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TITLE OF THESIS... THE FUTURES PERSPECTIVE IN EDUCATIONAL POLICY DEVELOPMENT

UNIVERSITY... UNIVERSITY OF ALBERTA

DEGREE FOR WHICH THESIS WAS PRESENTED... Ph.D

YEAR THIS DEGREE GRANTED... 1972

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THE UNIVERSITY OF ALBERTA

THE FUTURES PERSPECTIVE IN EDUCATIONAL POLICY DEVELOPMENT

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

EDMONTON, ALBERTA

FALL, 1972

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "The Futures Perspective in Educational Policy Development," submitted by Desmond Edward Berghofer in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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ABSTRACT

Because of apparent increases in the rate of change and in the interdependence of many factors related to economic and social well-being, there has been a tendency during recent years for those engaged in policy-planning to view the future not as a predetermined state of affairs, but rather as an array of alternative social possibilities. This has led to an upsurge of interest in long-range planning and to the proliferation of a vast and ever expanding volume of literature about possible and probable futures.

The intent of the present study was to examine the effect that exposure to the literature of futures research has upon those engaged in the task of developing educational policy. An experimental design involving three matched groups of educational administration students from the Department of Educational Administration at The University of Alberta was employed. A total of thirty-three subjects were involved and groups were matched according to familiarity with futures research and on the basis of scores on the personality constructs of integrative complexity and dogmatism. The format used for interaction was the Delphi method, and group treatments differed in the extent to which subjects were exposed to information about possible-probable futures.

The major findings from the study revealed that the group given greatest exposure to futures material manifested the greatest tendency to put forward policy suggestions which represented definite alternatives to present practice. In contrast, the group which was not exposed to information about alternative futures displayed the greatest tendency to either advocate the continuation of existing policy or extrapolate

present policy into the future. Exposure to futures material was also found to be associated positively with comprehensiveness of future perspective: the greater the exposure, the more factors that were taken into account concerning education's interaction with non-educational variables.

Additional findings were that the groups provided with futures material tended to make more use of the interactive features of the Delphi process in that they were more willing to change opinion between rounds and less likely to be influenced by majority opinion. These groups also tended to be more positive about their participation in the policy development process than was the group not exposed to futures material. Concerning the relationship between personality variables and policy development, some evidence was found to indicate that integrative complexity is positively related to comprehensiveness of future perspective.

With regard to the utility of the Delphi technique, it was concluded that this method used in conjunction with futures material provides an effective means for achieving broad-based participation in educational policy development. However, in discussing the implications of the findings, it was stressed that Delphi is but one way in which widespread participation might be achieved, and that the development of meaningful, citizen-based activities with an anticipatory emphasis will be one of the key challenges to a democratic society in the future.

ACKNOWLEDGEMENTS

Dissertations are rarely, if ever, the result of individual effort. This one is no exception. Many people contributed to the conclusion of the study and the writer readily acknowledges his indebtedness to them.

To the students in the Master's program of 1971-72 in the Department of Educational Administration at The University of Alberta who gave freely of their time and talents to act as participants, sincere appreciation is expressed. Without such co-operation, there would have been no study.

The significant contributions of Dr. E. Miklos to the research are also gratefully acknowledged. His critical, scholarly, and painstaking examination of ideas and manuscripts removed many of the errors that would otherwise have escaped the researcher. In addition, sincere appreciation is expressed to Dr. D. Kuiken, Dr. S. C. T. Clarke, and Dr. D. A. MacKay who gave valuable guidance throughout the project. The helpful suggestions and support provided by Dr. J. E. Seger and Dr. J. H. M. Andrews are also recognized.

Finally, to Judy, a devoted and unselfish wife through too many months of sacrifice and separation, an unsought but deeply deserved expression of gratitude is extended.

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INTRODUCTION

BACKGROUND TO THE PROBLEM

Under the impetus of scientific and technological development the world has changed considerably during the last century. Moreover, the spectacular accomplishments of the post World War II era attest to the fact that the rate of change is increasing. As Platt (1969) has pointed out, "the essence of the matter is that the human race is on a steeply rising 'S-curve' of change." Such rapid developments are completely unprecedented in human history and have led many writers to view the present and next several decades as times of crisis and transition to conflicting possibilities.

One consequence of such basic uncertainty about the future is an upsurge of interest in long-range planning. There is a desire among those charged with administering human affairs to get control over constantly changing and increasingly interdependent social conditions. This has led in recent years to an activity variously known as futures research, futurism, or futurology, which is now attracting the attention and interest of many people with diverse academic and scientific training. Following de Jouvenel (1967), most writers in this field view the future as an array of alternatives, and futures research is therefore "a means of discovering and articulating the more important of the alternative futures and estimating the trajectory likely to be produced by contemplated policies." (Gordon, 1971:2).

Futures research is of particular significance to the policy-

making process, for, as Weaver (1969) has pointed out, increasing complexity and rapid change demand that decisions be made quickly in a context of considerable uncertainty. It is not surprising, therefore, that an emphasis on research which attempts to study future possibilities in a systematic way should emerge as one means of coping with uncertainty in the policy-making environment.

However, two main questions arise out of this attempt to relate policy decisions to a study of the future:

1. How valid is the information which futures research can provide to the policy development process?

2. What use can or will be made of such information in developing policy?

The first question has received considerable attention, both in empirical investigation and in the form of continuing debate in specialized and popular journals. Much of the empirical research has been concerned with the so-called Delphi technique, a method of systematically eliciting judgment from respondents through sequential individual interrogations combined with controlled feedback of information. After reviewing the extensive literature of reported Delphi studies, Weaver (1971) came to the conclusion that Delphi as a forecasting tool suffers from fundamental weaknesses, and he suggested that its greatest potential may be as a pedagogical device for teaching people to think about the future in much more complex ways than they would ordinarily.

While the work of Weaver and others (Helmer, 1966; Campbell, 1966; Dalkey, 1969a, 1969b; Folk, 1972) has examined the question of the validity of information supplied by Delphi and other methods for

describing the future, the related point of the extent to which such information can or will be used in developing policy does not appear to have been explored as a research question. Writers such as Ziegler (1970a) and Gordon (1971) have recognized this as a problem, and Weaver's suggestion that Delphi has value as a teaching device also implies that learning something about the future will make a difference to the way people plan or develop policies. But in what ways will the policies developed by those who have been exposed to "futures thinking" be different from policies put forth by others who have not been so exposed? Is there any reason to believe that familiarity with the output of futures research will demonstrably affect the thinking of people engaged in developing policies which bear on the short to long-term future? These were the questions which, in the context of educational policy development, formed the basis of the study reported here.

STATEMENT OF THE PROBLEM

In general, the study sought to examine what Ziegler (1970a) and Webster (1972) have called the "futures perspective" as it relates to the process of educational policy development. More specifically, the problem addressed may be stated as three main questions:

1. Does exposure to information about possible-probable alternative futures make a difference to the output from individuals and groups involved in the educational policy development process?

2. Does the intensity of exposure to information about possible-probable alternative futures make a difference to the output from the individuals and groups involved in the development of

educational policy?

3. Do certain psychological variables among the individuals involved in educational policy development make a difference to their contributions to the process when it is associated with exposure to information about possible-probable alternative futures?

In examining these questions it was important that a number of groups be established whose members were interacting under common operational conditions. The method chosen for group interaction in the present study was the Delphi format. On this basis, the first two questions were investigated by studying the differences apparent in policy statements, in reasons given in support of those statements, and in the convergence of opinion concerning the statements derived from three matched groups of educational administration students operating under the following conditions:

1. As a Delphi panel with no guidelines other than a description of the task

2. As a Delphi panel addressing the same task as above, but supplied with an additional input of material designed to provoke thoughts about the future

3. As a Delphi panel addressing the same task as in (1) and (2) and supplied with the same materials as in (2), but also provided with an additional round of interaction designed to increase the extent to which panel members were exposed to the futures material.

With regard to the third main question raised by the study, it was proposed that an individual's contribution to policy development, because of the latter's dependence upon judgment about the future and upon the need to process considerable information, is related to the

individual's integrative complexity and openness of mind. It was therefore decided to match the subjects in the three groups according to the psychological variables of integrative complexity and dogmatism, and, moreover, to examine the data from the policy development process in the light of individual and group scores on these variables.

In addition to the three main research questions stated above, an allied aspect concerning group attitudes was investigated. In the problem area under examination three related concepts are predominant: "the future," "change," and "educational policy-making." Since it was felt that attitudes toward these concepts might well change depending upon a group's exposure to information about possible-probable futures, the following question was addressed: Do attitudes toward the above concepts change as a result of exposure to information about possible-probable alternative futures, and if so, in which direction do changes take place?

SIGNIFICANCE OF THE PROBLEM

The significance of the problem discussed above stems from an ever deepening dilemma facing those who attempt to develop educational policy. This dilemma has been clearly expressed by Weaver (1969:20):

> One way to conceptualize the policy dilemma is to consider that as change accelerates, less and less lead time is available to the decision maker and planner. But at the same time, complexity of the problems to be dealt with is also increasing, thus more time is needed to grapple with problems at the policy level.

In effect, policy is increasingly developed in a present which is being crowded by the future. Education, in particular, is being subjected to considerable criticism, because of its alleged inability

to keep pace with change. More and more, educators are asked to explain the relevance of much that takes place in educational institutions to either the clients of the institutions or the society at large. Faced with the spectre of rising educational costs, both official and self-appointed spokesmen for the larger society are claiming that educators must be held accountable for what they do.

One response to these kinds of pressures has been for those charged with the administration of public education to alter planning/policy relationships. In reviewing a decade of documentation, Webster (1972:16) points out that by the end of the 1960's there was considerable evidence in the papers of the Organization for Economic Co-operation and Development (OECD) that the concept of planning "as a technical, value-free activity, segregated from policy-making" had changed to a concept of planning as "involving questions of choice and values, and part of a policy-planning process." At the same time Webster reports that the locus of the planning activity had moved from "planning by centralized professional groups" to "participatory planning by multiple publics." Moreover, the time horizon adopted by planners had shifted from "short-to-medium range planning" to"long-term perspective planning."

The above changes imply a notion extant at the beginning of the 1970's that the policy-planning process should be participatory and should attempt to consider more seriously the long-range implications of policy decisions. In brief, the emphasis is on greater comprehensiveness, both in terms of those who participate and of what is considered. However, to increase the comprehensiveness of a process as complicated as that of educational planning and policy development is by no means simple. Questions inevitably arise as to who is to take part and what

means are to be used to increase involvement.

One method for achieving greater comprehensiveness that has gained prominence in recent years on the basis of its ability to involve a wide range of people and to reduce the influence of certain psychological factors such as specious persuasion and the "bandwagon" effect of majority opinion, is the Delphi technique. Numerous Delphi studies in education have been reported by Weaver (1971), Marien (1971), and Stevenson and Hamilton (1972). However, in none of these has the primary intent been to confront respondents with a concentration of previous research on the future to serve as a background for deliberating on policy. Though comprehensiveness of a sort is achieved by the Delphi technique in its original form, the extent to which the respondents themselves have a comprehensive or limited view of the future remains largely unknown to the person conducting the research. For this reason it is difficult to assess whether such studies can be used as a reasonable basis for planning for a complex future, or whether they merely represent the prolongation of individual whim and current values and trends.

The present study by combining the Delphi technique with output from other futures research methodologies, therefore, not only considered the question of the utility of futures research to the policy development process, but also examined the Delphi method as a viable means for achieving greater comprehensiveness in that process. The study, therefore, as well as being concerned with gaining better understanding of the way human actors behave when confronted with information about the future also addressed the allied practical concern of refining an existing methodology for more effective use.

DELIMITATIONS AND LIMITATIONS

The study was subject to certain limitations essentially derived from the fact that it was delimited to an experimental design and was intended to be exploratory in nature. They may be stated as follows:

1. The subjects who participated in the study constituted a small accessible group and were not, therefore, necessarily representative of a larger population.

2. The materials used to provoke thoughts about the future were limited in order not to place unrealistic demands on the subjects.

3. The possibility for results to be influenced by subjects interacting outside the experimental situation could not be entirely removed.

4. The study was not designed to provide firm policy statements, but rather was intended to examine selected aspects of policy development.

5. The research was subject to the limitations of all studies which rely in part on the interpretations of a single researcher.

ORGANIZATION OF THE THESIS

The report of the study has been organized in six chapters including this introduction.

In Chapter Two the literature that provides the conceptual framework for the study is presented. The chapter begins with a description of various approaches to thinking about the future and presents the distinctive traditions of futures research utilized in the study as inputs to the policy development process. The significance of this literature to educational policy-planning is then discussed and

a classification of planning attitudes currently adopted by educational planners in viewing the future is presented. The chapter concludes with a review of literature pertaining to the variables of integrative complexity and dogmatism, and the significance of these variables as key determinants of group membership is explained.

The research design is described in detail in Chapter Three. Following a description of the subjects and the measuring instruments they completed, an account of the three distinct group treatments is presented. The specific research questions investigated in the study are then listed, and the chapter concludes with an account of the statistical treatments employed in analysing data.

Chapters Four and Five are devoted to reporting the findings of the study. In the former, results pertaining to group differences with respect to policy statements and supporting reasons are presented, while the latter reports group differences on selected policy, interaction, attitude, and personality variables. Chapter Five concludes with an account of differential group assessments of participation in policy development.

In the final chapter the study is summarized and conclusions are presented. Further discussion of the findings is then given, together with their implications for educational practice and further research.

Chapter 2

CONCEPTUAL FRAMEWORK

The essential concern of this study was to examine the effect of incorporating certain aspects of the exponentially expanding literature on the future into the process of developing educational policy. In addition, it also attempted to ascertain the methodological and conceptual feasibility of achieving such incorporation. The purpose of the present chapter is to provide a conceptual framework for the study by linking the concept of futures research to the educational policy-planning process. In doing so a classification of ways of viewing the future--used later as one basis for analyzing policy statements and their supporting reasons--is described. In the last part of the chapter a tradition of research and inquiry into belief systems and conceptual systems will also be shown to be relevant to the question of how the future is viewed by different individuals.

FUTURES RESEARCH

Futures research is essentially based on de Jouvenel's (1967) contention that the future is not predetermined, but rather consists of an array of alternative futures any one of which is open to mankind. The approach implies that the future is "open" rather than "closed" and that man by his conscious choices in the present can affect how the future actually occurs.

