inequality: Three Problems of Participatory Groups," *Journal of Applied Behavioral Science,* Vol. 9, Nos. 2/3, 1973, pp. 351-367.
8. *FUTURING: A Futures Primer for Local Education Agencies.* Project Simu-School, Santa Clara County Component, Project No. S0010SW, Superintendent of Schools, 100 Skyport Drive, San Jose, Calif. 95110. (Available at no charge.)
9. Donald N. Michael, *On Learning to Plan–and Planning to Learn.* San Francisco, Calif.: Jossey-Bass, 1973.
10. Limited copies of the working draft of the long-range plan are available on request: Project Redesign, Palo Alto Unified School District, 25 Churchill Ave., Palo Alto, Calif. 94306.

Gerald N. King*

# SKYLINE-WIDE EDUCATIONAL PLAN (SWEP)

## Planning the School of the Future to Serve the Dallas-Fort Worth Metropolex

Project SWEP (Skyline-Wide Educational Plan) was conducted in 1973-74 under a special planning grant from the U.S. Office of Education to the Dallas Independent School District. Our overall mission was to examine, conceptualize, and describe the secondary school of the future (1980-2000). Conceptualization of the Model with its ancillary research and evaluation were completed in late spring of 1974.

The task, as we viewed it, had to begin with a comprehensive description of society in the 1980s with special emphasis upon how education would probably be affected by that future society. The future society, for example, will have certain needs that the educational process must meet: skills in workers, citizen attitudes, traditions, knowledge and values from the past, and the like. The total universe of educational influences must provide for meeting those needs, but the schools are only one sector of that universe. What will be the focus of the school sector and what other institutions of society will fill the needs not met by the schools? Given some decision on the extent of the school sector, we planned to define the societal needs to be met by the schools–the secondary school, in particular–and then to describe programs to meet those needs. From these program specifications, descriptions of staff, student population, and facilities could be derived.

*Objectives of SWEP.* The major objectives of the planning effort required the staff to:

1. Formulate a plausible description of the society of the future (the 1980s and beyond) for the world, the United States, and the North Central Texas region, and identify the most likely implications for education.
2. Determine constituency priorities relative to the educational programs and processes of the proposed system (SWEP).
3. Develop educational programs in concert with the future society and constituency priorities.
4. Examine staffing patterns and new modes of instruction to accommodate SWEP's educational programs.
5. Examine futuristic educational facilities designs including: building materials, innovative architectural design, future energy sources, facilities configurations, and alternative sites.

The purpose of the present article is to offer readers a brief description of the overall activities and methods employed, with somewhat more detail on the ways in which a futures-orientation and methods associated with futures studies were utilized in the Project.

*Deputy Assistant Superintendent, Management Services, Dallas Independent School District, and Director of the SWEP Project, 1973-74. This account is drawn from various documents received from Dr. King.

## Summary of SWEP Project Activities and Methods

At the outset it was obvious that SWEP could not exist in a vacuum. To be cost-effective and socially meaningful and responsive to community needs, clearly SWEP had to be interrelated with the future Metropolex in sociological and economic terms. Because of the lead time required to bring an educational program and facility into operation it was apparent that "future" would likely mean pertinent to the decade of the 1980s and beyond. It was also clear that no community would profit optimally from implementation of a plan that would be obsolescent shortly following its inception. Therefore, a time span from the year 1980 to the year 2000 was designated as the basic SWEP period of interest.

It was mandatory, then, to begin by envisioning the future society of 1980-2000, both within and outside the Metropolex. To accomplish this, an extensive search was made of appropriate literature and a scenario of the future was derived by means of a Futures Study. Thereafter a Delphi Study was conducted to generate educational goal priorities for the years to come. Finally, a conceptual model of the future school evolved, together with Planning Specifications for implementing the Model. The Model was then applied to a hypothetical Metropolex school site, as a test of its logic and as a guide to future planners. The hypothetical application of the Model and related research have provided the basis for several recommendations for future schooling. Moreover, it is considered that the Model developed in Project SWEP has some general applicability for comparable districts throughout the nation.

Methodologically, the SWEP Project is an unusual local district educational planning effort in that futures methodologies, such as Delphi, scenario writing, and cross-impact analysis matrices, were used in concert with the more conventional educational survey methods. In the process we made an overt attempt to "chain" the relevant data, that is, to build an ever-expanding data base from sequentially formulated and administered questionnaires, each created from the findings of those preceding it. Stated differently, the Project involved an attempt to ascertain certain constituency priorities relative to an educational system of the future (using the Delphi technique) in light of a set of future-focused images (using preference-type surveys, scenarios, and cross-impact analysis matrices).

A full account of the design, methods, findings, and outcomes of Project SWEP is presented in our Final Report.[1] The following discussion focuses upon the Futures Survey and the Educational Goals Study in which we drew heavily upon futures studies and related methods of inquiry.

## The Futures Survey

The purpose of the Futures Survey was to probe the question: "What plausible societal propositions can be identified for the world, the United States, and the Dallas-Fort Worth Metropolex for the decade of the 1980s?" To accomplish this, we engaged in an intensive review of the futures literature and derived therefrom some two hundred trends of themes which were then developed into propositions and ultimately presented to a Futurist Panel as questionnaire items. Figure 1 is a sample excerpt from one of two survey instruments used.

The instrument was administered to a sample of approximately three hundred persons widely reputed to be "forward thinkers." We made a concerted effort to get the best

Figure 1 SKY-LINE-WIDE EDUCATIONAL PLAN SURVEY NO. 1: FUTURE SOCIETY
Sample Excerpt from a 93-item Survey Instrument

[Note: For each item respondents rated the likelihood of occurrence (left) and the likely strength of impact on education assuming occurrence (right) on a 1-5 scale, 5 ranking high. Where impact on education was rated high (4 or 5), respondents added words to suggest the particular area of impact (e.g., taxes, curriculum, etc.)].

| LIKELIHOOD | | In the United States, in the 1980s... | IMPACT |
|---|---|---|---|
| _____ | 48. | More job descriptions will require people with human skills; i.e., openness, compassion, warmth, and tolerance. | _____ |
| _____ | 49. | Economic organizations will be planned to include young persons and will be designed for educational as well as productive efficiency. | _____ |
| _____ | 50. | Average income of full-time female workers will be below that of male workers, but the differential will be less. | _____ |
| _____ | 51. | Certification by demonstration of skills rather than by diploma, degree, or completion of prescribed training sequences will be in wide use and generally accepted in education, professional and business practice. | _____ |
| _____ | 52. | A shorter work week and more leisure time will be the rule for most workers. | _____ |
| _____ | 53. | Productivity of workers in both service and goods-producing industries will have increased. | _____ |
| _____ | 54. | Compulsory retirement at a set age will be enforced regardless of health, ability, or desire of the worker. | _____ |

possible cross-section of thinking in the Metropolex, on a rather sophisticated subject. The sample also included leaders from school districts across the nation; national, local and regional planners; top echelon executives from government, education, business, and industry; and academicians. Care was taken to include each of the three major ethnic groups of the Metropolex (Anglo, Black, and Mexican-American), both sexes, and a range of ages.

There were two scales for each questionnaire item: one scale rated the *likelihood of occurrence*, and the other rated the *potential educational impact*. Both scales were five-point, Likert-type scales. Of particular interest were the "5-5" items; i.e., those items perceived as most likely to occur, and from which occurrence considerable educational impact would result. Respondents were also encouraged to identify areas or facets of education that would be heavily affected.

From the Futures Survey we generated scenarios depicting a likely society for the decade of the 1980s in terms of manpower needs, population, life style, technology, careers, and education.

### The Educational Goals Study

The primary purpose of the Study was to identify educational goals both in terms of desired student outcomes and desired educational processes for the decade of the 1980s. These goals in turn were to be used for curricula development, facilities design, and professional staff considerations—training, selection, and organization.

A review of the literature in the domain of goals uncovered several pertinent educational goals studies since 1970. These studies provided the genesis of the SWEP Educational Goal Bank which became, after considerable refinement by staff, the response items on the initial Delphi questionnaire (Q-1). Figure 2 is a sample excerpt from Q-1, showing 9 of the items relating to process goals.

Figure 2 SKYLINE-WIDE EDUCATIONAL PLAN: DELPHI QUESTIONNAIRE NUMBER ONE
SECONDARY SCHOOL EDUCATIONAL GOALS FOR THE FUTURE (1980s)
Sample Excerpt from 134-item Instrument

The following statements are concerned with many of the process questions with which today's schools must deal in their normal operations. Please indicate your preference regarding these important issues for our proposed school of the future. You are encouraged to write in additional comments in the space provided below.

EDUCATIONAL PROCESSES: To achieve desired results, our proposed secondary school of the 1980s should:

| | PRIORITY<br>1-None<br>2-Low<br>3-Med.<br>4-High<br>5-Highest<br>(a must) |
|---|---|
| 1. Provide opportunity for students to enter and leave programs several times during the school year | |
| 2. Provide for student self-direction and decision-making in the selection of learning experiences | |
| 3. Describe student achievement in terms of measurable competencies rather than traditional grades | |
| 4. Operate programs year round | |
| 5. Involve students in the decision-making processes related to school policies | |
| 8. Develop student-owned, profit-motivated enterprises that will provide actual services and produces | |
| 9. Eliminate required attendance when students are able to demonstrate competence in a basic core of general education | |

Our review of futures studies included examination of related methods and techniques. The Delphi method was of particular interest to us and constituted an important segment of SWEP research because it appeared to have utility for planners in forecasting, in consensus generation, in identification of divergent opinions, and in selection of probable futures in terms of time, quantity, and events.

The method employed in the Goals Study consisted of a two-iteration Delphi (Q-1 and Q-2). The SWEP Delphi research differed from the conventional model in these dimensions: (1) the purpose of the SWEP Delphi was to generate both consensus and divergent opinion regarding a set of future-oriented educational goals, rather than to forecast possible, probable, or preferable phenomena. (2) SWEP's Q-1 was accompanied by a packet of brief societal scenarios derived from the Futures Study described above; and (3) the respondents were instructed to respond to the questionnaire within the framework of these future-focused societal images. Hence only two iterations were required.