That this concept of the future is significant for educational planning can readily be appreciated from the fact that increased emphasis on producing a broad educational base for its citizenry has

been associated throughout the world with an increase in a given country's economic growth and with a rising material standard of living for its citizens. In other words, decisions in the past to invest a certain proportion of a country's resources in educating its population have led, in conjunction with other factors, to a particular form of present social condition. Presumably, then, present decisions on the allocation of resources to education, combined with present decisions on what kind of education to offer, will substantially affect the kind of social future that eventually emerges.

If the phenomenon under consideration were characterized by a simple cause and effect relationship--that is, if implementation of a particular educational decision invariably led to a particular clearly defined social condition--then the task of developing educational policy, while it would not be easy, would at least be much more clear-cut than it is in reality. A great deal of the difficulty confronting those charged with the development and implementation of educational policy is caused by the interdependence of education with constantly changing economic and social conditions--which in turn are further affected by constantly changing and increasingly diversifying value systems throughout society.[1] For this reason--as writers such as Weaver (1971), Ziegler (1970a), and Webster (1972) have pointed out--there has been increased interest in educational circles in recent years to try to consider systematically the long-range implications of educational policy decisions.

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[1]For an informative account of the importance of value change in society see Kurt Baier and Nicholas Rescher (eds.), Values and the Future. (New York: The Free Press, 1967).

As might be expected, the interest of educators in researching the medium to long-range future (fifteen years and beyond) has developed in conjunction with an increased interest in this kind of activity by researchers from various disciplines and backgrounds. Out of this has emerged what Gordon (1971) has called the "proto-discipline" of futures research which now has such an extensive literature that no one person could follow it all.

Since the intent of the present study was not to carry out an exhaustive analysis of futures research, no attempt will be made here to provide a comprehensive review of literature in this field. However, since the study was concerned with incorporating what might be called the general thrust of futures research into the policy development process, it would seem appropriate to discuss briefly three different approaches to researching the future which are already in evidence at this time and which formed the basis for the futures input to the policy development process as it was executed in this study. A more detailed description of the material used is presented in Chapter Three, and the complete document is contained in Appendix A.

Three Approaches to Futures Research

As a means of attaining a ready grasp of the vast amount of material subsumed under the general category of futures research, it is helpful to distinguish among three different approaches: one which has grown out of an operations research tradition; one which relies heavily on intuition and combines it with narrative and descriptive writing; and one which makes use of historical and cultural analysis as a basis for expressing opinions about likely futures. Though the three approaches

are discussed separately below, it should not be concluded that they are mutually exclusive. A combination of approaches is often apparent in the literature, but an individual writer will usually emphasize one particular orientation.

Operations-research approach. The approach growing out of a tradition of operations research is oriented towards the mathematical treatment of quantified data and usually involves the "conceptual fabrication of an intellectual, analytical, or physical model that resembles the performance of its real-life counterpart." (Gordon, 1971:2) Specific treatments reviewed by Gordon which belong to this tradition are trend extrapolation, Delphi, cross-impact matrix, simulation, decision trees, and input-output matrices. The system dynamics method developed by Forrester (1971) and refined by Meadows et al (1972) is another example of the operations research approach and is possibly the one destined to be most influential on decision-making in the future. Finally, the technique of econometrics insofar as it tends to be long-range rather than short-range may also be included in this category.

Though the above methods, like all approaches to studying the future, depend heavily on judgment and probability, they also make use of rigorous techniques such as mathematical formulas and statistical analysis. Such treatment of data can all too easily give an impression of precision and for this reason the various methods stand in danger of raising aspirations for rationality that cannot be fulfilled. Gordon (1971), Folk (1972), and de Jouvenel (1967) have warned of this shortcoming.

The other main difficulty with this approach is that it is

crisis-oriented and tends to emphasize what forms of external control need to be applied in view of perceived dangers, but it lacks the tools and orientation for examining more fundamental questions. For example, it may well be that immanentism, or the capacity for creativity to come from within, rather than for control to be exercised from without, is the only process that can ultimately result in a satisfactory future condition for mankind. Futurists who rely exclusively on the operations-research approach may overlook this alternative in their preoccupation with a more narrow range of alternatives stemming from forecasts and aspirations of pragmatically-minded men in the present.

More intuitive approach. A second group of methods for studying alternative futures includes genius forecasting (the writing of Utopias or anti-Utopias), scenario writing, futures history, and the field anomaly relaxation technique. All of these methods, with the exception of the last, have been reviewed by Gordon (1971). The field anomaly relaxation technique is an outcome of ongoing research at the Educational Policy Research Center at Stanford and has been described by Rhyne (1971). It consists essentially of intuitively perceiving factors that in combination could produce various alternative futures which can then be described in some detail.

The above methods are characterized by intuitive thought usually presented in narrative or descriptive prose. This means that their plausibility depends heavily on the capabilities of the writers. Moreover, since they tend to represent a single point of view, they suffer from the disadvantage that they can be dismissed as being politically or culturallly biased. Despite these deficiencies, however, such analyses of the future

can be powerfully persuasive.

Retrospective-prospective approach. A third line of inquiry somewhat related to the intuitive approach seeks to see the present and possible future condition of mankind against the background of the past. Such research may be termed retrospective-prospective in that it attempts to reveal how it was that man came to the present juncture in history and from that basis conjecture what alternatives might be open to him in the future. The tools of such inquiry are historical and cultural analysis as opposed to the mathematical model building and systems analysis of the operations research tradition and the uncertain thought processes underlying the intuitive approach.

The essential elements of the retrospective-prospective approach can be seen in the work of Mumford (1956, 1970), Polak (1961), Boulding (1964), and Ferkiss (1969). Without exception these writers focus on the development of Western man: the societies that have emerged, the institutions that he has devised, and the tremendous changes to his civilization that were wrought by the application of the scientific method and technology. In this context they assess man's chances and alternatives for the future.

EDUCATIONAL POLICY-PLANNING AND THE FUTURE

The literature emanating from the three approaches to futures research described above is significant to the educational policy-planning process because of the crucial interrelationship between education and society. Increasing awareness of this interaction as far as the future is concerned is evidenced by a growing volume of literature

linking educational policy-planning to the concept of alternative futures. In drawing attention to the complementary nature of the alternative futures perspective and current concerns in educational planning documents of OECD member countries, Webster (1972:17) has asserted that "the records of OECD initiatives in the second half of the sixties . . . give evidence that the concept of alternative futures is already in some degree implanted in international planning discussions and activities."

As far as Canada is concerned a move towards emphasizing the futures perspective in education is apparent in a number of studies and papers originating in various parts of the country, many of which have been listed in a Canadian educational futures bibliography compiled by Stevenson and Hamilton (1972). Considerable work in this field has come out of Alberta under the stimulus of the recent Alberta Commission on Educational Planning. Three reports (Dyck, 1970; Seastone, 1971; Baker, 1971) published by the Human Resources Research Council of Alberta in 1970-71 expressed a desire to move from "reactive to anticipatory modes of plan development" and a desire "to inform citizens of emerging trends in society and of the choices open to them." In addition, Delphi studies by Berghofer (1970), Martin (1970), and Clarke and Coutts (1971)[2] examined certain aspects of the futures perspective as it relates to post-secondary and teacher education. More recently, Riffel (1971) in emphasizing the need to redesign policy-making and planning in education has stressed the potential for futures research to make planners more sensitive to probable social changes.

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[2]Another study by Clarke and Coutts entitled "The Goals of Teacher Education" is currently in progress.

THE ALTERNATIVE FUTURES PERSPECTIVE

There is clear evidence, then, of a desire to examine future possibilities and probabilities as a means of informing the educational policy-planning process. However, it should be stressed that attempts to extend the time horizon of planning do not necessarily lead to increased comprehensiveness in viewing the future. The basic distinction which needs to be made in this regard is a distinction between a time horizon (the number of years ahead attended to) and a time perspective (the way the future is viewed). Webster (1972:18) sums it up this way:

> Thus different planners may adopt a common time horizon; but the ways in which they view the future may lead to very different styles of planning and to different guidelines for development. Whether or not a long-term time perspective liberates thinking to inform present choices, policies and actions in ways which open up rather than foreclose future options depends upon how one views the future.

The confusion between time horizon and time perspective is almost certain to occur in Delphis, for in these studies respondents are customarily given a time horizon of, say, thirty years and asked to state goals or events or problems that will occur in that period. The question that does not appear to be adequately considered when such a request is made of participants is to what extent do differences in responses reflect differences in future perspectives among the respondents. Do some of them view the future largely as an extrapolation of the present? Do others conceive of changes in some dimensions but assume that all other aspects remain constant? Are there still others who adopt the kind of alternative futures perspective which enables them to view the future as being multi-dimensional and "open" and therefore as having the potential to be very different from the present? If such

differences in perspective do exist, what are the responsibilities for the researcher to identify and explicate them, and what are the implications of such differences for the policy-planning process itself?

In conceptualizing the problem of the present study, questions such as the above were raised in conjunction with the question of whether or not the output from futures research could be incorporated as an input to the policy development process. It was assumed that if people participating in policy development were to be made aware of the main thrust of research coming out of the three approaches to futures research described above, then such persons would have, at least in a superficial sense, a more comprehensive view of the future than others who had not been so exposed. However, whether or not such exposure would be reflected in an identifiable way in the deliberations made by the respondents in the course of the policy development exercise, was unknown. To collect and analyse empirical data relating to this question was the central aim of the present study.

VIEWS OF THE FUTURE MANIFEST IN EDUCATIONAL PLANNING

As a means of guiding the inquiry described above two traditions of literature were selected as being potentially useful. The first stems from an examination of educational planning in the United States, and the second comes out of research into personal belief systems and conceptual systems.

Concerning the first of these, a classification developed by Ziegler (1970a) is particularly significant. In synthesizing the current practice of American educational planning as it views the future, Ziegler and his associates have identified five approaches. They are:

1. The Future-as-the-Present
2. The Future-as-an-Extrapolation-of-the-Present
3. The Single Alternative Future
4. The Technological Future
5. The Comprehensive Future

The Future-as-the-Present

In the first of these the future is viewed as in no fundamental sense distinct or different from the present. Ziegler (1970a:23) asserts that this is the most common approach and that it really amounts to little more than anticipatory administrative behaviour. "The chief characteristics of this 'planning attitude' are: 1) that the future is defined pretty much like the present, and 2) the lead-time anticipated, from an administrative and policy view point, is generally one year."

The fact that this attitude is so widespread among those who would say that they were engaging in planning can be attributed in large measure to the severe constraint placed upon any other kind of planning by the annual budget, taxing, and appropriations cycle. "This time dimension so foreshortens the operationsl focus of educational officials at all levels of the system that it becomes most difficult, administratively and psychologically, for them to think about alternative educational futures over the longer term." (Ziegler, loc. cit.).

The Future-as-an-Extrapolation-of-the-Present

The second of the five approaches represents only a slight change from the first. It assumes that the future will not differ substantially from the present except within the limits prescribed by such readily apparent factors as demographic and economic variables which have been of

traditional concern to the educational enterprise. The emphasis is placed on quantitative extrapolation of the present. "There is no attempt here to redefine the goals or the domain of education or to reconsider what ends it might seek and in what different ways it might seek them." (Ziegler, 197oa:27). In short, the planner who operates in this way simply sees the future as being quantitatively more or less than the present but as not being really qualitiatively different from the present.

The Single Alternative Future

The chief characteristic of the third approach described by Ziegler "is that in at least one, but usually no more than one, substantial way, the educational future is perceived as clearly different from the educational past." (Ziegler, 1970a:32). This attitude to planning is usually a response to a crisis, or is engendered by a feeling of dissatisfaction with the present state of affairs. Planning, therefore, becomes a focus on a single alternative future which is viewed as being more desirable than the present. However, the intensity of this view precludes the consideration of other possible future alternatives which might well reveal a new set of policy choices.

As an example of planning based on this view, Ziegler refers to the extensive literature on individualized instruction. Invariably the research that has gone into this development has failed to pay attention to the potentially consequential effects of implementing such a scheme--such as the impact on the social structure of the school, the roles of teachers, parents and administrators, as well as on other educational, industrial, and cultural features of the society of the future. Moreover,

the proponents of such a different educational future usually do not build into their vision changes in non-educational factors such as the economic, political, and social patterns of the future. In short, the problem with a vision of a single alternative future is that it tends to leave out more of importance than it includes.

The Technological Future

The fourth planning attitude discussed by Ziegler is the technological approach, which he claims is essentially a variation of the single-future view. "Like the focus on a single alternative future, one critical variable of change, the technological, is assumed as paramount, with all other factors, educational and non-educational, related in a dependent fashion. The model assumes that technological developments will solve, in the future, the problems and crises of the present." (Ziegler, 1970a:37).

The reason that this approach is discussed separately from its single-future counterpart is that it explicitly recognizes the importance of technology in the future of what might already be called a high-technology culture. However, because it essentially produces visionary proposals for some future time (such as drive-in education and the town-brain) without paying due attention to socio-economic, ecological, political, and cultural events and trends likely to occur during the same period, it is likely to prove to be a most unrealistic approach to planning. If education is to be illuminated by visions of the possible and desirable, then detailed analysis must be given to the question of how society is to get to these visions from the humdrum, enormously complicated, politicized arena of the present.

The Comprehensive Future

The fifth approach described by Ziegler is labelled comprehensive and may be considered to be at the opposite end of a continuum from the future-as-the-present planning attitude. It entails the necessity to focus on the future, at least to the medium term, whilst making an attempt to relate non-educational factors in that future to educational policy-making and planning in the present.

This kind of planning attitude is by no means common. As examples in the United States, Ziegler (1970a:40-44) cites only the eight-state project on Designing Education for the Future, the educational programs of a few New Towns, and a planning project concerned with goals for the Westport School System. In Canada only the Alberta Commission on Educational Planning could realistically be considered as an attempt to adopt a comprehensive-future view of planning.

Though all of the above examples represent attempts to go beyond the limited visions implied in the other approaches discussed in this section, they are nevertheless confronted by the very difficult problem of span of control. While they attempt to plan a comprehensive future for the citizens of a limited regional area, they are faced with the reality that that area is interdependent with a larger society over which it can exercise very limited leverage. "Thus, while these smaller subunits of the education complex can attempt to consider a large number of variables exogenous to the traditional concerns of education, the comprehensiveness of their planning effort is severely restricted." (Ziegler, loc. cit.).