The Delphi panel, numbering 375 and 225 for iterations one and two, respectively, was local in origin, and selected from the ranks of reputed "forward thinkers" in education, business and industry, and government. As in the Futures Study, careful attention was paid to factors of ethnicity, sex, and age; and also to sampling residents of Dallas, Fort Worth, and other Metropolex communities.

Delphi questionnaire number one (Q-1) consisted of 105 discrete program goal statements arrayed in the general categories of: basic skills, citizenship, ethics, aesthetics, careers, health and recreation, and life management; and 29 process goal statements. In addition a section was provided wherein panelists could generate new goals where they perceived a need.

A double response scale was formulated such that the panel could furnish two kinds of information for each goal statement (questionnaire item). The first scale was designed to provide *priority* information regarding the educational programs; the second scale was designed to facilitate the identification of the *core* experiences. A five-point Likert-type response scale was used to assign relative priorities, and a dichotomous-type (yes-no) scale was used for the core dimension.

For Delphi questionnaire number two (Q-2), the general format remained substantially unaltered except that, as a result of the panel's input on Q-1, the total number of program goals increased from 105 to 117, and the process goals from 29 to 45. In addition, Q-2 included a format for entering minority opinions, and panelists who deviated from the group were asked to furnish a reason for their diverging opinions.

The data were analyzed to distinguish highest and lowest priority goals; highest and lowest core goals; highest priority-highest core goals (two-dimensional correlation between priority and core ranking of identical goals); and response shifts (change in scores from Q-1 to Q-2) in the priority dimensions. These analyses were applied both to program goals and process goals. In addition, an item-by-item minority report was developed which included each respondent's rationale for not agreeing with the majority consensus of the group. Data were also analyzed by subgroups such as age, sex, ethnicity, occupation, and residence.

*Results of the Educational Goals Study*

The SWEP Goals Study produced a rich array of material concerning educational goals and priorities among them. The detailed elaboration of the goals cannot be reproduced here, but readers will be interested in the broad outlines of the findings.

1. The educational experiences considered both highest in priority and required for all students clustered in the general content areas of basic skills (communication and computation), career development, citizenship, health and recreation, and ethics.

2. Lowest priority–lowest core educational goals for the curriculum (although the Minority Report viewed many of these as extremely important) were: high-level communication and mathematical skills; foreign languages; the physical, life, and social sciences; computer technology; world political and economic systems; the history of world religions and their impact; the visual, literary and performing arts; team sports; and life management (controversial questions of alternative family patterns).

It is important to mention here that, even though these goals were rated low on both dimensions, this does not mean they should be eliminated from SWEP's program of studies. What should be communicated is the notion of *relative* importance. If a situation arose where the curriculum had to be pared down for financial reasons, then the educational experience areas just mentioned would be trimmed down first.

3. Response shifts from Delphi One to Delphi Two revealed that there was greater consensus of the panel on Delphi No. 2 than on Delphi No. 1 for 130 fo the 134 goals;

and this was true for both high and low priority goals. The proportion of respondents at the modal position rose from round one to round two by an average of 11 percentage units.

4. The highest priority educational process goals, as identified in this study, concerned the managerial and operational aspects of the school. The two highest priority process goals related to students who have very special and unusual needs; i.e., the physically, mentally, and emotionally handicapped, and the academically gifted. Other high priority process goals were these: the potential dropout student; academic and career counselling; a staff development component; diversified instructional modes; year-round operation of programs; and a change in the role of the teacher from disseminator of knowledge to director of learning activities.

5. Lowest priority educational process goals related in large measure to student control. The panel did not favour a pass/fail grading system, student evaluation of staff, eliminating required attendance when the "basics" are satisfied, and permitting the coming and leaving of students at various times during the school day and/or year. Other low-rated process goals spoke to the granting of credit for religious training away from the school, required television viewing in the home, multilingual education in all disciplines, and nationalism toward countries other than the United States.

Two low priority goals addressed the assignment of teachers and students. The panel did not support the idea of assigning the best teachers to the lowest achievement schools, and they rejected the notion of student tracking: assigning students as early as the ninth grade to either vocational-technical areas or university preparation.

A surprising result was the low rating of the goal, "Develop a system for involving many groups, e.g., school administrators, community leaders, teachers, and students, in administering the local public schools".

### Postscript

Our experience with the materials produced by the SWEP Project has been varied. We have one group of "irate" citizens who are trying to find something in the SWEP study to get angry with; there are others who have used materials from the SWEP study as guidelines for creation of curriculum objectives. The State Association for Supervision and Curriculum Development used many of the outcomes of our studies in their report to the Governor on curriculum development in the State of Texas, published a year ago. The materials have also had direct and indirect effect upon the curriculum development project currently ongoing in the District. Aside from local effects, the SWEP Project has been presented to national audiences and received with considerable interest. In our own District it continues to be one of the more popular topics of discussion in such organizations as the PTA. It is our expectation that the impact of the study will be long-standing as well as long-range.

In this short report we have not discussed the Model of the school of the future which evolved in the course of SWEP research and built upon the studies described above. The Model appears to be viable and generalizable. Its inherent flexibility, philosophy, and general applicability should make it of substantial assistance to future planners of schooling at any level of public education, but especially those concerned with the future of secondary schooling.

## REFERENCE

1. A detailed account of the design, methods, and outcomes of the SWEP Project is printed in two volumes entitled *Sky-line Wide Educational Plan.* Final Report. Dallas, Texas: SWEP, 1974. Limited numbers of copies are available. For further information, readers may write to: Gerald N. King, Deputy Assistant Superintendent, Dallas Independent School District, 3700 Ross Avenue, Dallas, Texas 75204.

Lester B. Hunt*

# PROJECT SIMU SCHOOL: A PATH TOWARD BETTER PLANNING[1]
## A Report on the Santa Clara County Component

### Project Simu School

Change is the only unchanging human context. Nowhere does this simple truism seem more certain than in educational planning. Anticipating trends in society and translating those trends into emerging educational needs have always presented a challenge to school planners. But although educators have long worked to sharpen their vision of the future, their efforts have been largely sporadic and seldom shared with the broader educational community. In 1970, a national program called Project Simu School was formed to develop, collect, and disseminate techniques that would offer educational planners their much needed "glimpse of the future."

The initial intent of project Simu School was to develop a highly sophisticated simulation capability through a national coordinating centre for educational planning. Work at an early stage in the project suggested that a single large-scale simulation was not feasible. Accordingly, the project was designed to work with local groups in developing a series of planning "packages" that would aid planners both locally and throughout the nation.

There are four geographically dispersed components of Project Simu School. Three are funded under Title III of the Elementary and Secondary Education Act. They are located in Chicago, Illinois; Dallas, Texas; and Santa Clara County, California. A fourth component, at Ohio State University, has operated without outside funding.

Within the broad goal of providing techniques to bring forecasting closer to the people and providing better data for decision-making, each component agreed to focus upon solutions to problems associated with the school planning environment close to home. Chicago chose to study problems of densely urban populations, migration between schools, deteriorating schools and neighbourhoods, selection of school locations to meet the needs of community groups, and related problems. Dallas had a preexisting, fairly sophisticated data base for operational planning and chose to supplement that by developing a model called EDPLAN, which encompasses an enrollment forecasting module, a staff-needs/budgeting module, a facility needs module, and a financial module. Ohio State University has been working on New Towns, and on instructional materials to use with administrators-in-training.

The remainder of this report discusses the Simu School component in Santa Clara County, California, where we have focused on communities in areas that are changing from rural to urban characteristics and, more recently, on the problems of districts which are not growing and which have declining enrollments.

### The Santa Clara County Component: Understanding the Community

Meeting the educational needs of a community requires understanding that community, its people and its future. This widely accepted but often forgotten assumption has

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shaped virtually all of the planning packages developed by the Santa Clara County component of Projection Simu School. Soon after the component's formation in 1972, the project director recognized that an emphasis on understanding the community was especially important in the southern San Francisco Bay county. With 37 school districts facing a variety of educational problems, including increasing and decreasing enrollments, racial and economic segregation and soaring operational costs, Santa Clara County would be a valuable testing ground for Simu Scool planning tools.

The project staff also recognized the problems in assisting school districts whose communities ranged from urban, well-developed cities like San Jose, to rural but rapidly growing towns like Morgan Hill and Gilroy. Early efforts to standardize the collection and analysis of community data revealed little cooperation among the country's many public service agencies. Moreover, after a planning needs assessment was conducted, it became apparent that some sort of consolidated planning centre was strongly desired by a large majority of educational administrators in Santa Clara County.

For these reasons, Simu School joined forces with the Planning Resources Office, a Ford Foundation project interested in housing patterns and their effects on educational achievement. Staffed by experienced educators, urban and regional planners, and a data management specialist, and making wide use of outside consultants, the combined projects established strong lines of communication with a variety of public agencies and soon became the hub of educational problem solving throughout the County. Assisting more than half the county's school districts in various planning efforts, Project Simu School has functioned as the research and development component of the new planning team. Some of the major techniques developed by Simu School to date include: a community profile model; ENSIM enrollment models; and a "futuring package" designed to sensitize people to existing and potential future conditions and to stimulate the testing of alternative approaches. Each is described briefly below.

*Community Profile Model*

The Community Profile Model is designed to collect and analyze a broad array of data descriptive of the community and to translate these data into information useful to educational decision-makers. The Community Profile Model underwent its first field test in the south county town of Morgan Hill. A small district with a current population of around 22,000 people but one facing growth to perhaps 400,000 in the next 15 years, Morgan Hill Unified was in need of a long-range master plan, and Project Simu School offered its assistance. Working within the Community Profile framework, citizens' planning committee members and district staff collected community data from all available sources and, based on analysis of the data, made a series of far-reaching recommendations to the Morgan Hill School Board. The Profile effort also included a community opinion survey and a comprehensive inventory of recreational and other public serrvices.