The Five Approaches as a Classification of Planning Attitudes

The five approaches described above originally emerged from a synthesis of the current practice of American educational planning as it views the future. However, since each is based upon certain attitudes towards planning, it is conceivable that Ziegler's classification could be useful in analyzing the responses made by persons engaging in a policy-planning activity which directs them to consider a specified time horizon in the medium to long-range future.

If, as Ziegler asserts, the first four views are the ones most commonly found in practice, it would be expected that attitudes indicative of these views of the future would be displayed by policy-planning participants. The comprehensive view, on the other hand, because of its limited use in real planning situations and because of its difficulty of conceptualization, would not be expected to be prevalent. However, if the participants were exposed to experiences designed to give them a more comprehensive view of the future, it would be expected that some broader consideration of the interrelationship of non-educational and educational factors in the future would then become evident in their deliberations on policy for that future. A consideration of the extent to which such expectations could be identified served to guide the analysis in the present study.

BELIEF SYSTEMS AND CONCEPTUAL SYSTEMS

Another body of literature which has been shown to be relevant to research concerned with how human actors process information about possible-probable futures derives from theoretical and empirical inquiry into belief systems and conceptual systems.

The promise of this approach has been discussed in detail by Weaver (1969), who investigated how human information processing (conceptual level) is related to predicting. He found that a clear relationship existed. Deciding how far apart to place earliest and latest expected occurrences of future events was a task which distinguished complex (abstract) from simple (concrete) information handlers.

Integrative Complexity and Dogmatism

In reviewing the literature on conceptual systems and belief systems, Weaver (1969) has drawn attention to a basic similarity between the two. In the former, illustrated in the work of Schroder et al (1967) and Harvey et al (1961), the human organism is "considered within its environment and is viewed as an active processor of information." (Bundy, 1968:6). The organism is perceived as mediator between environmental stimuli and behavioural response. Such mediation is considered as a process in which the

> self-system receives information and then processes it into relevant and useful psychological dimensions according to the structural level of complexity inherent in the self-system. In this way, different people will receive the same information (content) but will process it, i. e., think, decide, relate, etc., in many different ways according to the conceptual level (structure) of each person. (Bundy, 1968:36).

Essentially the same view is held by Rokeach (1960) concerning beliefs. Seeking to "tie together . . . the organization of belief with the organization of cognition," Rokeach (1960:7) states that "we have come more and more to view a given personality as an organization of beliefs or expectancies having a definable and measurable structure." Such a structure of beliefs apparently serves the same function as level of complexity, that is, as a framework within which new stimuli are

ordered. As Weaver (1969:122) asserts,

> the assumption underlying both conceptions is that given some understanding of the structure, one could predict problem-solving behaviors. Both metaphors view the "self-system" as a kind of filter through which environmental information is exchanged, organized, and processed. The resultant differentiation in behavior of organisms is related to differences in the way environmental stimuli are added or rejected by the structure.

Despite the similarity between the two models in the view they present of the self-system as a mediator, they differ fundamentally regarding the generality of the constructs they describe. Whereas Rokeach holds that the construct of dogmatism is generalized across a range of stimuli or subject matter, Schroder et al believe that integrative complexity is domain-specific. One might be very complex with regard to authority concepts but very simple with regard to mathematical theorems.

The Relevance of Integrative Complexity and Dogmatism to Educational Policy Development

From the above discussion it would appear that the constructs of integrative complexity and dogmatism are relevant to the educational policy development process. The task of developing policy essentially confronts the individual with the need to process information about present conditions and to make some judgments about the possible-probable future. Once the information has been internalized by the self-system some form of integration must then take place so that decisions are eventually made with regard to policies that are applicable to the perceived situations. In the Rokeach and Schroder et al conceptualizations of the "'self-system as a kind of filter through which environmental information is exchanged," it would be expected that

subjects who differ markedly in complexity and dogmatism would manifest differences in behaviour in the development of policy.

In the present study the central problem was not to examine the differences in policy-development behaviour exhibited by subjects of varying conceptual level and dogmatism. However, because there is reason to believe that these constructs are operative in the policy development process, it was deemed advisable to match the three policy development groups as closely as possible on these variables. Moreover, the data thus made available on subjects' integrative complexity and dogmatism could then be utilized in further analysis of the output from the policy development exercise.

Expectations concerning the relationship between integrative complexity and policy-development behaviour, can be derived from Weaver's (1969:211) capsualization of the concrete (low complexity) person as an ideal type who has:

> (a) low tolerance for uncertainty and ambiguity, (b) need for closure, (c) limited perspectives, (d) limited inclination to project beyond the immediacy of present concrete information, and (e) reliance upon external rules, guidelines, and cues rather than a well developed internal structure for handling new information.

Given such characteristics, then, it would be expected that subjects of low integrative complexity as compared with their more complex counterparts, would be more inclined to assert that present policy should continue into the long-range future (low tolerance for uncertainty and limited inclination to project), and be less able to develop a comprehensive view of the future (limited perspectives).

With regard to the construct of dogmatism, Rokeach (1960:57) has suggested a basic characteristic that defines the extent to which

a person's system is open (low dogmatism) or closed (high dogmatism), namely,

> the extent to which the person can receive, evaluate, and act on relevant information received from the outside on its own intrinsic merits, unencumbered by irrelevant factors in the situation arising from within the person or from the outside.

Given this basic distinction between persons of high dogmatism and low dogmatism, it would be expected that the former (like persons of low integrative complexity) would be unable to hold a comprehensive view of the future, since they would be more likely to be dominated by a single point of view which would make a comprehensive future perspective untenable to their belief structure.

These expectations of the effects of integrative complexity and dogmatism on individuals' behaviour in policy development account for the decision to obtain measures of these variables at the outset and to match the groups accordingly.

Measurement of Integrative Complexity and Dogmatism

Concerning measurement of the variables, Rokeach's (1960) dogmatism scale was used to determine openness of mind, while integrative complexity was assessed using Tuckman's Interpersonal Topical Inventory (ITI). Both instruments are discussed in detail in Chapter Three.

The decision to use the ITI was made after due consideration of other approaches to measuring complexity. In reviewing the literature on the definition and measurement of cognitive complexity, Mulford (1971) has pointed to the lack of consensus among researchers and the infrenquency of consistent relationships found among various measures. The tradition of research followed in the present study is that of Schroder et al (1967)

and Harvey et al (1961) in whose approach .

> each person is viewed as having certain perceptual categories along which stimuli are scaled for the purpose of (a) receiving, storing, processing information, and (b) transmitting information between self and environment. To the extent that such rules for combining perceptions are measurable, they serve as indices of an individual's integrative complexity. (Weaver, 1969:122).

The instrument developed by Schroder et al for measuring integrative complexity is the semiprojective Paragraph Completion Test (PCT) which involves careful coding of paragraphs written in response to sentence stems such as "When I am in doubt . . . ." Tuckman's ITI was designed as an objectively-scored replacement for Schroder's measure, and as such it was deemed suitable for measuring integrative complexity in the present study.

Chapter 3

RESEARCH DESIGN AND PROCEDURES

In the present chapter the research design employed in the study is explained and an account of procedures followed is given, beginning with a description of the subjects.

THE SUBJECTS

All subjects who participated in the study were graduate students in the Master of Education program in the Department of Educational Administration at The University of Alberta. This group was selected partly because they were readily accessible to the researcher (an essential condition imposed by the research design and time constraints), and partly because they represented a group of educators who because of their administrative background would most likely be involved in policy questions in their future work. In addition, participation by these subjects provided the researcher with the opportunity to collect data concerning the applicability of incorporating future-oriented policy development activities in preparation programs for educational administrators.

The group comprised in all thirty-three subjects of whom twenty-nine were males and four females. The mean age of the group was 33.39 years (S.D. = 6.17) and the mean number of years of teaching experience and administrative experience were 9.12 (S.D. = 4.78) and 3.55 (S.D. = 3.39) respectively. All of the subjects had bachelor degrees with major fields of study distributed as follows: Humanities (seventeen subjects), Social Sciences (six), Mathematics (six), and Physical Sciences (four).

Though not all of the subjects were from Alberta, all had been in full-time attendance in courses and activities in educational administration at The University of Alberta for not less than four months. On the basis of this experience and their previous backgrounds in education, all were judged to be suitable as participants in the study.

Measuring Instruments Administered to Establish Sub-Groups

Allocation of subjects to groups was to be achieved by matching on integrative complexity and dogmatism. In addition, it was deemed advisable to match the groups according to subjects' self-professed familiarity with the literature of futures research. Accordingly, the following three instruments were administered to all: the Interpersonal Topical Inventory, the Dogmatism Scale, and the Futures Familiarity Test.

Interpersonal Topical Inventory. Subjects' integrative complexity was measured using Tuckman's (1966) Interpersonal Topical Inventory (ITI). This is a forced-choice, objectively-scored measure designed as a replacement for the Sentence Completion Test (SCT) developed by Schroder and Streufert (1962) and subsequently refined into the Paragraph Completion Test (PCT) (Schroder et al, 1967). A contingency coefficient of .54 was reported by Tuckman (1966:378) between the ITI and the SCT (N = 94). A copy of the ITI together with instructions for scoring is contained in Appendix B.

The scoring procedure used with the ITI allows an experimenter to classify a subject into one of four conceptual systems proposed by Harvey et al (1961). Subjects are instructed to select one alternative from each of thirty-six pairs. Of the seventy-two alternatives, eighteen fall into each of the four conceptual systems mentioned above,

increasing in complexity (concrete to abstract functioning) from System I to System IV. Subjects are assigned to the highest system in which they score.

Six stems are used in the ITI to obtain the subject's reaction to the following interpersonal topics: when criticized, when in doubt, when a friend acts differently towards you, beliefs about people in general, feelings about leaders, feelings when other people find fault with you. Six of the forced-choice pairs follow each stem. Tuckman (1966:373) asserts that "these topics are meant to confront the individuals with interpersonal conflict, ambiguity, and the imposition of control."

The original scoring system devised by Tuckman is often difficult to utilize in studies where the N is small, because several subjects may not be able to be classified clearly into one of the four conceptual systems. This was found to be the case in the present study, for of the thirty-three subjects tested only fourteen fell exclusively in one of the four systems. To overcome this problem, Gardiner (1968) devised an alternative scoring system by using a continuous distribution of scores based on one point for each "more complex" alternative the subject chooses. Gardiner found a correlation of .57 between the ITI thus scored and the PCT. Mulford (1971:259) reported a correlation of .59 (N = 105) between the two methods of scoring the ITI and a test-retest reliability of .77 with the ITI scored using Gardiner's system. Accordingly, it was decided to use this alternative scoring method in the present study.

Dogmatism Scale. The second personality variable used as a basis

for setting up the sub-groups in the study was dogmatism. Measurement of this construct was accomplished by use of the twenty-item Short-Form Scale developed by Troldahl and Powell (1965) as a modification of Rokeach's (1960:71-80) original forty-item Dogmatism Scale.

According to Rokeach, the original instrument went through a number of revisions, and the final scale, Form E, proved to have reliability coefficients ranging from .68 to .93 over a series of studies. In validation studies Zagona and Zurcher (1965) and Haiman and Duns (1964) found that observed behaviour conformed to that predicted by the Dogmatism Scale scores.

Troldahl's and Powell's (1965) version was developed by selecting the twenty most discriminating items out of Form E's original forty. This "Short Form" was found to have, on the basis of two separate field studies, correlations of .95 and .94 with the Form E scale. Its split-half reliability, along with scales of other lengths for purposes of comparison, was calculated to be:

40 items .84

20 items .79

15 items .73

10 items .66

A copy of the Short-Form Dogmatism Scale as used in the present study is contained in Appendix B.

Concerning the scoring of the instrument, Korn and Giddan (1964) demonstrated that it was the frequency of the positive responses which accounted for the largest percentage of variation in the score. Consequently, they recommended a simplified method of scoring to the one originally proposed by Rokeach (1960). Hamilton (1966) used this

revised method by asking subjects to indicate whether they strongly agreed, agreed, disagreed, or strongly disagreed with each item. For all statements agreement was scored as "closed-minded" and disagreement as "open-minded," the responses being given the following weights: SA = 5; A = 4; D = 2; SD = 1. Possible scores could range from a minimum of 20 (open-minded) to a maximum of 100 (closed-minded).

The reliability of the twenty-item version was in no way impaired using the above method of scoring. Hamilton (1966:121) found a split-half reliability coefficient of .81 as compared to the .79 originally calculated by Troldahl and Powell (1965). Accordingly, it was decided to use the revised method of scoring in the present study.

Futures Familiarity Test. The third variable to be used as a criterion for dividing the subjects into sub-groups was their professed familiarity with the literature of futures research. In order to assess this familiarity a test known as the Futures Familiarity Test was designed by the researcher. A copy of the instrument used is contained in Appendix B.

The purpose of the test was to ascertain subjects' familiarity with various aspects of futures research (concept of alternative futures, specific methodologies, et cetera) in general, and with the specific futures material (writers and works) to be administered later in particular.

The test was divided into three sections and subjects were asked to indicate their familiarity/unfamiliarity with each item on a four-point scale (very familiar, familiar, unfamiliar, totally unacquainted). The three sections were as follows:

1. Terminology--specific terms appearing in the futures literature; for example, alternative futures, normative forecasting, descriptive forecasting, Delphi technique, cross-impact matrix.

2. Published and unpublished material from which extracts were used later in the study to supply subjects with information about alternative futures.

3. Subject-initiated material, in which subjects were asked to list any additional articles, books, authors dealing with the future which they had read and which they thought made a significant contribution to work in this field.

The instrument was not scored quantitatively. In assessing a subject's familiarity with the field of futures research, greatest weight was placed on Section 2. Anyone who indicated high familiarity with any of the works which in the estimation of the researcher constituted a major component of the futures material to be supplied later in the study, was judged to be sufficiently familiar with the field to warrant special consideration during allocation to sub-groups. Other data obtained from this test were used mainly as descriptive information concerning the familiarity of this group of educational administration students with the emerging field of futures research.

Administering the tests. The above tests were administered to the entire group of thirty-three subjects in a single sitting of approximately forty-five minutes duration. Subjects were given minimum explanation as to the purpose of the tests. They were simply told that this testing period constituted the first stage of the Educational Policy Development Study and that information obtained from it was essential to

later phases of the study. In order to minimize the threat that subjects might have felt exposed to, all the tests were referred to as questionnaires--the Dogmatism Scale, in particular, being retitled as a General Opinion Questionnaire. The tests were arranged in the order of Futures Familiarity first, Interpersonal Topical Inventory second, and Dogmatism Scale third. Subjects were asked to complete the tests in the order given and to work at their own pace.