Another application of the model was tested in Sunnyvale and Santa Clara Unified school districts. There, the Community Profile Model was used to ascertain the socio-economic composition of the communities served by the two districts. Mini-profiles, comprised of census data and other selected "social indicators" such as juvenile referral and high school dropout rates, were compiled for each of the school attendance areas in both districts. The profiles were then used by Sunnyvale and Santa Clara to ensure that a sound crossrepresentation of the community was achieved in the districts' citizens'

planning committees. Later, the profiles were used by the citizen planners themselves as a kind of neighbourhood status report.

Still another application of the Community Profile Model is in generating the land use and socio-economic data required by the enrollment simulation models described below. All of the models' applications, as well as a general user's guide, appear in the Simu School publication, *Community Profile–A Comprehensive Base for Educational Planning.*

*Enrollment Projection Models*

*ENSIM Model.* The ENSIM Model is designed to apply as enrollment projection "simulator" to districts facing extensive future residential development. For this reason, a future land development projection system was devised and integrated into the model to provide data on the number of new dwellings predicted to be built for each year of the simulation. Unlike the "Cohort Survival" technique, which relies solely on past enrollment figures, ENSIM considers a multitude of social, economic, political and demographic factors that have direct or indirect influence on the number of new students coming into a school system.

Based on a fine-grained analysis of land use and other data, the ENSIM Model produces three alternative sets of enrollment projections, each based on a different set of potential zoning policies. In this way, the district will have a set of enrollment projections that reflect likely political eventualities. Another significant feature of the ENSIM Model is its capability of producing estimates at the small study area level. By analyzing the development potentials of individual tracts of land, the model is able to provide enrollment projections for each school attendance area within the district. Case studies of the model's two field tests, along with a detailed guide for its use, appear in the Simu School publication, *ENSIM: A User's Manual for a Land Use-Analysis-Based Enrollment Simulation.*

*ENSIM II Model.* Unlike the original ENSIM Model, ENSIM II is designed for use in districts facing decreasing enrollments. The key to the ENSIM II forecasting method is an in-depth assessment of household mobility. What types of families have a propensity for moving? What kinds of houses will certain types of families occupy? It is through a comparative analysis of two sets of census data that these questions are answered and input into the model. For ENSIM II to operate, all households, housing units and neighbourhoods in the district must be classified by type according to a number of social and economic characteristics. Once this process of classification has been completed, probability matrices are used to predict the future state of the district. In addition to the census data, assessors' data, health department data and land use data are correlated via computer matching and comparison and then input into the model.

Thus, the sophisticated land use analysis technique developed for ENSIM is combined with a population mobility analysis to provide predictions of future enrollment by number, socio-economic composition and location. Currently, the ENSIM II projection model is being field tested in Alum Rock Union School District, the only school system in the nation with a functioning "voucher system". In conjunction with the projection effort, Simu School staff members are working with the Center for Urban Analysis, a local county agency, in developing a geographic analysis and display system (GADS). The display system will enable Alum Rock planners to study the effects of projected in- and out-migration at the neighbourhood level and to examine alternative attendance boun-

dary shifts and student loading options. A second ENSIM II enrollment study is scheduled to begin in Kitsap County, Washington, to measure the impact of a major naval installation slated to be built there.

*The Futuring Package*

Inherent in the task of understanding the school/community is the need to speculate about the future. Who will reside in the community? What educational needs will emerge with the rapid changes that shape the community? Simu School's Futuring Package seeks to trigger these and other questions and to stimulate planners and other individuals and groups of people in the community to think systematically about the future and to become involved in planning for alternative futures. Futuring is presented in the Simu School Publication, *A Futures Primer for Local Education Agencies*, and there are related audio-visual aids.

Three kinds of alternative futures are examined with a view to sensitizing the school planning group to the myriad of social and economic trends likely to affect education in the coming years. The first is a future based upon continued technological development, the second a future with a controlled economy, and the third a future in which things are rapidly falling apart. Each type of future generates questions and implications for educational planning. The information for the presentation is based upon work done in Project Redesign in Palo Alto, California, as well as on the work of Willis Harman, Herman Kahn and other prominent researchers in futures studies who were invited to share their conceptions of the future.

The select collection of exercises, instructional materials, and audio-visual aids that comprise the Futuring Package offers the novice group of "futurologists" a structured but open-ended framework for making projections, addressing problems and formulating educational plans. Because it requires no technical expertise or hardware, the Package has been widely disseminated throughout Santa Clara County and the State. Planning groups in a variety of settings have successfully used the materials as a starting point for investigating the future of their schools and communities.

The techniques developed in Project Simu School in Santa Clara County offer a combination of methods that stimulate attention to the systematic examination of alternative futures and their educational implications (Futuring Package) and methods that involve "hard data" projections of enrollments related to projected land use, and factors in community development or decline (the ENSIM models, geographic base file and interactive display system).

What have we discovered? We have discovered that forecasts of community change and development can respond to citizen input–and citizen input responds to documented forecasting (e.g., city councils listen to opinions backed by data). We have discovered that planning to meet the needs of learners–sharing responsibility–is greatly assisted by the ability to explore future conditions through simulation. We have discovered that even among agencies where data exist, they are in many forms and formats–and present an enormous task of coordination–but that common data bases *do* exist and need not be duplicated. And finally, we have discovered that it is, and will be, difficult to transpose and adapt a planning model from one state or region to another for implementation, but that it can be done.

**REFERENCE**

1. To obtain the items mentioned in this report and a complete listing of Project publications, write to: Project Simu School, Office of the Superintendent of Schools, Santa Clara County, 100 Skyport Drive, San Jose, California 95110.

# FUTURISM AND EDUCATIONAL PLANNING IN CANADA
## Reports from Ontario, Quebec, and Alberta

The short reports presented here were assembled through the initiative of George Peek of the Ontario Ministry of Education. His discussions with planning colleagues in selected provinces generated information that allows us to describe the general orientation and some aspects of futures work in planning in Ontario, Quebec and Alberta. The examples, though limited in number and detail, do illustrate some of the ways in which elements of the futures perspective and futures studies are being utilized in educational planning and policy-making in Canada.

**George Peek***

## FUTURISM AND EDUCATIONAL PLANNING IN ONTARIO

> "Our approach starts not with attempting to define education in the future, but with attempting to introduce the future into education."

We in Ontario do not claim to have found *the* key to using futures research and futures thinking in formal educational planning. What is described here is an approach which we think useful. It is more a description of an attempt than of an accomplishment.

Our formal planning process does not differ markedly from that of any other jurisdiction. Generally, there are two parts to it—the use of past trends to project ongoing programs into the future and to define resource requirements, and the use of project study and analysis to produce plans for new programs or for changes in programs. We attempt to do these things on an appropriate multi-year basis and to relate them to general statements of philosophy and goals. They are considered by the government in the context of all other governmental programs and available resources. This is a highly limited use of futurism in educational planning but, if done well, can go far to establishing credibility within the organization and ensuring that the planning group is not isolated from the action.

At the same time, the Ministry planning group is attempting to bring the longer range future more realistically into the Ministry planning by studying the educational, economic, social and cultural elements of various possible futures scenarios. Here the extensive literature on futures is useful. In Toffler's terms this is an attempt to define "education in the future"—to foresee the requirements of future years and to take steps to see that they are satisfied. To be useful, this approach must operate in a long time-frame; certainly long enough to be beyond the reasonable reach of most trend projections. Conjecture and imagination must be combined with pragmatism and knowledge of people and

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organizations if useful scenarios are to be produced. In fact, many of our educators feel that the activity is too fanciful to be useful. Our answer to this concern is to suggest that the alternative is to leave the future of education in Ontario to the doubtful mercies of chance and exigency. It seems to us in the planning group that the logic of planning and the logic of education, both of which should surely be concerned primarily with the future, dictate this futuristic activity for educational planners. Nonetheless, it would be highly misleading to claim that we have achieved any real breakthrough in either the construction or the utilization of such scenarios. Their greatest utility may well be primarily educational.

There are a number of very real problems involved in attempting to make the futurist approach viable. Aside from the complexity of the elements and their interrelationships, most of these problems can be summarized in questions of involvement. Who decides on the contextual assumptions? Who defines the various alternatives? Who chooses from amongst the alternatives? How do the chosen alternatives become accepted and effective within the system? Only in a dictatorship is comprehensive formal planning *from the top down* a viable approach.

Once we accept the limitations of formal planning in a democratic system we can begin to seek alternative ways to prepare for and adjust to the opportunities and problems of the future. In Ontario we are attempting a less formal, full involvement approach. This approach starts not with attempting to define education in the future, but with attempting to introduce the future into education. The intent is to obtain a general futures orientation throughout the educational system. This involves clarification of individual values, definition of individual goals, study of the futures applications and implications of existing disciplines and, eventually, extension from individual to group, from study unit to total system. Our contention is that, if we can achieve a fairly strong futures orientation throughout the system, the use of futures in educational planning at all levels should come about in a fairly natural way.

Of course, to achieve a futures orientation throughout such a large and complex system will not be easy. How, one may well ask, is such to be achieved? Our experience is that there are already many people in our system who are deeply concerned with various issues which bear on our future. Many of the Ministry staff and many of the Board officials, teachers and students are looking for ways to contribute to solving existing and future problems, both of an individual and a societal nature. We believe that we can encourage and build upon this demonstrated interest, and this is one approach to promoting the desired orientation to the future. An example of such activity is our involvement in an enterprise called "Education Futures Ontario" which is an attempt on the part of those interested in both education in the future and the future of education to increase and spread their knowledge and ideas by means of seminars, workshops, newsletters and various kinds of informal communications. At the same time the regular and continuing reviews of curriculum have resulted in guidelines which permit the teacher to take a futurist approach to teaching in every subject. The teacher is encouraged to innovate within the guidelines and, with specific permission, may experiment outside of the guidelines.

One of the greatest problems to overcome is the feeling of helplessness on the part of the individual when faced with forecasts of cataclysmic futures which abound in the literature of the subject. Nuclear war, mass starvation, unbreathable air and all of the

other very real problems that the human race is preparing for itself do not lend themselves to piecemeal solutions by individuals.

I believe that the most rewarding approach to futures in education is to start with the smallest unit and work upwards and outwards to the larger concerns. The smallest unit is the individual student. Each student should be encouraged to clarify his or her values, to articulate short- and long-term goals in accordance with these values, to study the environmental context and its opportunities and problems within which these values and goals will exist and to attempt to project all of these into a chosen future for himself or herself.