A summary of the above testing procedure together with its use in forming the sub-groups of the experimental design is shown in Figure 1. The results of the tests are presented below.

Group Structure

Integrative complexity as a group variable. Scores achieved by subjects on integrative complexity ranged from a low of 19 to a high of 34 out of a possible 36. The mean score was 25.67 with a standard deviation of 3.94. Since the research design called for groups to be matched as closely as possible on this variable--along with other criterion measures--subjects were distributed across the groups beginning with low scorers and working up to high. The resulting mean integrative complexity score and range for each group are shown in Table 1.

Dogmatism as a group variable. The second psychological variable on which sub-groups were matched was the construct of dogmatism. Scores ranged from a low of 33 to a high of 58. The mean was 44.55 with a standard deviation of 5.95. Subjects were distributed across groups so that mean group scores would be approximately equal and range of scores would be similar. Group characteristics on these factors are shown in Table 1.

Total group of educational administration students, N=33	completed	Interpersonal Topical Inventory Dogmatism Scale Futures Familiarity Test	to give	three sub-groups matched on integrative complexity, dogmatism, & familiarity with futures material	to be known as	Group I, N = 11: a Delphi panel which would have no guidelines other than a description of the task Group II, N = 11: a Delphi panel to be supplied with an additional input of information about alternative futures Group III, N = 11: a Delphi panel to be supplied with information about alternative futures and given an additional round of interaction to increase exposure to this material

Figure 1

Preliminary Tests and Their Use in the Formation of Sub-groups

Table 1

Group Characteristics on Integrative Complexity and Dogmatism

Group	N	Integrative Complexity		Dogmatism	
		Mean	Range	Mean	Range
I	11	25.73	19-34	44.73	35-53
II	11	25.64	19-33	44.45	34-56
III	11	25.64	20-31	44.45	33-58

Familiarity with futures material as a group variable. With regard to subjects' self-professed familiarity with the literature of futures research, examination of Section 2 of the Futures Familiarity Test identified seven subjects as warranting special consideration. Each had indicated that he was very familiar with the arguments of either Illich (1971) or Toffler (1970) or both. Accordingly, two of these subjects were placed in each group and the remaining one was allocated to Group III.

Sex as a group variable. Although the only variables on which it was deemed important that groups should be matched were the three discussed above, it was also decided that the four females in the total group of thirty-three subjects should also be evenly distributed if possible. Accordingly, two were placed in Group I, one in Group II, and one in Group III.

General Familiarity with Futures Material

In addition to its use described above, the Futures Familiarity

Test was also designed to gather additional data concerning the major variable (information about the future) manipulated later across group treatments. For this reason further discussion is provided here of the results of this test.

In general, subjects could be said to have been largely unfamiliar with the terminology, techniques, and general literature of futures research. Though practically all stated that they had heard of this activity, only one claimed to be very familiar with it; and later assertions by this subject indicated that his familiarity was limited to his having summarized two theses which used the Delphi technique (Berghofer, 1970; Martin, 1970).

Almost all subjects stated that they were unfamiliar or totally unacquainted with different classification systems for forecasts. Concerning general approaches to futures research, six or fewer claimed to have any degree of familiarity with "systems forecasting" or "operations research." With respect to more specific techniques, practically the entire group reported unfamiliarity with trend extrapolation and cross-impact matrix, though all but four indicated that they had at least heard of the Delphi technique. Only one, however, claimed to be very familiar with this method.

As far as the specific works listed in Section 2 of the Futures Familiarity Test were concerned, the general pattern for subjects was to state that they were either unfamiliar or totally unacquainted with them. Of the twenty-eight works listed, sixteen received at least one response of "familiar" or "very familiar;" but only two received more than five responses at this level of familiarity. These were Toffler (1970) and Illich (1971). Key works in the field which received no

responses above the "unfamiliar" level were Forrester (1971), Michael (1968), Mumford (1970), and Polak (1961).

In addition to indicating their degree of familiarity with various terms and works, subjects were given the opportunity to state other works which they had read and which they felt made a significant contribution to thought in the field of futures research. Only seven subjects responded to this section. Of the additional works mentioned, three were theses in the Department of Educational Administration (Berghofer, 1970; Martin, 1970; MacCormick, 1971), and four were articles used in a planning course in the same department (Berghofer, 1971; Riffel and Miklos, 1970; Riffel, 1971; Ziegler, 1970b). The remaining reference, mentioned by two respondents, is rather well known for its visionary references to the future--The New Testament.

By way of summary it can be said that the subjects who participated in the study asserted that they were generally unfamiliar with the field of futures research. The work which was obviously the most well known was Toffler's best seller, Future Shock, though twelve subjects still claimed to be either unfamiliar or totally unacquainted with this. Illich's Deschooling Society, though unknown to thirteen subjects and unfamiliar to a further seven, was the second most well known of the works listed. The Delphi technique was the only futures methodology that was generally in the vocabulary of subjects, but only one claimed to have more than passing familiarity with it.

RESEARCH PROCEDURE

Once the three experimental groups had been established, each was confronted with a variety of experiences. In general, the number of

experiences increased progressively from Group I to Group III. In the description which follows certain experiences common to more than one group will be discussed first, then the section will conclude with an account of the way treatments varied.

Measurement of Attitude and Attitude Change

Since the problem being studied was basically concerned with examining the effect of incorporating information from futures research into the policy development process, it was decided that information pertaining to subjects' attitudes toward three related concepts would be pertinent. These concepts were "the future," "change," and "educational policy-making." In order that data could be collected about subjects' attitudes toward these concepts prior to and following their involvement in policy development, it was decided to adopt a procedure which allowed for a pre-test and post-test situation. To accomplish this an instrument designed by the researcher which made use of a semantic differential format was administered.

The semantic differential approach to measuring attitude and meaning was developed by Osgood et al (1957). In their words (p. 20):

> the semantic differential is essentially a combination of controlled association and scaling procedures. We provide the subject with a concept to be differentiated and a set of bipolar adjectival scales against which to do it, his only task being to indicate, for each item (pairing of a concept with a scale), the direction of his association and its intensity on a seven-step scale.

The semantic differential format has been widely used in studies of attitude and attitude change. Recent studies in education in Alberta which have used this approach include those by Friesen (1969), Friesen and Bumbarger (1970), and Maguire (1971). In each of these

the semantic differential format was found to be most effective in distinguishing differences in attitude held by different groups. Accordingly, this format was deemed suitable for use in the present study.

In order to develop scales on which the concepts to be examined could be measured, a pilot study was carried out. Using data from research reported by Osgood et al (1957:31-75), twenty-four scales were selected for the pilot study on the basis of their relevance to the concepts being judged (Osgood et al, 1957:78). Some of these scales came from each of the three factor loadings described by Osgood et al as evaluation, potency, and activity.

The instrument developed by the above method was submitted to a group of seventy-three undergraduate students in education with the intention of identifying those scales which best discriminated for the concepts being examined. The mean and standard deviation for each scale were obtained and the results were factor analyzed into three factors using the varimax rotation. From these data scales for inclusion in the final instrument were selected on the basis that they must have a standard deviation greater than one and a factor loading greater than .500 on one of the three factors. An additional criterion was that the final instrument should contain a variety of scales whose mean scores fell above and below four, the mid-point of the seven-point scale.

The instrument developed in this way and utilized in the main study is contained in Appendix B. It consists of twelve scales to be used to rate each of the three concepts. The scales are:

futile - worthwhile	sweet - bitter
soft - hard	violent - gentle
reasonable - ridiculous	full - empty
fair - unfair	superficial - profound
tense - relaxed	ugly - beautiful
cruel - kind	progressive - regressive

The above instrument was administered to each of the three groups in the study immediately prior to and immediately following their involvement in policy development. Since a time period of at least ten days elapsed between the pre-test and the post-test, the one instrument was deemed suitable for both purposes.

Futures Material

Whereas the attitude instrument described above was administered to all groups, certain other material was not made available to subjects in Group I but served as common input for subjects in Groups II and III. This material consisted of information on possible-probable alternative futures as derived from a review of the literature emanating from the three traditions of futures research discussed in Chapter Two. The supplying of this information to Groups II and III constituted the key feature of the research design.

In presenting subjects with material from futures research three primary factors were held in mind: (1) the information was designed to give subjects a broad understanding of the field; (2) it was to be presented in a form which could be incorporated into a Delphi design; and (3) it had to be limited to what subjects could reasonably be expected to consider given their other commitments.

Due consideration of the above factors led to a decision to present the information as an extended essay in which key works on social and educational futures were reviewed and to some extent integrated. In this compact form the material could be conveniently distributed to the subjects in accordance with the requirements of the research design. A copy of the material, which was titled "The Future: Its Challenge to Twentieth Century Man," is contained in Appendix A.

To achieve the aim of incorporating the main thrust of futures research in essay form, the material was organized in three parts:

1. The future as a field of inquiry
2. Assertions about the future
3. Education and the future.

The future as a field of inquiry. The first section presents the notion of the future as a field of inquiry. The content here is drawn essentially from the work of de Jouvenel (1967), Jantsch (1967), Ayres (1969), and Bundy.[3] The section begins by presenting some basic assumptions about the future--that it is a mental construct; that an array of possible futures are open to mankind; that man can exercise choice with respect to the future; that forecasting is a natural activity of the mind and is inevitable; that there is increasing need for long-range planning and forecasting. By way of conclusion to this section a survey of certain necessary characteristics of forecasts (plausibility, internal consistency, realism, justifiability) and a description of different classifications of forecasts (primary, secondary,

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[3]Personal communication with R. F. Bundy, formerly of the Educational Policy Research Center at Syracuse.

and tertiary; intuitive, exploratory, and normative) are presented.

Assertions about the future. The second section of the material begins with a short introduction on ways in which the mind makes assertions about the future, then presents specific analyses of individual writers working within the three traditions of futures research described in Chapter Two. Within this framework the following topics are raised: the need for positive images of the future (Polak, 1961); the myth of the machine and the person-centred society (Mumford, 1970); the emergence of technological man and a new philosophy (Ferkiss, 1969); the basic, long-term multifold trend (Kahn and Wiener, 1967); complexity, turmoil, scarcity (Michael, 1968); the disease of change (Toffler, 1970); the environmental crisis (Brinkhurst and Chant, 1971); the resources crisis (Eyre, 1971); the world systems crisis (Forrester, 1971); and imperatives for survival (Ehrlich and Harriman, 1971).

Education and the future. In the third section the educational aspects of the studies reviewed in Section 2 are integrated with other research related to the role of education in the future. Several broad considerations are raised: the need to view education as a large complex consisting of more than core educational institutions (Ziegler, 1970a); the importance of viewing education as a life-long, non-sequential process (Green, 1971); the significance of student disaffection (Tussing, 1971; Committee on Youth, 1971); the importance of analyzing the interrelationship of education, economic growth, and technology; and the relevance of Illich's (1971) proposals for deschooling society.

Conclusion. In a concluding section it is emphasized that the intent throughout has been to remove the focus from traditional concerns

of educational planners in order to gain a wider perspective for educational policy development. The material concludes by suggesting that a change in the dominant Western view of reality is possible before the end of the century. In this context the reader is asked to consider carefully the implications for education of such a change.

Policy Development Task

The tests and materials described above were administered prior to any consideration of educational policy questions. In the following paragraphs an account is given of the way in which subjects were subsequently involved in the educational policy exercise.

Essentially, the task for each group was the same. Subjects were given six key statements of present policy pertaining to elementary and secondary education in Alberta and asked to consider the applicability of these policies during a time horizon of fifteen to twenty years. In order to achieve a comprehensive survey of policy without placing unrealistic demands on the subjects, the statements though restricted to six were chosen from three separate areas of concern to the provincial educational system: overall organization, curriculum, and teacher preparation. The statements were as follows:

1. In the area of organization--

(a) Compulsory education for all children between the ages of six and sixteen

(b) Education primarily carried out by bringing the young together in buildings specifically set aside for that purpose

2. In the area of curriculum--

(a) Secondary school curriculum divided into subjects

taught (on the basis of a specified time allotment) and examined largely independently of each other

(b) Spirit and content of the curriculum oriented toward the accumulation of information and toward past and present economic and social systems

3. In the area of teacher preparation--

(a) Teachers virtually constitute a single group all of whom achieve the status of teacher through undergoing a minimum of three years of training in a university faculty of education

(b) All teacher trainees selected basically on academic qualifications.

Delphi Technique

The method used to involve the members of each group in active consideration of the above policy issues was the Delphi technique. The reason for using this format was based on concern that the method in its traditional form was neither requiring participants to view the future comprehensively nor encouraging researchers to look for underlying assumptions about the future in the responses given. However, Weaver's (1971) conclusion that Delphi appeared to have considerable pedagogical value, indicated that an attempt to combine it with inputs from futures research might result in an improved methodology for informing the policy-planning process.

The original technique came out of research conducted by Dalkey and Helmer for the Rand Corporation in the early 1950's. Since then it has been used widely in both technologically and socially oriented research. Among the better known of the United States-based studies

are those by persons originally associated with the development of the technique--Helmer and Gordon (Helmer, 1966), Gordon and Ament (1969), de Brigard and Helmer (1970). In Alberta, Delphi studies on social and educational futures have been reported by Berghofer (1970), Martin (1970), Dyck (1970), MacCormick (1971), Clarke and Coutts (1971).

In all of the above research the Delphi method was used essentially as a forecasting device--the purpose for which it was originally devised. In this usage the basis of the method is

> (1) the systematic use of expert judgment provided by panelists who remain anonymous to one another, (2) controlled feedback of information to panelists, and (3) group judgments reported as statistical scores. The procedure consists of sequential individual interrogations, usually by means of questionnaires, intended to serve as an alternative to traditional round-table discussion by experts. (Berghofer, 1971:26).

In the traditional use of the Delphi heavy emphasis was placed on achieving consensus among experts while at the same time reducing the influence of such psychological factors as "specious persuasion, the unwillingness to abandon publicly expressed opinions, and the bandwagon effect of majority opinion." (Helmer and Rescher, 1959:47). However, as research reviewed by Weaver (1971) has indicated, the assumption that "experts" bring to bear "cool analysis" in their judgments about the future is questionable. This implies that instead of placing heavy emphasis upon achieving consensus as to when a particular event or problem might occur, the Delphi researcher would be better advised to flush out and display the reasoning underlying respondents' statements about the future.

Consideration of the above factors in conjunction with the larger problem of the effect of information about the future on policy development, led the researcher in the present study to devise a

Delphi format differing in two important respects from the traditional form.

In the first place, though the majority of respondents had extensive backgrounds in education, they were not necessarily "experts" on the points raised. However, as was shown subsequently, they all had very definite opinions to express on these points--which is an important fact to bear in mind if one allots value to the concept of participatory policy-planning.

An even more important distinction between Delphi as used in the present study and its traditional form was that respondents were not asked to forecast when something would occur, but rather to state and support with reasoning the kind of policy which, given their individual views of the future, would be applicable in Alberta during the next fifteen to twenty years. After stating their own individual positions, they were then given the opportunity to consider the opinions of other group members. In all, the procedure involved three rounds of interaction with a heavy emphasis being placed on reasons for agreeing or disagreeing with various policy positions.

From the above it can be seen that Delphi as used in the present study was being utilized as a device for involving participants in a "dialogue" about the future and its implications for educational policy in Alberta. The "dialogue" was mediated by the researcher who acted as a synthesizer and clearing house of information. In this capacity the researcher made no attempt to influence the content of each group's deliberations, although the actual treatments given to each did vary in accordance with a specific research design. A summary of the three group treatments is shown in Figure 2, while a more detailed account

	Group I Treatment	Group II Treatment	Group III Treatment
Period of interaction	Jan. 18, 1972-Jan. 28, 1972	Jan. 28, 1972-Feb. 14, 1972	Feb. 16, 1972-March 6, 1972
Given attitude pre-test	Yes	Yes	Yes
Given futures material to read	No	Yes	Yes
Futures material reinforced through an additional round of interaction in which subjects identified the educational implications of the material; these implications were fed back to all group members prior to the next round	No	No	Yes
Asked to respond to policy statements	Yes	Yes	Yes
Asked to respond to old + new policy statements + reasons	Yes	Yes	Yes
Asked to respond to old + new policy statements + reasons for agreeing-disagreeing + group opinions from the preceding round	Yes	Yes	Yes
Asked to complete a Respondents' Assessment Sheet	Yes	Yes	Yes
Given attitude post-test	Yes	Yes	Yes

Figure 2

Summary of the Three Group Treatments

of how they varied is presented below.

Group I Treatment

Since the research design called for variation in the intensity of exposure of subjects to information about alternative futures, it was important that Group I, which acted as the control group, complete all phases of the Delphi interaction before Groups II and III began their deliberations.

Accordingly, once the assignment of subjects to groups had been completed, all members of Group I were contacted by the researcher and asked to attend a first session at a specified time in a seminar room in the Department of Educational Administration at The University of Alberta.

First session. At this first meeting subjects were told by the researcher that the purpose of the study was to examine educational policy in the light of future requirements. They were also told that there would be a total of three meetings each one of which would require approximately one hour of their time. The semantic differential test of attitudes was then administered.

When all subjects had completed the test, the instruments were collected by the researcher, who then proceeded to introduce the policy development exercise with these words:

> Now we shall turn to the subject of educational policy development. As stated previously, this is the first of three sessions we shall hold concerning this matter. In each of these sessions though we are meeting as a group all of the work will be done individually in writing. The purpose of this is to enable you to work quickly and to assure you of complete anonymity with respect to your responses.

> The format we shall be using in these sessions is a modification of the Delphi technique, which is a procedure designed to overcome some of the problems associated with round-table discussion. This means that once we begin you will not have an opportunity to discuss orally the issues raised with other members of the group.
>
> In the second and third sessions, however, all individual responses will be displayed so that you will have the benefit of the thinking of other group members. In this way you can be assured that while your own response remains anonymous it will be considered by the group as a whole. By using this method it is hoped that we can get frank expression of opinion on important policy questions.
>
> I have for each of you individual files which contain the material you will need for this session. When you have completed work, please leave the material in the file. After this session I shall collate all responses into a second set of materials to be used in the second session.
>
> One final word. Since this procedure is essentially designed to obtain individual thinking, I would ask you not to discuss the substance of your replies with each other in between sessions. In addition, please do not discuss any of the materials with people outside this group as they might be participating in a later phase of the study. Are there any questions before we begin?

After the above introduction the instrument comprising the first Delphi round was distributed to all subjects. This consisted basically of the six policy statements described earlier arranged in such a way that subjects could either declare that a particular policy would remain applicable during the next fifteen to twenty years, or state one or more alternative policies. In either case the subjects were asked to give a reason for their response. In addition, they were requested to rate their certainty of judgment on a seven-point scale and to list any specific sources of information which they consciously referred to or took into account. A copy of the instrument used is contained in Appendix C.[4]

Subjects were asked to read carefully the introduction and

outline of the task described on the first page of the instrument and to look through the remainder so that any procedural questions could be dealt with at the outset. When the researcher was satisfied that all aspects were clearly understood, he asked the subjects to begin and work at their own pace. As each respondent finished, he handed the completed instrument back to the researcher and left the room. The time required to complete the instrument ranged from approximately forty-five to sixty minutes.

Second session. After all first-round material had been received, the researcher compiled the second-round instrument by collating the responses. Since many statements and reasons were contained within others, it was possible to reduce the quantity of material to a total of twenty-three statements of policy (including the six original ones) with each statement supported by a range of from one to six reasons.

The material was then arranged so that each statement of policy appeared together with its supporting reasons. Provision was made on the same page for subjects in Round 2 to complete three tasks: (1) rate the validity of each reason as a basis for supporting the policy; (2) indicate on a six-point scale whether they agreed or disagreed that the policy would be applicable; and (3) give a reason for their response. Illustrative pages of the instrument developed to incorporate all of the above are contained in Appendix C.

The new material was presented to the subjects during the

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[4]The final format for this instrument was derived from the comments made on an intial draft by a group of ten PhD students and staff members in the Department of Educational Administration at The University of Alberta.

second session using much the same procedure as in the first round.[5] After a brief introduction by the researcher, including a reminder not to discuss responses after the session, the copies of the instrument were distributed and all procedural questions were dealt with at the outset. The subjects then worked through the instrument at their own pace. Completion time fell in the range of forty-five to sixty minutes.

Third session. Following the second round, the researcher collated all responses to develop an instrument which contained the following information: (1) the original policy statements and the proposed alternatives; (2) reasons given in support of the various policies; (3) reasons given for disagreeing with various policies; and (4) the percentage of group responses which fell in each of the agree-disagree categories from Round 2.

The intent in the third and final group session was to provide subjects with the opportunity to come to a final decision about each statement in the light of all the information generated by the previous two rounds. Accordingly, provision was made for them to respond once more to the statements using the same agree-disagree scale as was used in Round 2. Illustrative pages of the instrument developed to incorporate all of the above are contained in Appendix C.

In addition to the third-round Delphi instrument, the researcher prepared a Respondent Assessment Sheet designed to elicit subjects' reactions to participating in the policy development exercise. For Group I this evaluation sheet consisted of five questions linking the

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[5]Subjects' individual first-round responses were not returned to them as the intention in Round 2 was to display the total group opinion in a structured format.

present study with the policy-planning process. The questions were as follows:

1. How do you feel about participation in developing educational policy? Who should be involved? What methods could be used to involve them?

2. Do you think the Delphi technique as used in the present approach is a useful means for developing educational policy?

3. Did you gain any particular insights into the educational policy development process from participating in this study?

4. What, if any, difficulties did you experience in responding to the three instruments used in this study?

5. Any other comments?

A copy of the Respondent Assessment Sheet is contained in Appendix C.

As in the previous two rounds, subjects completed the material described above in a group session conducted by the researcher.[6] They were asked first of all to complete the Delphi instrument, then to fill out the assessment sheet. As each subject completed these tasks at his own pace, he was then given a copy of the same attitude test as had been used in the first session and asked to fill it out again. All three instruments were then returned to the researcher. The time required to complete them again ranged from approximately forty-five to sixty minutes for various subjects.

The third session marked the end of Group I's involvement in the study. Subjects were thanked for their co-operation and again asked to refrain from discussing the exercise with others who might be involved in later phases.

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[6]Round 2 individual responses were not returned to the subjects.

Group II Treatment

Turning now to Group II, it should be stressed that the basic Delphi procedure which was followed was identical to that applied to Group I. However, the intention with Group II subjects was to give them some preliminary exposure to information about futures research by providing them with the opportunity to read and consider the review of literature specially prepared by the researcher for this purpose.

With Group II it was not intended to go beyond asking subjects to read the prepared material at their own convenience. This procedure was adopted because it is readily applicable to a field Delphi in which the researcher would most likely be contacting respondents by mail. A booklet of background reading such as that prepared for the present study could therefore be conveniently included in such a procedure.

In the present study, however, because it was the intention to examine the effect on group responses of exposing subjects to futures material, it was deemed essential that some precautions be taken to ensure that subjects in Group II did, in fact, read the material. This was accomplished by preparing a "Companion" to the booklet which the subjects were asked to fill out as they read and then return to the researcher in completed form.

The "Companion" was designed with an open-ended format. The same headings under which the futures material was organized were used and spaces were provided for subjects to write in key points from the material. In this way the completed "Companion" comprised a compact summary of the larger body of information. A copy of the "Companion" is contained in Appendix A.

Preliminary session. Since it was necessary to distribute the

futures material to Group II subjects prior to involving them in the Delphi-type interaction, a preliminary session was called in which two tasks were accomplished: (1) subjects completed the attitude questionnaire; and (2) the futures material was distributed. The latter task was preceded by the following introduction given by the researcher:

> The other task I have scheduled for this session simply involves distributing to you some material which I would like you to become familiar with in preparation for later work in the study. In the next meeting we shall be looking specifically at educational implications, so it is most important that you become as familiar as possible with the contents of this material before then.
>
> This is the only occasion on which I shall be distributing material to you which involves preparation work. It seems that this is necessary because the area with which we are concerned is somewhat unfamiliar to most of you and these materials have been specially prepared to bring you quickly up to date with the new and emerging field of futures research.
>
> What you will find here is a review of the key works in this field which attempts to link the various arguments together and relate them to matters of educational policy. I think you will find the material here to be stimulating and thought-provoking.
>
> I would like you to read through this booklet very carefully before we meet again. I realize that all of you are extremely busy, so I have prepared a short companion to go with the material. This is designed to help you quickly get the main points and retain them in a readily accessible form.
>
> The booklet is yours to keep and you should bring it with you to all subsequent meetings for reference purposes. The completed "Companion," however, I would like to collect from you so that it can be included in the permanent records of the study.

The futures material was then handed out and a date arranged for the next meeting so that three days were provided for subjects to read and consider the material. They were also asked to refrain from discussing the material amongst themselves as this kind of exchange would take place during other phases of the study on an anonymous basis. In addition, they were requested not to discuss the substance of the study with others who might be involved in it.

Delphi sessions. The remainder of Group II's involvement in the study consisted of subjects' participating in the same three Delphi sessions as previously described for Group I. The first-round instrument was identical to that used with the previous group. The instruments used in Rounds 2 and 3 utilized the same format as was used with Group I, though the content (alternative statements and reasons) was, of course, different.

After completing the third Delphi instrument subjects were asked to fill out a Respondent Assessment Sheet and to respond again to the attitude questionnaire. With regard to the former, the first four questions were the same as described previously for Group I. There were, however, three additional questions designed to obtain subjects' reactions to the futures material distributed to them. The questions were as follows:

1. Do you think that the futures material distributed to you in this study is useful in developing educational policy?

2. Do you think that a course on futures research giving the opportunity for more in-depth study of works such as those included in the hand-out distributed to you would be a worthwhile addition to the program offered by the Department of Educational Administration?

3. If asked to prepare a position paper on educational policy for the future, do you think you would be better prepared to do so after having been through this Delphi exercise than not?

To the last question subjects were asked to respond by checking one of three responses: "much better prepared," "a little better prepared," and "no better prepared." They were also asked to give a reason for their response. A copy of the complete Respondent Assessment Sheet as used with Group II is contained in Appendix C.

Group III Treatment

The basic Delphi procedure applied to Groups I and II was also used with Group III. However, with this last group the intention was to carry the degree of exposure of subjects to futures material beyond that which was given to Group II. The basic reason for seeking to increase the intensity of exposure derives from the nature of the material itself. In the first instance, thinking about the future in a systematic and holistic way is undoubtedly a difficult cognitive task, and, therefore, increased exposure to experience designed to provide this type of thinking would presumably give subjects a better chance of perceiving insights that might otherwise elude them. Secondly, the intention was for subjects to draw implications for educational futures from information about alternative social futures, a task which again would presumably be better explicated through increased intensity of examination.

In keeping with another requirement of the research design, the greater exposure to futures material was to be accomplished in a way that could readily be incorporated in a field Delphi. The procedure followed, therefore, was to include one extra round of interaction aimed at preparing subjects to adopt a more comprehensive view of the future before they began the three rounds of interaction on educational policy issues. Accordingly, the procedure adopted with Group III was to hold a preliminary session followed by four rounds of Delphi interaction.

Preliminary session. The preliminary session for Group III was held after Group II had concluded its interactions. At this meeting subjects completed the attitude questionnaire and were then given the prepared booklets of futures material and their companion documents.

These were distributed with the same introductory remarks as had been used with Group II.

First Delphi session. Three days after the futures material had been handed out the first Delphi session was held. This constituted the intensification round being included as an extra experience for Group III subjects. The researcher opened this session with the following remarks:

> Today we are going to make an assault on a very difficult task--the task of thinking about the future.
>
> Last day I distributed to you some material designed to give you a broad acquaintance with the emerging field of futures research. However, I suspect that in reading this material you ran into the problem of how to keep all of the different positions and arguments in mind. This is one of the real difficulties in dealing with futures literature. The "Companion" which I asked you to complete was designed to help you cope somewhat with that problem. I hope you found it useful.
>
> A second difficulty that one has with this material is that it deals with a total picture--a holistic view--and most of us experience difficulty when we try to think that way. We are so accustomed to dealing with parts that we find it difficult to relate to arguments that handle a lot of variables at once.
>
> This, I believe, is particularly true in our approach to education. It is all too easy for us to become preoccupied with studying or thinking about what goes on in education and to neglect to pay adequate attention to the relationship that education bears to some overall picture. In order to break that kind of thinking we have to raise three questions. The first two deal with the present, the third with the future: (1) Why are we in education doing what we are doing? (2) What effect does it appear to be having on the world at large? (3) Where does it appear to be leading us?
>
> It is not my intention here to enter into the endless debate that would ensue if we attempted to answer those questions. All I am trying to do by raising them is to indicate to you the kind of mental mode that it is necessary to adopt if one is to think about the long-term future comprehensively.
>
> And that, as I said before, is what I want you to do in this session. More specifically, the objective is to focus on the futures material which you have already looked at to see if, as

a group, we can identify the implications for education. Seeing the implications is difficult. All of us have blind spots when it comes to perceiving relationships. For this reason I want you to confront the task using the Delphi format--which is based partly on the premise that two heads are better than one.