This approach has the dual advantage of focusing on an element of the total problem which is small enough for some degree of control and is of primary interest to the individual concerned. This introduction to futurism can then be built upon and extended into concern for the future of the school, the family and the community and, eventually, of the total context in which the student will exist during the rest of his or her life.

At the same time concern for the future can be introduced into practically every subject taught. In many of these subjects the elements of futurism introduced may appear to be of trivial nature compared to the scenarios of doom produced by some of our global prophets. They will all contribute, however, to that futuristic orientation which we are seeking and they will all have the advantage of being within the grasp and understanding of each of us.

The main idea I would like to stress is that, while I believe that educational planners should accept the future as their main concern, they are not alone in this concern. Indeed, their principal efforts should be to work with others in the system to promote a future orientation throughout. Formal plans for improvement can then be built on a solid base of support and will have some chance for fruition.

## THE FUTURES PERSPECTIVE AND EDUCATIONAL PLANNING IN QUEBEC PROVINCE*

> "A planning approach based upon empirical data and the elaboration of new alternatives drawn from futures work."

The General Planning Branch of the Quebec Ministry of Education subscribes fully to a planning approach which bases the analysis and evaluation of educational policies not only upon empirical data, but also upon the elaboration of new alternatives drawn from the domain of futures work.

The evaluation and systematic planning of educational policies must be based, in the first instance, upon analysis of the present realities of the educational system. This analysis is achieved through a procedure which draws upon methods of historical analysis on the one hand and, on the other, upon extrapolation methods and the construction of exploratory scenarios where the "logical" or "surprise-free" futures of the educational system is explained.

*This account is taken from a document entitled "Utilisation de la prospective dans le domaine de la planification de l'éducation au Québec," provided by M. Pierre Fontaine of the Planning Department, Quebec Ministry of Education to Mr. George Peek, and translated by the editor.

The Planning Branch also utilizes such purely prospective methods as the construction of normative scenarios to describe new alternatives based upon different value sets. These scenarios describe possible and more or less probable futures for the Quebec educational system and identify alternative paths for realizing them. The possible futures thus generated are then compared, each with the others and with the logical or surprise-free future of the educational system, in order to derive the most desirable future.

Since July 1974, studies undertaken in the Planning Branch have focused upon the construction of trend-based and normative scenarios of Quebec society and upon elucidating the linkages between what we term *"cultural paradigms"* (that is, consistent sets of assumptions or premises about the nature of the individual and his relationships with the environment, and about ways of knowing, modes of action, and value sets) and *societal futures* (logical, possible and probable futures of Quebec society) and probable and possible *educational futures.*

In the coming year we intend to:

- Complete research on the linkages between cultural paradigms, societal futures and educational futures, and produce two documents: one examining a hypothesis for educational policies for 1975-1985, the other focusing upon prospective models of education;
- continue our review of studies and experience relating to systematic futures studies in general and in education;
- elaborate some normative exploratory scenarios of the Quebec educational system;
- develop a handbook on the futures perspective in education to elucidate our conception of the futures perspective and preferred methods of analysis, projection and prospection; and
- devise mechanisms for involving citizens in the choice of desirable alternative futures for the educational system of Quebec.

Working documents on some of these questions are available and offer additional information. The present short account of our approach and work agendas serves to affirm the commitment of the Planning Branch to the use of the futures perspective in educational planning in Quebec Province.

## EDUCATION AND SOCIETAL FUTURES 1970-2005
## A Report on Studies in Alberta*

The most notable of the futures-oriented studies undertaken in Alberta in the past decade have derived from the work of the Commission on Educational Planning (CEP) and the Human Resources Research Council (HRRC). The CEP produced the report entitled *A Future of Choices, A Choice of Futures* (the Worth Report) and, jointly with the HRRC, sponsored a set of complementary studies of the future. The latter studies are the subject of the present descriptive report.

*George Peek of the Ontario Ministry of Education received from W.L. Hill of the Alberta Education Planning and Research Branch three reports on HRRC futures studies and a letter commenting briefly upon the work. From these materials the editor of this issue of the Journal, Maureen Webster, has compiled a report, retaining as far as possible the language of the Alberta Documents.

## Alberta

Two concerns provided the impetus for the futures studies undertaken 1969-1971: (1) a desire to inform the planning process in all areas of human resource development and to assist planners in advancing from a reactive to an anticipatory mode of plan development; and (2) a desire to inform citizens of emerging trends in society and of the options open to them, so that they might be better able to shape their society and to avoid "future shock".

The overall research program was designed to yield images of the future which would include both exploratory and normative forecasts and utilize both systematic and intuitive methods of forecasting. The time frame of the studies was 35 years, the period from 1970 through 2005—when Alberta will celebrate its centennial year. The studies, as reported, together constitute an examination of potential futures for Alberta and their implications for education.

The work on societal futures for Alberta includes a study of economic and demographic futures, using conventional techniques of projection, extrapolation and trend analysis; and a study of social futures derived from the use of the Delphi technique to assemble the judgments of panels of experts. From these studies researchers derived some implications for the future of education in Alberta.

### Economic and Demographic Futures

The Economic and Demographic Futures Study was conducted by an economist, Don Seastone, who had access to a broad range of data sources. The two primary objectives of the study were: (1) to consider probable levels and distribution of the population 1970-1980 and 1980-2005, and to explore the implications of these population data for enrollment at various levels of the provincial educational process; (2) to consider the growth potential of the provincial economy, its implications for government revenues, and the relationship among these revenue projections, potential educational costs, and projected personal income levels.

The study is essentially a compilation of available data and analyses, and extensions of the data where necessary, based upon a set of assumptions and analyses that reflect the judgment of the researcher concerning probable future patterns of behaviour.

### Social Futures

The Social Futures Study, conducted by the Westrede Institute, involved the generation of a series of forecasts on social phenomena tending to influence education. Six major topic areas were addressed: Social Goals and Values, the Needs of the Individual, Political Life, Family Life and Child Rearing, Leisure and Recreation, Inter-cultural Relations. The intent was to accomplish some breadth of forecasting—to develop general forecasts and broad prospectives rather than detailed ones. A series of two-round Delphis* were used to obtain the forecasts. In the first round, respondents gave forecasts in the specific areas; in the second round they detailed the forecasts in terms of timing, probability, and rationale.

*Selection of Panelists.* A "snow-balling" technique was used to select the six panels of "experts" corresponding to the six general areas of inquiry. For each panel topic resource individuals having divergent viewpoints were first identified (8 to 15 per topic). They in

*Refer to Michael Folk's article in this Journal for a summary review of the Delphi technique.

turn identified prospective panelists—persons judged to be knowledgeable, responsible, and insightful (82 to 170 were named per panel). From these the researchers selected 40 to 60 persons per panel. The intent was to assure representation of as many viewpoints, organizations and specialities as possible within each given topical area.

*Reporting.* As reported, the forecasts fall into eleven areas:

| | |
|---|---|
| Divisions in Canadian Society | Politics |
| Value Change and Ideology | Native Peoples |
| The Family | Relations with Others |
| Religion | Law and Disorder |
| Education | Mental Illness and Other Social Problems |
| Leisure and Recreation | |

For each of these areas there were sub-sets of forecasts. Thus, in the category "Divisions in Canadian Society" specific sub-sets dealt with Anglo-French, East-West, Rich-Poor, Red-White, Young-Old, Extremist-Moderate, Labour-Management divisions.

The results of Delphi exercises are sets of group descriptions of the various forecasts which are sometimes presented in statistical terms, sometimes in verbal descriptions, and sometimes as a combination of both. The Alberta report describes group opinion in qualitative rather than quantitative ways and presents the information in succinct, clear and readable fashion. For each of the eleven reporting areas there is first a general statement of panel conclusions (e.g., conclusions on Divisions in Canadian Society). Then for each sub-component of the general area (e.g., the different types of "divisions" in society mentioned above) there is (a) a one-page statement of the panel forecast, accompanied by a short discussion of panel opinion which highlights divergencies and the rationale for them; and (b) a graphic presentation showing the majority, major, minor, and modal positions of panelists concerning the expected increase or decrease in the strength of the phenomenon over the period 1970-2005. Each section ends with an overall statement of the panel forecast for the area (e.g., a statement on the "Integrity of the Canadian Nation" consonant with the set of forecasts concerning Divisions in Society).

#### The Future and Education in Alberta

The reports on economic, demographic, and social futures for Alberta through the year 2005 were each the subject of a one-day seminar in which invited people, mainly educators, explored in preliminary fashion some of the educational implications and reported them briefly in two minor documents. A more systematic review is presented in the concluding report of the series, *The Future and Education.* In it, Harold Baker and associates from the Human Resources Research Council identify and categorize some major forecasts derived from the societal futures studies, analyze their social implications, and propose some educational responses.

The forecasts selected for analysis are grouped in the following (interrelated) categories: population and urbanization; economic growth and organization; work, leisure and pleasure; science and technology; physical and mental health; human relations and citizenship; values and value systems. Wherever possible, attention is directed to alternatives, particularly with reference to varying degrees of adaptation or prevention. The analysis is selective rather than exhaustive and is recognized as involving value judgments. The overall intent is to focus attention on the issues to be faced and upon alternatives in attempting to resolve them. The report ends with a summary of recurrent educational emphases which are considered to offer cues to the leading edge of changes needed for education in the future.

### Social Forecasting and Educational Planning

What is the relationship between social forecasting of the type undertaken in the Alberta futures studies and educational planning? *The Future and Education* report views the relationship as follows:

Forecasting is a rational means of anticipating the future, employing the element of probability; planning is a willful selection from among futures. Forecasts serve the planning process by providing continuous information and guidance for planning, criteria for determining priorities for interventions into the present system, indications of which or what kinds of resources are committed or uncommitted, and insights into some of the problems associated with the timing of both the planning activity and the actual implementation of plans.

In education, lead times for *decisions* commonly reach five to ten years. But *planning horizons*, the period of interest to the long-range planner, may extend for thirty years or more. Admittedly, many unexpected things can happen in these long lead periods. Nevertheless, long-range forecasts are necessary if planning is to be as good as it can be at any point in time. How, then, can some sound approach to forecasting be built into planning?

At the outset it is essential to understand what forecasting is and what it is not. Essentially, a forecast is a statement about the probable occurrence of an event or about the probable consequences of an event or series of events. It follows that forecasts are *conditional* upon certain assumptions, that they are *probabilistic* by nature, and that their accuracy depends upon the data on which they are based.

It follows further that forecasts cannot be intended for implicit belief. They cannot be regarded as blueprints for the future, even if they are presented at the 95 percent level of confidence. Too many surprises, too many unexpected events can intervene. But they can be used to urge planners to think about what they are doing and about the possible consequences of their actions, and so give men some small added measure of control over events.

Contemporary social forecasting is concerned with much more than the connection between technology and society–the focus of earlier studies. It is used to provide information about the kinds of future developments that are likely, that are possible, that are desirable–and the amount of effort that will be required to accomplish them. In this sense, social forecasting is a way of describing the range of possible or alternative futures before a society, and a way of influencing the direction and pace of development: that is, of adapting to some futures, preventing the occurrence of others, and inventing even more.

#### REFERENCES

PROVINCE OF ONTARIO

For information on educational planning in Ontario, write to: Mr. George Peek, Program Planning Officer, Planning and Research Branch, Ontario Ministry of Education, 17th floor, Mowat Block, Queen's Park, Toronto, Ontario, Canada.

PROVINCE OF QUEBEC

For information on educational planning in Quebec, write to: Direction Générale de la Planification, Ministère de l'Education, Gouvernement du Québec, 1035 rue de Lachevrotière, Québec, P.Q., G1A 1H2, Canada.

Working documents of the Educational Planning Branch of the Ministry include:
(a) *Une réflexion sur la formation à la gestion de l'innovation en éducation* [An examination of training for management of innovation in education]
(b) *Les futurs au service du présent* [Futures in the service of the present]
(c) *Une réflexion prospective sur le futur de l'éducation au Québec* [A futures perspective on the future of education in Quebec]

PROVINCE OF ALBERTA

For information on educational planning in Alberta, write to: Planning and Research Branch, Alberta Ministry of Education, Executive Building, 10105-109 Street, Edmonton, Alberta, Canada T5J 2V2.

Province of Alberta, Commission on Educational Planning, *A Future of Choices, A Choice of Futures* (Report of the Commission on Educational Planning, under the chairmanship of W. Worth). Edmonton, Alberta: L.S. Wall, Queen's Printer, 1972.

The set of reports published by the Human Resources Research Council of Alberta is as follows: [Note: The Council was phased out in 1971. Write to the address above for information on the publications].

(a) Harold J. Dyck and others, *An Outline of the Future: Some Facts, Forecasts and Fantasies.* Summer 1970. (b) Don Seastone, *Economic and Demographic Futures in Education: Alberta 1970-2005.* c. 1971. (c) Harold J. Dyck and George Emery, *Social Futures: Alberta 1970-2005.* December 1970. (d) Harold S. Baker, ed., *The Future and Education: Alberta 1970-2005.* Fall 1971.

**Maureen M. Webster***

# ALTERNATIVE FUTURES: CONTEXTS, METHODS AND APPLICATIONS
## A Select Introductory Bibliography for Educational Planners

### Introduction

The burgeoning literature of futures studies presents a resource, a problem and a challenge to those of us concerned with educational planning and policy. It offers a rich resource of old and new ideas, analyses and methods oriented towards alternative futures and having strong implications for education, planning and policy-making. It poses a problem in that the works that lay claim to inclusion in what is (in its present form) a relatively new field of study reflect such a broad array of approaches, methods, and emphases that selection is difficult for those who wish to sample but not to specialize in futures studies. And the literature presents a challenge because, although there are many writings purporting to deal with education and the future, few employ a systematic alternative futures perspective, and fewer still relate the futures perspective to educational planning and policy. This means that educational planners who believe, as I do, that examination of alternative futures is an important, even necessary, condition for responsible planning and policy-making in our time, must first become familiar with the major themes, analyses and methods of futures studies and then make a serious effort to critically examine their implications, potentials and limitations in relation to educational planning.

The items listed below are one person's selection from many hundreds that might be brought to your attention. *Section A* offers a sample of works on *Societal Futures*-the plausible contexts which planning and education may make more or less possible. I have sought to include some widely recognized works that deal comprehensively with major themes of alternative futures studies, a few titles that focus on some particular aspects (e.g., societal implications of technological change), and a mix of research-documented and more popular writings. When possible, readers are alerted to where they may find a response to or a critical review of a major approach. The section ends with some sample titles on planning and policy-making where authors relate their work to alternative futures. None of the works in this section is specific to education; you, the reader, must make the serious effort of mind to draw the inferences for the who, what, when, why, where and how of education and the implications for the content, methods, and processes of educational planning.

*Section B* focuses on *Approaches, Tools, and Methods*. It offers first a selection of works dealing with general apporaches and/or surveys of methods, then sample writings on social indicators, and thereafter identifies selected titles on specific methods, variations and combinations of methods utilized in parts of futures studies. The intent is to identify critical surveys of methods wherever possible and to give a sample of applications–with a bias to applications in education where they illustrate the variants of techniques. The methods literature is not oriented primarily to education–although there are increasing, but often fragmented, attempts to utilize the tools in education and related planning. A distinction to bear in mind is between the use of tools for forecasting or predictive purposes and the use of tools heuristically and pedagogically to clarify goals, strategies and tradeoffs, and to facilitate more inventive and participatory planning. Here again, the reader should be prepared to make the effort to critically appraise the utility of the various methods for producing information to be used in educational planning and/or for assuring a planning process which is educational.

The pedagogical use of futures studies techniques directly links futures studies appraoches and the educating and planning processes. *Section C* on *Education and the Futures Perspective* contains some items of interest methodologically, but that element is incidental. The titles in this section have been selected primarily to illustrate different aspects of the perceived relationship between an alternative futures perspective and education and are weighted in favour of those more likely to be of interest to planners. Were the list to be expanded, readers would be increasingly aware of the proliferation of

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writings that consider some particular sector or aspect of education and futures, and the relative dearth of works that seek to address the issues comprehensively and/or with an educational planning orientation.

The listings furnish only an introduction to a literature. Readers familiar with futures studies would no doubt have suggested alternatives and additions. For those who would like to probe farther, *Section D* suggests some *Further Sources* of information that could be pursued.

### A. SOCIETAL FUTURES

BOULDING, Kenneth. *The Meaning of the Twentieth Century: The Great Transition.* New York: Harper & Row, 1964. 208 pages. – To make a successful transition from civilized to post-civilized society man must avoid overpopulation, war, exhaustion of resources, and dissipation of creativity and energies.

GABOR, Dennis, *Inventing the Future.* New York, N.Y.: Knopf, 1964. 232 pages. – Overview of the human condition, including discussion of dangers from nuclear war, overpopulation and the Age of Leisure; technological challenges, creativity lag, rich-poor gaps; dangers of pessimism preventing us from inventing the future.

INTERNATIONAL FUTURES RESEARCH CONFERENCE, 2nd, Kyoto, Japan, 1970. *Challenges from the Future: Proceedings of the International Futures Research Conference.* Tokyo: Kodansha (for the Japan Society of Futurology), 1971. 4 vols. – The papers are grouped in sections dealing with: the role of futures and future research; research methodology; technological innovations and social change; education and the future (11 papers); environmental changes–time and space; new values–new man; social systems and social innovation; world futures. This compendium is fairly typical of the range of topics addressed at the annual conferences–information on which can be obtained from the World Future Society.

KAHN, Herman and Anthony J. Wiener. *The Year 2000. A Framework for Speculation on the Next Thirty-Three Years.* New York, N.Y.: Macmillan, 1967. xxviii+431 pages. Tables, charts, index.– A widely read study by Hudson Institute researchers. It opens with discussion of change and continuity, science and technology. Major sections then develop "Standard World Surprise-Free" economic and political projections and build scenarios of "Canonical Variations of the Standard World". The book ends with a useful essay on "Policy Research and Social Change". Note Willis Harman's arguments on societal transformation in the present issue of *Educational Planning*, contesting Kahn's views that plausible and viable alternative futures comprise modest deviations from a "long-term multifold trend".

KAHN, Herman and B. Bruce Briggs. *Things to Come. Thinking About the 70's and 80's.* New York, N.Y.: Macmillan, 1972. – This shorter book overlaps and continues the arguments of *The Year 2000* and can serve as an introductory popularizer of the ideas developed at more length in that work. For a critical appraisal of Kahn's work, see Michael Marien's review in *The Futurist*, February 1973, pp. 7-15.

MEADOWS, Donnella H. and others. *The Limits of Growth.* New York, N.Y.: Universe Books, 1972. 205 pages. – Non-technical report by a team from MIT sponsored by the Club of Rome. The authors elaborate a model of population, agricultural production, natural resources, industrial production and pollution and stress the potential collapse of world systems within the next 100 years. The work has generated considerable debate. Note the critique by University of Sussex researchers.

University of Sussex, Science Policy Research Unit. *The Limits to Growth Controversy.* Special issue of *Futures*, 5(1), February 1973. 152 pages. Concluded in *Futures*, 5(2), April 1973, pp. 157-235. Book version: *Thinking About the Future.* Brighton, U.K.: Sussex University Press, 1973. – A thorough analysis of *The Limits to Growth* and its related Technical Report. The first part offers a detailed criticism of the methodology employed and the data used. The second part presents five essays on the ideological background.

HEILBRONER, Robert L. *The Future as History.* New York, N.Y.: Grove Press, 1961. 217 pages. – Synthesizes ideas concerning the influence of the past upon the future and the need for planning.

MEAD, Margaret. *Culture and Commitment: A Study of the Generation Gap.* New York, N.Y.: Doubleday and Natural History Press, 1970. 113 pages + appendices. – An examination of living cultures of varying complexity (postfigurative, cofigurative and prefigurative–corresponding to past, present, future). Emphasis is on discontinuities and the increasing shift to prefigurative culture where the past is instrumental rather than coercive.