The task of seeing relationships among education, society, and the future is extremely difficult. But it is a task that must be performed if we are to have realistic educational policy. If some of our existing educational policy is not too realistic, it is largely because those who framed it in the past saw relationships imperfectly or because while social circumstances have changed, educational policy has not.

Following this introduction the researcher distributed to subjects an instrument specially prepared for this session. A copy is contained in Appendix C. Essentially it was designed to stimulate subjects to see educational implications in the futures material previously distributed to them. It listed nine concerns about the future and asked subjects to indicate what significance they had for education. Three response categories of "considerable significance," "some significance " and "little significance" were provided. This section was followed by an open-ended task in which respondents were invited to list other concerns about the future which they felt had significance for education.

The above two sections were intended mainly as preparation for subjects to consider--in the light of the various concerns--what are the major implications for education arising out of the futures material. They were asked to do this in a third section by stating the implications for the three broad policy areas being considered by the study: overall organization of education, curriculum, and preparation of teachers.

Before subjects began work on the above instrument, the researcher again stressed that the procedure being adopted was the Delphi format of individual anonymous response followed by feedback of group results. Accordingly, they were reminded not to discuss their responses with each

other or with others who might be involved in the study.

When all instruments had been returned, the researcher collated the results and from them developed another instrument (illustrated in Appendix C), which contained the following information: (1) the percentage of group responses which fell in each of the educational significance categories related to the original nine future concerns; (2) a list of thirteen additional future concerns provided by the subjects themselves; (3) a list of the educational implications given by subjects in the three broad areas of educational policy being considered. Provision was also made on this instrument for subjects to express their opinions of the concerns and implications which the group as a whole had raised.

Because of time pressure on subjects, the researcher distributed the above instrument to them individually without calling a group session. They were asked to review the information contained therein, to make the necessary responses, and to bring the completed instrument to the next group session, the date and place of which had already been arranged.

Since the data derived from the two instruments described above were not directly pertinent to the main research questions being examined in the study, they are not reported in the main body of the thesis. A summary, however, is contained in Appendix D.

Remaining Delphi sessions. The remainder of Group III's involvement in the study consisted of subjects' participating in the same three Delphi sessions as previously described for Groups I and II. After completing the third Delphi instrument they were asked to fill out

the same Respondent Assessment Sheet as was used with Group II and to reply once more to the attitude questionnaire. This marked the end of Group III's participation and the conclusion of the data collection for the study.

SPECIFIC RESEARCH QUESTIONS

By means of the research design described in this chapter several questions bearing on the general problem area of the study were examined. In terms of the three group treatments employed, these research questions may be stated concisely as follows:

1. What differences could be observed among groups with respect to their tendency to put forward policy proposals that constitute definite alternatives to present practice rather than the extrapolation of existing policy into the future?

2. Did Groups II and III adopt a more comprehensive future perspective in their deliberations on educational policy than Group I?

3. Was greater comprehensiveness of future perspective a factor which distinguished Group III from Group II?

4. What differences occurred among groups with respect to the following tendencies:

   (a) to assert that present policy would remain applicable in the future

   (b) to propose alternatives to present policy

   (c) to converge on opinion in the third round of interaction

   (d) to change opinion between responses

   (e) to conform to majority opinion

   (f) to express certainty concerning responses

(g) to express agreement with the proposals of others?

5. What changes occurred within and among groups concerning attitudes towards the concepts of "the future," "change," and "educational policy-making?"

6. Were there differences among groups concerning relationships between integrative complexity and dogmatism, on the one hand, and the following tendencies on the other:

(a) to adhere to present policy

(b) to advocate alternative policies

(c) to agree with the proposals of others

(d) to display positive attitudes towards the concepts listed in (5) above

(e) to manifest comprehensiveness in future perspective?

STATISTICAL ANALYSIS

The research questions listed above were examined using both statistical and non-statistical analysis. With regard to the former, statements of hypotheses were not employed, though where *a priori* expectations were held these were indicated and tested appropriately.

Statistical procedures used included the t-test for the significance of the difference between two means for independent samples and the t-test for the significance of the difference between two means for correlated samples (Ferguson, 1966:167-71). In addition, analyses of variance were used for comparisons of the three groups with respect to differences among them in attitude, and Pearson correlation coefficients were employed for determining relationships among variables.

With regard to levels of significance, the position adopted was

that no strict decision rule would be applied, but that the intention would be to identify trends and directions. Further to this point, it is instructive to note the comments of Winer (1962:13):

> No absolute standards can be set up for determining the appropriate level of significance and power that a test should have. . . . The frequent use of the .05 and .01 levels of significance is a matter of convention having little scientific or logical basis. When the power of tests is likely to be low under these levels of significance, and when type 1 and type 2 errors are of approximately equal importance, the .30 and .20 levels of significance may be more appropriate than the .05 and .01 levels.

Bearing in mind Winer's statement and the small N's employed in most of the analyses, the actual probability levels as determined by the computer programs used have been reported, and the following procedure adopted for discussing differences: $p < 0.05$ referred to as "significant;" $0.05 < p < 0.15$ referred to as "marginally significant;" and $0.15 < p < 0.30$ referred to as "trends."

Chapter 4

GROUP DIFFERENCES ON POLICY PROPOSALS

In the present chapter, findings pertaining to the first three research questions stated in Chapter Three are reported. The focus of the analysis is on the extent to which subjects in the different group treatments presented policy suggestions which foreclose the future as a continuation or extrapolation of the present, and the extent to which they put forth proposals which offer more definite alternatives to present practice. At the same time proposed policies and supporting reasons are examined for evidence of comprehensiveness of future perspective.

POLICY PERTAINING TO THE ORGANIZATION OF EDUCATION

The first policy area that subjects were asked to consider was the organization of education. In this regard they were presented with two policy issues, the first of which concerned compulsory education.

Compulsory Education

A summary of group responses to this issue over three rounds of interaction is contained in Tables 2 to 4 inclusive. Each table presents several items of information:

1. The original statement of present policy--which always appears as Statement 1

2. The alternative proposals put forth by subjects in the first questionnaire

3. The percentage frequencies (from second questionnaire data)

which occurred in the various agree-disagree categories

4. The percentage frequencies (from third questionnaire data) which occurred in the various agree-disagree categories after subjects had had the opportunity to review all reasons and opinions put forward in earlier rounds

5. The number of subjects in (3) and (4) above who responded--usually eleven but occasionslly less due to incomplete responses

6. The percentage frequencies reported in (3) and (4) above but collapsed into two categories only--"agree" and "disagree."

Group I responses. Results for Group I are shown in Table 2. With regard to the future applicability of present policy concerning compulsory education (Statement 1), subjects in this group were unable to reach consensus. After all the available information had been considered, 55 percent expressed some measure of agreement that the policy would remain applicable while 45 percent were inclined to the opposite view.

In terms of Ziegler's (1970a) classification of planning attitudes (supra:18-24), the above finding indicates that approximately half of the subjects in responding to this item were adopting a view that the future in fifteen to twenty years will not be fundamentally different from the present. Further to this observation, it should be noted that Statements 2 and 3 in Table 2, which were proposed as alternatives to present policy, reflect a view which could be classified as the second step in the continuum proposed by Ziegler--the future seen as an extrapolation of the present. Both of these statements propose some extension of compulsory education, which in reality means that their

Table 2

Percentage Frequency of Responses for Group I Concerning Agreement with Policies Related to Compulsory Education

Statement	Response	N	SA[a]	A	AS	DS	D	SD	Agree	Disagree
1. Compulsory education for children between the ages of six and sixteen	1[b]	11	9	27	9	27	27	0	45	55
	2[c]	11	18	27	9	18	27	0	55	45
2. Compulsory education to be extended both upwards and downwards from the present guidelines	1	11	0	36	0	18	36	9	36	64
	2	11	0	36	0	9	46	9	36	64
3. Compulsory education to be extended upwards from the present limit	1	11	9	9	18	27	27	9	36	64
	2	11	0	9	18	18	36	18	27	73
4. Free non-compulsory education for a larger group, e.g. from 4 to 18	1	10	10	30	30	0	20	10	70	30
	2	11	18	18	27	9	27	0	64	36

[a] SA Strongly Agree; A Agree; AS Agree Somewhat; DS Disagree Somewhat; D Disagree; SD Strongly Disagree

[b] Response on the second policy-development questionnaire

[c] Response on the third policy-development questionnaire

proponents are advocating the continuation of an existing trend. It is of interest to note, however, that neither of these proposals received strong support from the group as a whole.

Statement 4 in Table 2 is the only proposal coming from Group I which represents a clear departure from and real alternative to present policy. The suggestion here is that education should be non-compulsory and free, though the idea of some kind of age limit is retained. Again final group opinion could not be said to be strongly for or against this proposal.

The above discussion of statements reveals that although there was some evidence of subjects viewing the future as being potentially different from the present, the bulk of the substantive proposals represented a more constricted view of the future. This tendency on the part of Group I was also revealed in the reasons given in support of policy positions. The basic argument for retaining or extending compulsory education was that this is demanded by the specialized, technological nature of our society. Reasoning which indicated some alternative view of the future was put forth by only two members of the group, one of whom had indicated previous familiarity with futures research. This reasoning was offered in support of non-compulsory education and it presented the view that norms towards education might well be different in the future and that past and present reasons for advocating compulsory education (creation of a factory work force and creation of consumers) might well have no validity in a future social and economic climate.

Group II responses. The responses from Group II on this policy issue (presented in Table 3) show a certain amount of similarity with

Table 3

Percentage Frequency of Responses for Group II Concerning Agreement with Policies Related to Compulsory Education

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Compulsory education for all children between the ages of six and sixteen	1	11	0	36	27	0	36	0	64	36
	2	11	0	36	18	0	46	0	55	45
2. Compulsory education to be extended to include 4-5 year olds	1	11	0	18	18	18	46	0	36	64
	2	11	9	9	0	9	73	0	18	82
3. Compulsory education from age 5 to age 16 with an additional two years of free education provided by a voucher system	1	11	9	0	27	36	27	0	36	64
	2	11	9	9	9	46	27	0	27	73
4. Years of compulsory education to be reduced	1	11	18	9	27	18	18	9	55	45
	2	11	0	9	36	18	36	0	45	55
5. Free, non-compulsory education for 15 years	1	11	18	18	0	27	27	9	36	64
	2	11	0	9	9	36	46	0	18	82
6. A more general yet individualized educational system to be developed which will not have a graded system nor be confined to the educational institutions as they now exist, but an open system with a continuous educational policy	1	11	27	36	9	9	9	9	73	27
	2	11	9	36	9	36	9	0	55	45

those of Group I. Again, opinion was almost equally divided on the applicability of present policy for the future, and again proposals were put forward (Statements 2 and 3) for extending compulsory education. Group opinion, however, was quite clearly against such extension.

Though the above results follow a similar pattern to that observed for Group I, a noticeable difference between the two groups is revealed by examining the remaining proposals put forward by Group II. Statements 4, 5, and 6 in Table 3 all constitute policy positions which see the future as some form of alternative condition to the present. They suggest that years of compulsory education could be reduced (a break with tradition), that education could be non-compulsory, or that the educational system could adopt a more flexible and open approach in which the continuous nature of education would be emphasized over the compulsory aspect. These proposals indicate a greater tendency to think in terms of alternatives than was exhibited by Group I, but it is important to note that the group as a whole was not prepared to state that any of these policies would be applicable in the future period under consideration. Opinion was evenly divided on reduced compulsion in education and on adopting a more flexible approach, but it was clearly against allowing education to be non-compulsory.

Reasons given in support of policies by subjects in Group II again reflected a range of future perspectives. The need to supply society with a trained work force, the need to keep young people out of the work force, the realities of present government thinking--all were offered as arguments for retaining or extending compulsory education in the future. The proposals which represented definite breaks with present policy were supported by reasons which reached a level of comprehensiveness

that took into account such possibilities as changed norms and values and changed social and economic conditions. The technological view of the future also appeared among the reasons given in support of Statement 6. It was felt by two subjects that improved technology would make a more flexible, individualized system possible.

Group III responses. The responses given by Group III on the policy issue of compulsory education are shown in Table 4. These results indicate that while Group III subjects were definitely inclined to suggest and favour alternatives to present policy, they were at the same time reluctant to assert that compulsion in education will not be applicable in the next fifteen to twenty years.

As with the other groups, opinion was divided on the future applicability of present policy, but of the five other proposals put forward only one was a clear example of extrapolating the present into the future. This suggestion was that compulsory education should be extended downwards--a policy to which more than 70 percent of the subjects were at least to some extent opposed. Beyond this proposal there were four suggestions that represented definite alternatives to present policy: reduced emphasis on compulsory education, a different form of compulsory education, a move away from strict adherence to formal and consecutive education, and the establishment of education on a voluntary basis. Group opinion regarding the first two suggestions remained divided, but the idea that education need not be carried out in formally designated structures and need not be conducted in consecutive years of early life, was considered favourably by more than 90 percent of the subjects. Similarly, more than 70 percent were prepared to give some

Table 4

Percentage Frequency of Responses for Group III Concerning Agreement with Policies Related to Compulsory Education

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Compulsory education for all children between the ages of six and sixteen	1	10	0	40	20	20	10	10	60	40
	2	11	0	46	18	18	9	9	64	36
2. Compulsory education to be lowered to include 4 year olds--compulsory kindergarten	1	11	9	27	0	46	9	9	36	64
	2	11	9	0	18	55	9	9	27	73
3. Compulsory education for all children between the ages of five and twelve	1	10	10	20	30	0	30	10	60	40
	2	11	0	27	36	9	18	9	64	36
4. Compulsory education to be retained but in a somewhat different sense than is understood at present	1	10	10	30	10	20	20	10	50	50
	2	11	0	46	9	27	18	0	55	45
5. A number of years of free education (perhaps 15) but not necessarily formal or consecutive. The policy would not be without some restraining conditions--certain minimum requirements would be needed, e. g. 5 years education by age 14, 10 years by age 20, etc.	1	10	0	70	10	0	20	0	80	20
	2	11	0	55	36	0	9	0	91	9
6. Education to be voluntary and to be available over a wider age range	1	10	30	10	20	0	30	10	60	40
	2	11	27	0	46	18	9	0	73	27

support to the idea of voluntary education.