MESTHENE, Emmanuel G. *Technological Change: Its Impact on Man and Society.* Cambridge, Mass.: Harvard University Press, 1970. 124 pages. New York, N.Y.: NAL Mentor Books, 1970. 127 pages. Biblio. – An overview of research of the Harvard Program on Technology and Society, dealing with social change, values, and economic and political organization. The program produced annual reports reviewing ongoing research from 1964-65 onwards.

## BIBLIOGRAPHY

BELL, Daniel. *The Coming of Post-Industrial Society. A Venture in Social Forecasting.* New York, N.Y.: Basic Books, 1973. 489 pages. Tables, charts, indexes. – A 30-50 year perspective on post-industrial societies. Methodologically, the work involves some innovation in conceptual analysis. Empirically, it seeks to "identify substantive structural changes in society as they derive from the changing nature of the economy and the new decisive role of theoretical knowledge in determining social innovation and the direction of change". Reviewed by Dennis Little (positive) and Michael Marien (highly critical) in *The Futurist,* December 1973.

DRUCKER, Peter F. *The Age of Discontinuity: Guidelines to Our Changing Society.* New York, N.Y.: Harper & Row, 1969. xiii + 394 pages. – Drucker focuses on four major discontinuities: the explosion of new technology which will result in major new industries; the change from international to world economy; a new socio-political reality of pluralistic institutions; and mass education and communication. The last section on the shift to the "knowledge society" is interesting in relation to educational implications.

PERSICO, C.F. and N.B. McEACHRON. *Forces for Societal Transformation in the United States, 1950-2000.* Menlo Park, Cal.: Stanford Research Institute, Educational Policy Research Center, September 1971. Processed. – A four-part examination of the title topic. (1) An historical account of American nationalism through the 1950s and its reemergence. (2) A theoretical framework within which indicators of structural and cultural transformation can be considered. (3) An application of the framework to data for the U.S., post World War II. (4) A plausible set of alternative future histories to 2000 for the U.S. and suggested directions for research on related policy choices. EPRC/ Stanford has produced several papers derived from continuing research on alternative futures.

#### Planning and Policy Making

ADELSON, Marvin. *Toward a Future for Planning.* Santa Monica, Cal.: Systems Development Corporation, June 1966. 17 pages (SP-2002). – Discusses the relationship of futures studies to planning and proposes an Institute for the Future.

DROR, Yehezkel. *Ventures in Policy Sciences: Concepts and Applications.* New York, N.Y.: American Elsevier, 1971. 321 pages. – Note the integration of futures studies and systems theory in setting forth desirable improvements in public policy-making. Dror has published several books and articles on a policy sciences approach to the future.

GROSS, Bertram M. "Planning in an Era of Social Revolution," *Public Administration Review,* 31 (2) May/June 1971, pp. 259-297. – The lead paper in a symposium on "Changing Styles of Planning in Post-Industrial America". Gross discusses accelerating, cumulative system change in past history, considering past social revolutions and outlining major components of the emerging service society. The concluding section depicts a civilized, post-service, learning society in which boundaries between work and education are obliterated.

JANTSCH, Erich. *Technological Planning and Social Futures.* London: Cassel/ Associated Business Programmes, 1972. 205 pages. Charts. – A systematic exposition of goals and methods of planning utilizing an alternative futures perspective and drawing upon ideas accumulated in the recent literature of futures studies and planning.

JANTSCH, Erich, ed. *Perspectives of Planning. Proceedings of the OECD Working Symposium on Long-range Forecasting and Planning, Bellagio, Italy, 27 October - 2 November 1968.* Paris: Organisation for Economic Co-operation and Development, 1969. 527 pages. – Major parts: (1) 15 major papers of the symposium; (2) after-thoughts by 8 participants. The introductory section gives a synopsis of the papers and discussion and sets out the Bellagio Declaration on Planning–reflecting common concern on "crucial, complex problems of world-wide import and the nature of planning urgently required to mitigate them". The Declaration is reprinted in *Futures,* 1(3), March 1969, pp. 182-184.

MICHAEL, Donald M. *On Learning to Plan and Planning to Learn. The Social Psychology of Changing Toward Future-Responsive Societal Learning.* San Francisco, Cal.: Jossey-Bass, 1973. Biblio., index. – A major study of the kinds of changes in our definitions of competence and in the norms and structures of organizations that will be necessary if we are to meet the social psychological conditions for changing toward long-range social planning (lrsp). Part 1 elucidates the problem and elaborates on the need for and the meaning and purposes of lrsp. Part 2 examines the burdens of changing from personal and interpersonal perspectives, and Part 3 the structural and organizational burdens of changing. Note also Michael's *The Unprepared Society: Planning for a Precarious Future.* New York, N.Y.: Basic Books, 1968.

### B. APPROACHES, TOOLS, METHODS

de JOUVENEL, Bertrand. *L'Art de la conjecture.* Paris: Editions SEDEIS, 1964. 400 pages. *The Art of Conjecture.* New York, N.Y.. Basic Books, 1967. 307 pages. – An examination of "customs of the mind in its commerce with the future." A new classic discussion of ways of conjecturing about the

future, concluding with recommendations for establishing the "surmising forum" to meet the demand for societal forecasting. The action-oriented section is reflected in de Jouvenel, "Political Science and Prevision", *American Political Science Review*, 59, March 1965, pp. 29-38.

EDUCATIONAL POLICY RESEARCH CENTER, Stanford, Ca. *Alternative Futures: A Needs-Values-Beliefs Approach.* Menlo Park, Cal.: Stanford Research Institute, Educational Policy Research Center, January 1970 – One of several reports reflecting the Stanford approach to study of alternative futures. The principal sections present a rationale for a needs-values-beliefs (NVB) approach, an empirically derived set of NVB groups, futures that these groups would try to create if they were in power, and futures that are plausible on grounds of internally consistent economic, political and social factors.

MARKLEY, O.W. *Alternative Futures: Methods and Methodology.* Menlo Park, Ca.: Educational Policy Research Center, Stanford Research Institute, January 1970. – Documentation and discussion of how the SRI/EPRC approached and accomplished the task of deriving a set of alternative futures. Examines the approach in the contexts both of social forecasting state of the art and of policy analysis, and discusses problems in treating 'negative results', threats to validity of results obtained, and feasible extensions to the work described.

BAIER, Kurt and Nicholas RESCHER, eds. *Values and the Future: The Impact of Technological Change on American Values.* New York, N.Y.: Free Press, 1971. 512 pages. Biblio. – Contributors offer a range of discussions of value forecasting, its problems, and methods. Extensive bibliography.

DUHL, L. "Planning and Predicting; Or what to do when you don't know the names of the variables", *Daedalus,* Summer 1967. – Note also the other items in this special issue of *Daedalus* on "Toward the Year 2000". The issue is edited by Daniel Bell and reports the work of the Commission on the Year 2000 of the American Academy of Arts and Sciences.

DUNCAN, Otis Dudley. "Social Forecasting–The State of the Art", *The Public Interest,* 17, Fall 1969, pp. 88-118. – A useful critical survey.

HELMER, Olaf. *Social Technology.* New York, N.Y.: Basic Books, 1966. 108 pages. Charts. – A treatise on methodology which includes discussions of operational model-building, methods involving utilization of experts, illustrative procedural sketches, and relates these to the society of the future.

HELMER, Olaf and Nicholas RESCHER. "On the Epistemology of the Inexact Sciences", *Management Science*, 6(1), October 1959, pp. 25-52. Also, Santa Monica, Cal.: RAND, February 1960 (R-353). – An examination of the place of judgmental data in systems studies. The authors compare the philosophical bases of explanation and prediction and provide a springboard for combining scientific and futures thinking in policy analysis.

deHOGHTON, Charles and others. ... *And Now the Future: A PEP Survey of Futures Studies.* London: PEP, August 1971. 170 pages. Biblio. (PEP, Vol. XXXVII, Broadsheet 529). – A useful report and reference source. The major section discusses methodology and critically reviews techniques used in futures studies. Appendices identify organizations and individuals in futures studies, conferences and seminars, journals. The 1256-item categorized bibliography includes research projects as well as publications.

YOUNG, Michael, ed. *Forecasting and the Social Sciences.* London: Heinemann (for the Social Science Research Council), 1968. – Collected papers commissioned by the SSRC's Next Thirty Years Committee. The writers examine possibilities and limitations of social forecasting and suggest which future problems especially need planning and research.

BAUER, Raymond, ed. *Social Indicators.* Cambridge, Mass.: MIT Press, 1966. 357 pages. – A set of papers focusing on "... the entire set of social indicators used in our society–statistics, statistical series, and all other forms of evidence–that enable us to assess where we stand and are going with respect to our values and goals, and to evaluate specific programs and determine their impact ...".

WILCOX, L.D. *et al. Social Indicators and Societal Monitoring.* Amsterdam: Elsevier, Scientific Publishing Company, 1972. – A valuable annotated bibliography. The initial chapter offers a comprehensive, succinct overview of the social indicator movement in the U.S. and abroad, outlines trends towards alternative conceptual perspectives, identifies current issues, and reviews some current social indicators research. The bibliography has 1000 listings, categorized by topic. Address index included.

MARKLEY, O.W. *Alternative Futures: Context in Which Social Indicators Must Work.* Menlo Park, Cal.: Stanford Research Institute, Educational Policy Research Center, February 1971. 16 pages (R.N. 6747-11). – Questions of development of social indicators are related to five "mid-range futures". A "morphological" method for projecting a set of alternative future histories is presented, and interim results (a set of contexts) described. Alternative future histories are used to illustrate how 'normative' social indicators might be of practical value.

HENCLEY, Stephen P. and James R. YATES, eds. *Futurism in Education. Methodologies.* Berkeley, Ca.: McCutchan, 1974. x + 510 pages. Biblio., annexes. – A useful compendium in which there is a

conscious effort to relate the selected methods to problems in the area of education. The first chapter is an Introduction to Studying the Future; the last discusses Values and Forecasts. The remaining chapters deal with specific techniques: contextual mapping, force analysis, relevance trees, Delphi, cross-impact matrix, Ariole (a planning guide), scenarios, decision matrix, morphological analysis, technology assessment, educational trend analysis, Bayesian statistics, Markov chain theory, Monte Carlo techniques, technological forecasting.