The above results indicate a general willingness among Group III subjects to consider alternative arguments. Further evidence of this tendency is seen in the "discussion" which took place about Statement 4. The general thrust of the supporting argument was that the notion of "compulsory education" might well change with changed conditions, and that "a whole family, a group of families, a group of students might fulfill the compulsory education by travel, outdoor experiences, research, sensitivity exercises, commune existence." Though some group members objected to this notion as being too vague or inconsistent with the generally accepted (present) definition of education, more than 70 percent indicated that the reasoning had a high degree of validity.

In general, though arguments reflecting views of the future as being little different from the present were certainly clearly in evidence in the assertions of Group III subjects, there was also a definite tendency to put forward alternative positions and support them with arguments that challenged the inevitability of present trends continuing and of present attitudes and behaviours remaining as the norms of the future. In this respect Group III arguments were more forceful and comprehensive than those of the other two groups.

Schools as Separate Institutions for the Young

The second policy issue in the overall area of organization that subjects were asked to consider raised the question of whether schools should continue to exist as separate institutions for the young. Group responses are presented in Tables 5, 6, and 7, each of which adheres to the same format as used in reporting responses to the preceding policy issue.

Group I responses. Results for Group I are shown in Table 5. With regard to this issue, subjects were noticeably unwilling to assert that any substantial change will be made during the next fifteen to twenty years in the existing policy of conducting education primarily by bringing the young together in buildings specifically set aside for that purpose. Seventy-three percent indicated a fairly strong measure of agreement that such a policy would remain applicable.

Only two alternatives to present practice were proposed. The first of these represented an extrapolation into the future of the present practice of schools' making use of community facilities and of performing activities in the community. This policy received 100 percent support from the subjects. The second alternative proposal represented a much more definite departure from present practice in that it raised the idea that education should not be thought of as something that pertains simply to the young. It advocated rather the establishment of "education centres" and the use of other physical locations for educating both children and adults. This proposal, which was put forth by one of the subjects in Group I who had indicated previous familiarity with futures material, received sympathetic consideration from other group members in that 91 percent expressed some measure of agreement that the policy could become applicable.

The above results indicate that subjects generally were in agreement that the basic principle of bringing people together in special buildings for purposes of education will not be abandoned during the next twenty years. The reasons given in support of such a contention varied all the way from viewing the future as being little different from the present to arguing more comprehensively that the "social, moral,

Table 5

Percentage Frequency of Responses for Group I Concerning Agreement with Policies Related to the Establishment of Schools as Separate Institutions for the Young

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Education primarily carried out by bringing the young together in buildings specifically set aside for that purpose	1	9	11	33	22	0	22	11	67	33
	2	11	0	64	9	0	18	9	73	27
2. Some education to be carried out in buildings like schools, but increasing use to be made of community facilities and of performing activities in the community	1	10	20	50	20	0	10	0	90	10
	2	11	18	64	18	0	0	0	100	0
3. Education not to be thought of as something that pertains simply to the young. "Education Centres" and other physical locales (e. g. farms, business, outdoors, etc.) to be used in the education of both children and adults	1	11	18	55	9	18	0	0	82	18
	2	11	9	55	27	9	0	0	91	9

ecological, emotional, vocational, and avocational components of the educative process will be seen as being as important as the intellectual or academic aspects."

Group II responses. As was the case with the first policy issue, Group II responses on the present question (shown in Table 6) revealed some clear similarity with Group I reactions. Though opinion was divided on the future applicability of present policy, a majority of subjects indicated some measure of agreement that the policy would remain in effect. Moreover, as in Group I, a proposal based on extrapolation into the future of present trends towards integration of education with community structures received unanimous support from subjects.

However, two further proposals put forward in Group II presented approaches not raised by either of the other two groups. Both of these suggestions represented definite alternatives to present practice, though neither received the support of more than 64 percent of the subjects. The first proposal (Statement 3 in Table 6) raised the possibility of providing education in government subsidized and privately subsidized service organizations and technical businesses throughout the community. The second suggestion (Statement 4) saw the possibility of "school buildings" becoming centres housing personnel and resources to supplement education received at home via electronic and other means.

From the perspective of Ziegler's (1970a) classification of planning attitudes, both of the proposals described above are examples of the single alternative future. As indicated by supporting reasons, the first proposal stems from dissatisfaction with present deficiencies of "rising costs," "antiquated classrooms," and lack of relevence. The

Table 6

Percentage Frequency of Responses for Group II Concerning Agreement with Policies Related to the Establishment of Schools as Separate Institutions for the Young

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Education primarily carried out by bringing the young together in buildings specifically set aside for that purpose	1	11	9	27	18	0	36	9	55	45
	2	11	0	27	36	0	36	0	64	36
2. Education to be carried out by using buildings specifically set aside for that purpose, but this to be combined with an attempt to reduce the isolation of schools from society by integrating education into community structures	1	11	36	27	18	9	9	0	82	18
	2	11	27	46	27	0	0	0	100	0
3. Education to be provided in government subsidized and privately subsidized service organizations and technical businesses throughout the community	1	10	0	30	30	20	20	0	60	40
	2	11	0	9	55	18	18	0	64	36
4. "School buildings" to become centres housing personnel and resources to supplement education received at home via electronic and other means	1	11	9	27	36	0	18	9	73	27
	2	11	0	36	27	18	18	0	64	36

proposed solution, however, though certainly presenting an alternative, concentrates on a rather limited aspect of difference. Similarly, the other proposal essentially looks to one factor, technology, to bring about the necessary changes. In this respect it can be viewed as a special case of the single alternative future--what Ziegler calls the technological approach to planning.

Group III responses. In Group III results (shown in Table 7), it is possible to detect a similar pattern of responses to that displayed by this group in reacting to the first policy issue. The subjects put forth clear alternatives to present practice, but at the same time showed a marked disinclination to agree that the basic idea behind the existing policy would be abandoned in the future.

As with the other two groups, a majority of subjects (80 percent) expressed some measure of agreement that the present policy would remain applicable. However, in contrast to the other groups, the reasons given in support of this position indicated that some comprehensive thought had been brought to bear on the question, for specific reference was made to the unacceptability of Illich's (1971) system of a deschooled society, and to the tremendous obstacles of implementing a system of individualized education. The definite feeling of the group was that the present system can be improved in terms of climate, curriculum, and teaching--it does not have to be completely replaced.

The above opinion notwithstanding, the group was still prepared to look favourably at proposals for bringing people of different ages together in schools; for providing community access and resources for anyone desiring a learning experience at any time; for having students "plot" their own educational experiences, many of which would presumably

Table 7

Percentage Frequency of Responses for Group III Concerning Agreement with Policies Related to the Establishment of Schools as Separate Institutions for the Young

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Education primarily carried out by bringing the young together in buildings specifically set aside for that purpose	1	11	9	46	27	0	18	0	82	18
	2	11	9	27	46	0	18	0	82	18
2. Certain buildings to be set aside as centres in which students gather with teachers to "plot" their educational experiences; other facilities to be increasingly utilized for learning on an experiential level	1	11	18	64	0	9	9	0	82	18
	2	11	18	36	27	18	0	0	82	18
3. Education to be partially carried out by providing buildings specifically for <u>people</u> to come together for that purpose	1	11	36	46	18	0	0	0	100	0
	2	11	27	56	18	0	0	0	100	0
4. Education to be partially carried out by providing community access and resources for anyone desiring a learning experience outside the "school" at any time	1	11	18	36	36	0	9	0	91	9
	2	11	18	55	18	0	9	0	91	9
5. A policy to be adopted which permits people to learn together in the "world"-- through individual field experience, in common interest groups, through "commune" experience	1	11	27	9	27	0	18	18	64	36
	2	11	18	0	36	9	18	18	55	45

take place away from schools.

In addition, a proposal was put forth in Group III which led to a clear illustration of opposing alternative views of the future. This suggestion (Statement 5 in Table 7) and its supporting reasons reflect a definite move towards a view of man which emphasizes concern for human qualities, respect for others, need for co-operation, and an awareness of man's place in nature as opposed to his dominion over nature. The opinion of the whole group remained divided on this proposal, though a slight majority viewed it favourably and even more were prepared to concede high validity to the arguments put forward. Two objections raised were the predictable criticisms of over-idealism and vagueness, but in addition, one subject took a more comprehensive long-range view and pointed out that conflicting pressures from population growth, pollution generation, and general growth orientation would make attainment of such a policy unlikely. Clearly, this subject's "comprehensive" view of the future was less optimistic than that of the proposer of the policy, and again Group III had provided evidence of having examined the policy issue in more depth than either of the other two groups.

POLICY PERTAINING TO THE CURRICULUM

The second policy area that subjects were asked to consider was the curriculum. In this regard two specific issues were examined--one concerned with the structuring of the secondary school program of studies and the other dealing with the general orientation of the curriculum. As was observed in group reaction to the first policy area, there was a tendency for subjects in Group I to manifest a limited view

of the future on both issues, while those in the other two groups--and particularly in Group III--adopted a more comprehensive approach.

Secondary School Curriculum

Concerning the first issue, subjects were asked to consider the future applicability of the present policy in secondary schools of dividing the curriculum into largely isolated subject areas. Group responses to this issue are shown in Tables 8, 9, and 10.

Group I responses. Results for Group I are presented in Table 8. After three rounds of interaction subjects in this group remained divided in their opinion regarding the continuation of the present policy. In the final response, equal numbers fell in the "agree" and "disagree" categories, indicating that subjects held clear opinions on this question.

Despite the apparent division on Statement 1, the group was able to achieve a better than 70 percent consensus on the four alternatives put forward. In general, it seemed that most subjects who urged the continuation of present practice saw enough consistency with this approach in the various alternatives that they were able to indicate some measure of agreement. Strongest overall support went to Statement 2 (91 percent agreement), which in a sense avoided the main point of the policy issue under consideration (the isolated treatment of school subjects) and referred to the further development of ideas now commonly discussed in educational circles--continuous learning, individualized instruction, instructional material packages. Statements 3 and 4 urged greater interdisciplinary activity and more attention to interrelatedness of subject matter, while Statement 5 presented the strongest departure

Table 8

Percentage Frequency of Responses for Group I Concerning Agreement with Policies Related to the Division of the Secondary School Curriculum into Isolated Subjects

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Secondary school curriculum divided into subjects taught (on the basis of a specified time allotment) and examined largely independently of each other	1	10	0	40	10	10	20	20	50	50
	2	11	0	46	0	9	46	0	45	55
2. Move towards continuous learning, individualized instruction, abandonment of notion of "year's work," development of instructional material packages	1	11	9	36	46	0	0	9	91	9
	2	11	0	64	27	0	0	9	91	9
3. Humanities oriented subjects to be grouped in an interdisciplinary approach. Vocational subjects and Math/science to remain independent	1	11	9	55	18	0	0	18	82	18
	2	11	9	27	36	9	9	9	73	27
4. Much more integration of the curriculum with more attention to interrelatedness	1	11	18	27	36	9	0	9	82	18
	2	11	9	36	46	9	0	0	91	9
5. Secondary school curriculum determined by individual student interests and aptitudes, established on a contractual or semicontractual basis and having a broad multi-disciplinary approach	1	9	11	33	33	22	0	0	78	22
	2	11	9	36	27	27	0	0	73	27

from present policy by suggesting that the curriculum be determined by individual student interests.

The support given to the above proposals indicates that subjects in Group I were generally sympathetic to some modification of present policy in the future. However, the arguments put forth in support of such policies showed little evidence that a concern for the future was prompting the thinking of subjects. The most common arguments were that present trends would continue or that subjects' individual biases will eventually be adopted as policy. Only two respondents indicated that they had given consideration to the fact that society in the future might require a different type of curriculum because the society itself might be different. One of these subjects had expressed previous familiarity with futures material.

Group II responses. Results for Group II (presented in Table 9) reveal that subjects in this group had much less sympathy for the continuation of present policy than their counterparts in Group I. More than 90 percent disagreed that existing policy would remain applicable, and of this number 46 percent expressed strong disagreement.

This lack of support for the established way of organizing the curriculum was further indicated in the group's negative reaction (80 percent disagreement) to Statement 2, a proposal put forth by two group members which merely extrapolated present ideas on flexible scheduling into the future. In contrast, the remaining three alternative proposals received better than 80 percent agreement from subjects as to their future applicability. Noticeably, Statements 3 and 4 presented similar policies to those advocated in Group I--emphasis on interdisciplinary activity and giving students considerable freedom of choice to

Table 9

Percentage Frequency of Responses for Group II Concerning Agreement with Policies Related to the Division of the Secondary School Curriculum into Isolated Subjects

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Secondary school curriculum divided into subjects taught (on the basis of a specified time allotment) and examined largely independently of each other	1	10	0	0	10	10	30	50	10	90
	2	11	0	9	0	9	36	46	9	91
2. Division into subjects to be retained, but schools to be given more freedom and authority to schedule courses and time flexibly	1	11	27	9	9	9	46	0	45	55
	2	10	10	10	0	10	70	0	20	80
3. The curriculum to consist of an interdisciplinary approach based on student interest areas; this to be combined with an emphasis on word and number skills and an opportunity for individualized instruction	1	11	18	64	18	0	0	0	100	0
	2	11	18	73	9	0	0	0	100	0
4. The program to be established in such a general form that students are free to choose the subjects they are interested in and integrate these subjects into a meaningful experience	1	11	18	27	46	0	9	0	91	9
	2	11	9	18	55	9	9	0	82	18
5. Secondary schools to be concerned with emphasizing relationships between subjects rather than in developing "specialists" in miniature for universities	1	11	36	27	36	0	0	0	100	0
	2	11	27	46	27	0	0	0	100	0

develop their own curricula. Statement 5 was a little different in that it specifically stressed an aversion to specialization at the secondary level.

Though the alternative policies put forward by Group II were similar to those advocated by Group I, the arguments given in support of them were noticeably different. In Group II one respondent linked heavy emphasis on specialization in schools to the societal ills generated by unrestrained economic and technological growth. Others referred to lack of attention to an overall view as being artificial and potentially dangerous to society, and they argued further that just because subject disciplines have traditionally been regarded as prerequisites does not mean that this approach will continue in the future.