**Delphi Techniques and Variants**

SACKMAN, H. *Delphi Assessment: Expert Opinion, Forecasting, and Group Process.* Santa Monica, Cal.: RAND, April 1974 (R-1283-PR). – A valuable critical report from RAND which has published many reports on Delphi and related techniques.

WEAVER, W. Timothy. *Delphi: A Critical Review.* Syracuse, N.Y.: Educational Policy Research Center, Syracuse University Research Corporation, February 1972. 72 pages. Biblio. (RR-7). – A useful discussion of the nature and forms of Delphi, its applications in normative and exploratory studies in education, and the research background. Includes an appraisal of the more promising educational applications of the technique.

DALKEY, Norman. *An Experimental Study of Group Opinion: The Delphi Method.* Santa Monica, Cal.: RAND, June 1969 (RM 5888-PR). Also in *Futures*, 1(5) and 1(6), 1969. – Reports a detailed social psychological study, investigating questions such as reliability in relation to size of group, face-to-face vs. anonymous feedback, distribution of individual error scores. This is one of a set of 1969-70 RAND studies of Delphi, by Dalkey and colleagues. Others deal with technical aspects of the method.

ADELSON, Marvin, ed. *Planning Education for the Future: Comments on a Pilot Study.* Special issue of *The American Behavioral Scientist*, 18(7), March 1967. – Reports on a multidisciplinary study on 'Innovation in Education' carried out at UCLA Institute of Government and Public Affairs. A Delphi procedure was used and 93 proposed innovations were arranged in relevance tree format. The procedure was considered by participants as "potentially very useful in educational planning".

HUDSPETH, Delayne R. and Stuart SANDOW. *A Long-range Planning Tool for Education.* Albany, N.Y.: New York State Education Department, 1970. – Report on a study conducted in 1969-70 for the New York State Education Department, Bureau of Two-year College Programs. The major function of the research was to refine the Delphi process so that policy planners could analyze varying levels of consensus within a social system. The concern in the *Focus Delphi* thus developed is to discover where there is or is not consensus among interest groups–not as in traditional Delphi, to force consensus.

DYCK, Harold J. and George E. EMERY. *Social Futures: Alberta, 1970-2005.* Edmonton, Alta.: Human Resources Research Council of Alberta, c. 1970. 201 pages, charts. – This report summarizes in text and graphs the results of six forecasting exercises relating to changes in: values and social goal orientations, family, leisure and recreation, intercultural relations, politics, needs and problems of individuals. Topics were selected for relevance to the future of education and the studies were co-sponsored by the Commission on Educational Planning. A two-round Delphi was utilized to solicit the informed views of panels of selected "experts".

**Cross-Impact Matrix and Variants**

FOLK, Michael. *A Critical Look at the Cross-Impact Matrix.* Syracuse, N.Y.: Educational Policy Research Center, Syracuse University Research Corporation, August 1971. 44 pages + appendices. Tables, charts, biblio. – A close examination of CIM and its basic assumptions to determine the role it should play in helping us think about the future. Discusses problems of the formula, the sequencing of events, the specification of input, and epistemological problems most influencing the way the method is used. Concludes that CIM should be used for decision-making only with much caution, but that it has considerable heuristic potential.

GORDON, T.J. "Cross-Impact Matrices: An Illustration of Their Use for Policy Analysis", *Futures*, 1(6) December 1969, pp. 527-531. Charts.–The policy area studied concerned alternative future environments for education.

GORDON, T.J. and others. *Research on Cross-Impact Techniques With Applications to Selected Problems in Economics, Political Science, and Technology Assessment.* Middletown, Conn.: Institute for the Future, August 1970. 164 pages (R-12). – Reports NSF-sponsored research undertaken in 1969-70 to improve the cross-impact method of long-range forecasting. The basic method and some variations are discussed and the authors indicate how some methodological problems have been resolved. Usefulness of the methods is illustrated by examining a number of innovations.

HELMER, Olaf. "Cross-Impact Gaming", *Futures*, 4(2), June 1972, pp. 149-167. – This paper describes preliminary research in the design of a series of planning games that can be applied in various fields. Scenarios of future states of the Union result from manipulating estimates of possible events.

**Models, Simulations, Mapping**

ABT ASSOCIATES, INC. *Report of a Survey of the State of the Art: Social, Political, and Economic Models and Simulations.* Washington, D.C.: ABT, November 1965. 83 pages + appendices. – The survey reviews over 50 non-industrial models and simulations. Includes: descriptive typology, appraisal of strengths and weaknesses of the art, discussion of applicability to public policy planning, and recommendations for government policy.

LITTLE, Dennis and Richard VELLER. "Social Indicators, Policy Analysis and Simulation", *Futures,* 4(3), September 1972, pp. 220-231. Chart, table. – Simulation is presented as a possible tool for building a bridge between the conceptual model of social indicators and the operational model, allowing exploration of new policy options. The article deals with the need for such a model, describes one (STAPOL), and discusses some current and future applications of this type of simulation.

UMPLEBY, Stuart. *The Delphi Exploration: A Computer-based System for obtaining Subjective Judgments on Alternative Futures.* Urbana, Ill.: University of Illinois, August 1969. Processed (Social Implications of Science and Technology, Report F-10). – Progress report on the use of a teaching computer to allow laymen to explore possible alternative futures by making choices on the basis of available background information and seeing the consequences of choices.

ROSOVE, Perry E. *An Analysis of Possible Future Roles of Educators as Derived from a Contextual Map.* Santa Monica, Cal.: Systems Development Corporation, March 1968. 82 pages. – A report describing the results of an experiment in conjecturing about potential future roles of educators in the late 1980s. The analysis uses "contextual mapping" to consider possible consequences for education of selected long-term social and technological trends.

**Combination of Techniques**

HELMER, Olaf and others. *Development of Long-Range Forecasting Methods for Connecticut: A Summary.* Middletown, Conn.: Institute for the Future, September 1969. 83 pages. Charts. (Report R-5.) – The summary report of a set of six on research undertaken on procedures of long-term forecasting, to gain insight for the citizens of Connecticut about prospective changes to the year 2000. Related reports discuss three Delphi studies, a simulation game which utilized the Delphis, and the use of the cross-impact matrix in forecasting and planning.

BECKER, Harold S. and Raul de BRIGARD. *A Framework for Community Development Action Planning.* Vol 1: *An Approach to the Planning Process.* Vol. 2: *Study Procedure, Conclusions and Recommendations for Future Research.* Middletown, Conn.: Institute for the Future, 1971. 282 + 122 pages. (Reports R-18, R-19). – Reports on a project conducted for Connecticut Department of Community Affairs, designed to investigate methods of improving the analytical process used by municipalities to prepare a Community Development Plan. Delphi studies were used to generate checklists of goals, needs, social indicators, and possible actions for 13 areas of municipal concern.

ENZER, Selwyn and others. *Futures Research as an Aid to Government Planning in Canada: Four Workshop Demonstations.* Middletown, Conn.: Institute for the Future, August 1971. 139 + 121 pages. Charts, appendices. (R-22, R-22A.) These reports present the results of four accelerated workshops in which government participants examined economic, social, and physical aspects of the Canadian environment in three sequential workshops. The final "open-ended" workshop built on the first three to demonstrate that sequenced futures analyses facilitate a more comprehensive assessment of societal futures and the identification and evaluation of alternatives.

ENZER, Selwyn. "Delphi and Cross-Impact Techniques: An Effective Combination for Systematic Futures Analysis", *Futures,* 3(1), March 1971, pp. 48-61. Charts. – The author suggests ways of combining two techniques to provide an appreciation of the interplay of individual problems and opportunities that can be foreseen.

SANDOW, Stuart A. *Educational Policy Formulation: Planning with the Focus Delphi and the Cross-Purpose Matrix.* Syracuse, N.Y.: Educational Policy Research Center/SURC, February 1972. 72 pages. Charts. Processed. (RR-9). – This report describes modifications of Delphi and cross-impact matrix in which the concern is development of pedagogical devices (rather than forecasting instruments) to assist in the examination of objectives and the setting of planning priorities.

SANDOW, Stuart A. "The Pedagogy of Planning: Defining Sufficient Futures", *Futures,* 3(4), December 1971, pp. 324-337. – The author questions the notion of professional expertise concerning the future and presents several futures-related devices which can assist planners and citizens in focusing thought about goals for the future: Delphi, future histories, scenarios, value shift assessment, future history analysis and review, cross-impact and cross-purpose matrices.

ZIEGLER, Warren L. "Planning as Action: Techniques of Inventive Planning Workshops" in *"Participatory Planning in Education.* Paris: Organisation for Economic Co-operation and Development, 1974. – A discussion of the relationship between the futures perspective (as developed at EPRC/ Syracuse) and participation, related conceptual issues, and the activities and techniques used in work-

shops. Emphasizes the use of futures methods as pedagogical devices to facilitate examination of alternatives in planning and action. See also Ziegler and Healy article in this issue of *Educational Planning.*

EDUCATIONAL POLICY RESEARCH CENTER, Syracuse. *Reports on Futures Invention/Social Action Studies.* Syracuse, N.Y.: EPRC/SURC, 1975-76. – A set of reports on five futures invention/social action studies focusing on problem areas identified by the participating states and communities. These are not research reports, but documents prepared for the use of participants in their further action and planning. They present the distilled products of participants' contributions in workshops, together with analysis of materials derived from workshops and in-depth pre- and post-workshop interviews.

### C. THE FUTURES PERSPECTIVE AND EDUCATION

EDUCATIONAL POLICY RESEARCH CENTER, Stanford. *Alternative Futures and Educational Policy.* Menlo Park, Ca.: EPRC, Stanford Research Institute, January 1970. 43 pages. Processed. – The major part of this report summarizes findings of some 300 alternative future histories for the United States. The few that avoid serious crisis by 2050 require a dramatic shift of values and perceptions if major world problems are to be resolved. The authors develop a framework for examining implications for educational policy.

GEORIS, R. and others. *Plan Europe 2000. Project: Education. Programme of Studies.* Amsterdam: European Cultural Foundation, September 1971. 47 pages. Tables. Processed. – This progress report offers an overview of the program of studies and brief reports on 15 studies concerned with the future of education. See *Futures*, 2(2), June 1970, pp. 163-169 for an account of the overall project, Plan Europe 2000, which seeks by systematic, coordinated thinking about industrial, urban, rural and educational development to "conceive of society in the 21st century and the type of man capable of regulating it".

GREEN, Thomas F., ed. *Educational Planning in Perspective: Forecasting and Policy-making.* Guildford, Surrey: FUTURES/IPC Science and Technology Press, Fall 1971. 132 pages. Paperback. – Contributors, in varying degrees, utilize an alternative futures perspective in discussing problems of educational policy, planning, and administration.

MARIEN, Michael and Warren L. ZIEGLER, eds. *The Potential of Educational Futures.* Worthington, Ohio: Charles A. Jones (for the National Society for the Study of Education), 1972. 126 pages. Charts, biblio., refs. Paperback. – A collection of 15 short, non-technical papers which together offer an introduction to aspects and potentials of the futures perspective in education. Topic areas: concepts and status of the field, approaches and methods, applications in planning at international, national, state and local levels, and applications in teaching.

MORPHET, Edgar L. and David L. JESSER, eds. *Designing Education for the Future.* New York, N.Y.: Citation Press, 1967-1969. 7 vols., 150-350 pages per vol. – A useful paperback series derived from area conferences of the Eight-State Project. Each volume contains a range of articles contributing to the title topics. The first volume examines prospective changes conditioning the societal context in 1980. The remaining six volumes focus on various aspects of the implications for education.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT. *Alternative Educational Futures in the United States and Europe: Methods, Issues and Policy Relevance.* Paris: OECD, 1972. Charts, Biblios. – Three major papers preceded by an overview-synthesis statement by the OECD Secretariat. Torsten Husén writes on "Purposes of Futurologic Studies in Education"; Warren Ziegler elaborates "An Approach to the Futures-Perspective in American Education"; and Willis Harman examines "Changing United States Society: Implications for Schools".

UNITED STATES. 92nd CONGRESS. 2nd SESSION. HOUSE COMMITTEE ON EDUCATION AND LABOR. *Alternative Futures in American Education.* Appendix 3 to Hearings on H.R. 3606 and Related Bills to Create a National Institute of Education. Washington, D.C.: U.S. Government Printing Office, 1972. 448 pages. Charts, biblio. Committee Print. – A useful paperback collection of articles, including a 936-item annotated bibliography. Contributors include many listed above.

WEBSTER, Maureen M. *Educational Planning in Transition–Emerging Concerns and the Alternative Futures Perspective.* Syracuse, N.Y.: Educational Policy Research Center/SURC, August 1971. 310 pages. Charts, tables, biblio. Processed. – Part I documents and analyzes the evolution of educational planning 1960-1970 within programs of the Organisation for Economic Co-operation and Development (20 + Member states). (Findings are briefly reviewed in Marien and Ziegler, *op. cit.*) Part II uses the alternative futures perspective to examine implications of identified shifts in planning context, content, methods, and process.

#### Focus on Particular Sectors

EURICH, Alvin C., ed. *High School 1980: The Shape of the Future in American Secondary Education.* New York, N.Y.: Pitman, 1970. 304 pages.

GREEN, Thomas F. "Schools and Communities: A Look Forward", *Harvard Educational Review*, Spring 1969. – Discusses change and continuity in school-community relationships 1980-1990.

CASE, Charles W. and Paul A. OLSON, eds. *The Future: Create or Inherit.* Lincoln, Nebraska: University of Nebraska Printing Service, 1974. 238 pages. Paperback. – This book was developed by the Deans Committee of the USOE Study Commission on Undergraduate Education and the Education of Teachers. Four sections (seven essays) examine: alternative views of the future; practical questions posed for colleges of education by a 10-or-more years time perspective; tools whereby community-centred. political groups can influence their futures; and a critique of the original recommendations of the USOE Study Commission.

EURICH, Alvin C., ed. *Campus 1980. The Shape of the Future in American Higher Education.* New York, N.Y.: Delacorte Press, 1968. xvii 327 pages. – The President of the Academy for Educational Development in New York has here assembled contributions by major writers on higher education – mainly descriptive forecasts.

LIVESEY, J. Lionel. *Participatory Planning for Higher Education.* Albany, N.Y.: State University of New York (SUNY), Office of Long-range Planning, 1970. Processed. – Paper presented at a Symposium on Assessing the Future and Policy Planning, organized by the National Bureau of Standards and the World Future Society. A futurist and practicing educational planner appraises the experience of the SUNY university system in developing master plans, emphasizing grassroots participation and the effort to inject an alternative futures perspective.

PORTER, John and others. *Towards 2000: The Future of Post-Secondary Education in Ontario.* Toronto, Ont.: McClelland and Stewart, 1971. 176 pages. Biblio. – A report submitted to the Commission on Post-Secondary Education in Ontario. Education is discussed in perspectives of reasoned speculation about the nature of the world thirty years ahead.

BELL, Daniel. *The Reforming of General Education: The Columbia College Experience in its National Setting.* New York, N.Y.: Columbia University Press, 1966. xviii + 320 pages. Index. – An example of policy recommendations based on consideration of the future.

## D. FURTHER SOURCES

### Directories and Bibliographies

COUNCIL OF EUROPE. *Long-term Forecasting in Europe: An Inventory of Institutes, Academies and Associations, as well as of Projects Undertaken in Europe in the Field of Long-Term Forecasting.* Strasbourg, 1970. 2 vols. French and English entries.

INSTITUTO RICHERCHE APPLICANTE DOCUMENTAZIONI E STUDI (IRADES). *Social Forecasting Ideas–Men–Activities. Documentation.* Rome: Edizioni Previsionali (Via Paisiello, 6), 1971- –An international directory (834 pages in 1971) listing organizations, individuals, periodicals related to futures studies and identifying futures courses and meetings for the 1965-1971 period – all indexed. 3,000-item unannotated bibliography, with separate author index. Periodically updated.

MARIEN, Michael. *Alternative Futures for Learning.* Syracuse, N.Y.: Educational Policy Research Center/SURC, 1971. 936 categorized, annotated items, with a foreword on the literature, and indexes.

MARIEN, Michael. *Societal Directions and Alternatives: A Critical Guide to the Literature.* LaFayette, N.Y.: Information for Policy Design, forthcoming, Spring 1976. (5413 Webster Road, LaFayette, N.Y. 13084). – Annotated, evaluated entries for over 500 books, reports, and articles, primarily written in the 1970s.

### Journals

*Futures.* The Journal of Forecasting and Planning. Vol. 1(1), September 1968- . – Published by IPC Science and Technology Press, 32 High Street, Guildford, Surrey, U.K. An international bi-monthly of articles and original papers, including a broad range of technical and non-technical contributions.

*The Futurist.* A Journal of Forecasts, Trends, and Ideas About the Future. Vol 1(1), February 1967- . – Published by The World Future Society, P.O. Box 19285, 20th Street Station, Washington, D.C. 20036. Illustrated bi-monthly containing short non-technical articles with a futures orientation, plus news of activities of the World Future Society.

*Fields Within Fields . . . Within Fields.* Vol 1(1), 1968- . – Quarterly published by The World Institute Council, 777 United Nations Plaza, New York, N.Y. 10017.

*Futuribles,* 1975- . – Published by Association International Futuribles, 10 rue Cernuschi, 75017 Paris, France. Formed by the merger of *Analyse et Prevision* and *Prospectives*. Text in French, summaries in English and French. Indexed in Sociological Abstracts.

## BIBLIOGRAPHY

*Analysen und Prognosen – Uber die Welt von Morgen.* – German bi-monthly published by Zentrum Berlin fur Zukunftsforschung, Glesebrechstr. 15, 1 Berlin 12, Federal Republic of Germany.

**Additional Addresses**

*Educational Policy Research Center/Stanford.* Stanford Research Institute, 333 Ravenswood Ave., Menlo Park, Calif. 94025.

*Educational Policy Research Center/Syracuse.* Syracuse Research Corporation, Merrill Lane, University Heights, Syracuse, N.Y. 13210.

*Plan Europe 2000.* The European Cultural Foundation, Jan Van Goyenkade 5, Amsterdam, The Netherlands, 1007.

*Organisation for Economic Co-operation and Development.* 2 rue André Pascal, Paris 16, France. For education-related interests, note the work of the Center for Educational Research and Innovation (CERI), and the Educational Planning Program.

*Commission on the Year 2000.* American Academy of Arts and Sciences, 280 Newton Street, Brookline, Mass. 02146.

*The Institute for the Future.* Founded 1968. In 1973 the Connecticut office was phased out. The Institute is now located at 2725 Sand Hill Road, Menlo Park, Calif. 94025.

*The Futures Group.* Formed in 1973. The president, Theodore Gordon, and several colleagues formerly worked with the Institute for the Future. Address: 124 Hebron Avenue, Glastonbury, Conn. 06033.

*RAND Corporation.* 1700 Main Street, Santa Monica Calif. 90406. Note the quarterly, *Rand Abstracts*, which includes with fair frequency items related to forecasting and planning.

## The International Society of Educational Planners

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The Society was founded on December 10, 1970, in Washington, D.C. Over fifty local, state, national and international planners attended the first organizational meeting.

Since then its growth has demonstrated that there is need for a professional organization with educational planning as its exclusive concern.

*Purpose*

The ISEP was founded to foster the professional knowledge and interests of educational planners. Directly and indirectly it is also concerned with the state of the art of planning.

*Activities*

The activities of the Society are those of most professional associations: it publishes a newsletter and a journal, holds an annual conference, sponsors training workshops, conducts professional liaison with related organizations and encourages research.

*Commissions*

The Society has three commissions the chairmen of which sit on the Board of Directors: Research, Training and International Relations. Discussions have also been held on the feasibility of establishing commissions for the specialized interests of sub groups of its members, such as a commission on Manpower Planning, Facilities Planning or Institutional Planning.

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