Group III responses. Results for Group III on this issue are shown in Table 10. Regarding present policy, some subjects (36 percent) again showed unwillingness to say that it would have no applicability in the future. This position was supported by two main arguments. One was based merely on the extrapolation into the future of present trends in specialization and curriculum development. The other, however, reflected the more thoughtful view that although change was desirable, the sheer inertia of the system would prevent any significant shift from occurring in the next fifteen to twenty years.

In contrast to the other two groups no policy suggestions were put forth which clearly presented the extrapolation of present trends, though three were similar to the more definite alternatives made in the other two groups (Statements 2, 3, and 4). They urged interrelationship of subject areas, emphasis on students devising their own curricula, and interdisciplinary activity. All received some measure of agreement

Table 10

Percentage Frequency of Responses for Group III Concerning Agreement with Policies Related to the Division of the Secondary School Curriculum into Isolated Subjects

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Secondary school curriculum divided into subjects taught (on the basis of a specified time allotment) and examined largely independently of each other	1	11	0	18	18	18	36	9	36	64
	2	11	0	0	36	9	46	9	36	64
2. The secondary school curriculum to be centred around broad areas of interest with considerable emphasis on subject interrelationships and student interest	1	11	18	46	36	0	0	0	100	0
	2	11	9	46	36	9	0	0	91	9
3. The secondary school curriculum to become "personalized"--education to be obtained by choice "super-market style." Each student with the assistance of counsellors will devise his own curricula	1	11	18	9	46	0	18	9	73	27
	2	11	9	9	55	18	0	9	73	27
4. Teachers to be organized into interdisciplinary groups and students to be taught in an informal atmosphere. The teachers would be available when needed--in a group or individually	1	11	27	18	18	36	0	0	64	36
	2	11	27	18	36	18	0	0	82	18

Table 10 (Continued)

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
5. The secondary school curriculum to pay due attention to subject disciplines, but to use these to centre on problem areas which are also part of the curriculum. Applying the knowledge and skills of a subject discipline would be given more weight than examining them	1	11	18	36	36	0	9	0	91	9
	2	11	9	36	27	18	0	9	73	27
6. The secondary school curriculum to be related to the needs of individuals with the aim of developing an integrated view of humanity in a world setting	1	10	30	30	20	20	0	0	80	20
	2	11	36	27	9	27	0	0	73	27
7. The curriculum to be based on three principles: humanism, process, and integration. This would lead to a curriculum concerned with student interests and social issues and emphasizing process as a key to understanding the meaning of life	1	11	9	27	46	0	18	0	82	18
	2	11	9	9	36	9	36	0	55	45

from more than 70 percent of subjects. Statement 5 introduced the notion of organizing the curriculum around problem areas, while Statements 6 and 7 reintroduced the ideas of student needs and interests, but linked them directly to problems of creating a sense of humanity throughout the world and trying to understand the meaning of life. Statement 7 was the only one on which group opinion was clearly divided on the second response; the other two received approval from 73 percent of the subjects.

As was the case in Group II, several arguments reflecting a comprehensive view of the future were given in support of policy positions. Holistic thinking was linked with human survival and the avoidance of ecological catastrophe, and it was stressed that planning for the future necessitated the development of a curriculum based on broad problem areas rather than on arid subject specialization. Statements 6 and 7 were supported by reasons that pointed out that values are changing concerning the work-ethic and "welfare" mentality. In general, the above arguments received a high rating of validity from a majority of group members, again indicating Group III's receptiveness to a comprehensive, future-oriented line of reasoning.

The Orientation of the Curriculum

The second policy issue that subjects were asked to consider in the area of curriculum dealt with the question of general orientation. Group responses are presented in Tables 11 to 13 inclusive.

Group I responses. Results for Group I are shown in Table 11. After three rounds of interaction 60 percent of subjects in this group felt that no substantial change will be made during the next fifteen to twenty years in the existing policy of emphasizing the accumulation of

Table 11

Percentage Frequency of Responses for Group I Concerning Agreement with Policies Related to a Curriculum Oriented toward Past and Present Economic and Social Systems

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Spirit and content of the curriculum oriented toward the accumulation of information and toward past and present economic and social systems	1	10	20	30	10	30	10	0	60	40
	2	11	0	36	27	18	18	0	64	36
2. Orientation toward past and present to remain, but emphasis to be placed on sources of information rather than on straight accumulation of information	1	10	40	20	40	0	0	0	100	0
	2	11	36	46	18	0	0	0	100	0
3. Emphasis on sources and synthesis of information; this to be done with a basic orientation toward examining economic and social alternatives for the future; the past to be seen as a <u>means</u> for understanding the present and for planning the future	1	8	50	38	13	0	0	0	100	0
	2	11	36	54	9	0	0	0	100	0

information in a curriculum oriented toward past and present economic and social systems. Despite this result, however, subjects indicated strong support for the two alternatives proposed. The first of these (Statement 2) represented an extrapolation into the future of the current orientation toward past and present, but suggested that emphasis be placed on sources of information rather than on straight accumulation of facts. The second proposal constituted a much clearer alternative to present practice in that it suggested that the curriculum be oriented toward examining economic and social alternatives for the future.

The approval given to the last proposal (100 percent agreement) indicates that subjects in Group I had some sympathy for shifting the orientation of the curriculum toward the future. As far as supporting reasons were concerned, it could be said that a concern for some future societal condition was entering into subjects deliberation much more on this issue than on any other considered. Several respondents stressed the need for curriculum builders to consider the future, though the case was argued most strongly by the subject who had urged this view-point through the previously discussed issues. He suggested that "education will play the key role in the survival and in the conscious directed evolution of humans and their habitat." This argument was given a rating of high validity by all members of the group.

Group II responses. Group II responses (shown in Table 12) reveal, on at least one level, a clear difference from Group I's reaction to this policy issue. Whereas subjects in the latter group showed unwillingness to reject the present policy but at the same time were prepared to support alternative proposals, subjects in Group II were almost unanimous in their opinion that the current policy would not be applicable in the future.

Table 12

Percentage Frequency of Responses for Group II Concerning Agreement with Policies Related to a Curriculum Oriented toward Past and Present Economic and Social Systems

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Spirit and content of the curriculum oriented toward the accumulation of information and toward past and present economic and social systems	1	11	0	0	27	0	27	46	27	73
	2	11	0	0	9	9	36	46	9	91
2. Curriculum to be oriented toward the accumulation of information, development of attitudes and values, and toward individual self-realization and actualization	1	11	18	46	36	0	0	0	100	0
	2	11	9	46	46	0	0	0	100	0
3. Emphasis to be placed on sources of information, on the requirements of society and the outside world, and on principles and trends. Skills of relating to others and choosing to be stressed. All of this to be done with a basic orientation in which past and present are used as a basis for projecting alternative futures	1	11	36	46	18	0	0	0	100	0
	2	11	27	55	18	0	0	0	100	0
4. Curriculum to stress changes in social systems based on information (which will be readily available); no emphasis on information per se.	1	11	9	18	46	0	27	0	73	27
	2	11	0	36	46	0	18	0	82	18

As alternatives, three proposals were put forward. The first of these (Statement 2) did not depart substantially from present practice in that it stressed accumulation of information and repeated traditional educational assertions of developing values and encouraging individual self-realization. Though this statement was supported by all of the subjects, a large proportion (46 percent) limited their approval to the "agree-somewhat" category. In contrast, 82 percent marked "agree" or "strongly agree" for Statement 3, which adopted a much more comprehensive and future-oriented view. It took into account a variety of factors such as sources of information, the requirements of society and the world at large, and skills of relating and choosing. All of these factors were then placed in a basic orientation "in which past and present are used as a basis for projecting alternative futures." The third alternative also took a future view, but laid more stress on the need for the curriculum to emphasize change (for the better)--to provide opportunities for students to use information to project desirable changes in social systems. This proposal received some measure of support from 82 percent of the subjects.

The above results clearly illustrate that orienting the curriculum toward the future was seen to be an appropriate direction for policy to take. This view was borne out also by arguments supporting the proposals. The continuation of present policy was rejected on the basis of a need for people to be able to project futures and to study potential "Utopias." In support of Statement 3 it was argued that policy was needed which would make the future an important consideration in all aspects of the curriculum; that educators are bound to begin seeing education as a means to help bring about changes in outlook needed to avert world-wide

catastrophe within thirty years; that "a new education and new life style are inevitable if we are to survive." All of these arguments were given a high rating of validity by more than 80 percent of the subjects.

Group III responses. The opinions of subjects in Group III towards the question of orientation of the curriculum (shown in Table 13) reveal some close similarity to those of Group II. Again, a large proportion of subjects (82 percent) indicated that present policy will not remain applicable, and again the proposed alternatives received a strong measure of support.

As in previously discussed policy issues, Group III produced a more comprehensive set of options than either of the other groups. Statement 2 presents the least contrast with current practice since it sets forth a list of aims which, as one subject pointed out, could readily be assumed to be the aims of present educational policy. The statement, however, was proposed in the context of arguments which identified certain societal trends: "breakdown of family, increase in leisure time, explosion of knowledge, development of a so-called generation gap." From this view the policy therefore represents an example of thinking based on a perspective of the future as an extrapolation of the present.

Statement 3, however, presents an interesting contrast, for although it retains some of the elements of the preceding proposal, it omits any reference to specialist skills and lays emphasis on the development of the "moral individual." This statement of policy was backed up by an argument which stressed that "moral" was being used in the sense of "human-value oriented" and that society has great need of

Table 13

Percentage Frequency of Responses for Group III Concerning Agreement with Policies Related to a Curriculum Oriented toward Past and Present Economic and Social Systems

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Spirit and content of the curriculum oriented toward the accumulation of information and toward past and present economic and social systems	1	11	0	9	36	9	36	9	45	55
	2	11	0	0	18	36	36	9	18	82
2. The curriculum to stress growth of: (1) individual as a mature human being; (2) group skills; (3) problem-solving skills; (4) development of a value complex and recognition and acceptance of others; (5) ability to apply, store, and manipulate information; (6) specialist skills in one discipline	1	9	44	33	0	11	11	0	78	22
	2	11	27	46	27	0	0	0	100	0
3. The curriculum to emphasize: (1) self-discovery; (2) development of self-reliance (including freedom to seek out information from various sources); (3) problem-solving; (4) development of moral individual; (5) learning to live together	1	11	36	46	0	18	0	0	82	18
	2	11	27	55	18	0	0	0	100	0
4. The emphasis in the curriculum to move towards problem solving and the need to continually re-learn	1	11	46	46	0	9	0	0	91	9
	2	11	36	55	0	9	0	0	91	9
5. The spirit and content of the curriculum to lean toward the accumulation of information from the present and the past that will assist in making projections into and predictions of the future	1	11	46	27	0	18	9	0	73	27
	2	11	18	46	27	0	9	0	91	9

such individuals who think continuously of the future states which can develop out of present procedures. Other arguments supporting this policy referred to man's realization that he can greatly affect the destiny of his species, and that "the world is in dire need of citizens who can recognize key problem areas, assess alternatives, and make intelligent suggestions."

The remaining two alternative proposals also carry a heavy future orientation. Statement 4 again pinpoints problem solving as a key activity in the preparation of students. Its supporting argument refers to the rapidity of change and suggests that education should place emphasis on developing the individual's ability to adapt, relearn, and cope with problems. Finally, Statement 5 brings out the point raised in Groups I and II that the curriculum must somehow involve students in the activity of projecting alternative futures. This proposal was supported by arguments which referred to man's growing awareness of where present practice is leading him, which stressed the need for an "image" of the future to be inculcated through education, and which recognized society's and hence education's need to come to terms with change.

All of the above arguments reflecting a concern for the future were rated as having high validity by more than 80 percent of the subjects. This, together with the policies proposed, suggests that Group III readily related concern for the future to the orientation of the curriculum. However, this group again presented some evidence that it was not urging a shift from present policy without giving due consideration to numerous factors. In particular, the argument was raised that education does at least have some responsibility to transmit the cultural heritage and as such a just balance between past and future orientation must be maintained.

POLICY PERTAINING TO THE PREPARATION OF TEACHERS

The final set of policies that subjects were asked to consider dealt with the preparation of teachers. As in the other policy areas, two specific issues were raised: (1) the preparation and status of teachers, and (2) the selection of teacher trainees. Again, it was found that groups who had been exposed to futures material tended to adopt a more comprehensive and future-oriented approach to the issues than did Group I.

Preparation and Status of Teachers

On the first topic, subjects were asked to state their opinions as to the future applicability of present Alberta policy of preparing teaching personnel to constitute virtually a single group all of whom achieve the status of teacher through undergoing a minimum of three years of training in a university faculty of education. Group responses to this issue are shown in Tables 14, 15, and 16.

Group I responses. Results for Group I are presented in Table 14. Though subjects were initially divided on this issue, opinion on the last response moved noticeably in the direction of disagreeeing that present policy would remain applicable during the next fifteen to twenty years. However, it should be noted that the majority of responses (64 percent) fell in the "disagree-somewhat" category, which would indicate that subjects were not strongly rejecting present policy.

As far as alternative proposals were concerned, four suggestions were put forward. Two of these (Statements 2 and 3) were essentially extrapolations of present practice in that they advocated increasing the length of the training period and emphasized the importance of assessment

Table 14

Percentage Frequency of Responses for Group I Concerning Agreement with Policies Related to a University Based System of Teacher Preparation

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Teachers virtually constitute a single group all of whom achieve the status of teacher through undergoing a minimum of three years of training in a university faculty of education	1	10	10	10	30	30	20	0	50	50
	2	11	0	0	18	64	9	9	18	82
2. Years of teacher training to be increased	1	10	20	40	20	20	0	0	80	20
	2	11	9	73	9	9	0	0	91	9
3. Actual years of training to be less important than performance as assessed by the principal, other teachers, and students	1	11	0	46	27	27	0	0	73	27
	2	11	9	46	27	18	0	0	82	18
4. Teachers to be trained in colleges; master teachers may attend a university for further education	1	10	10	0	0	10	80	0	10	90
	2	11	9	0	9	0	82	0	18	82
5. Teachers to cease being regarded as exclusive dispensers of knowledge; some professional educators to become directors of student learning and in this capacity utilize "natural" teachers from many areas in society--including parents; these natural teachers will not necessarily have any formal training in education	1	10	40	40	20	0	0	0	100	0
	2	11	9	46	36	9	0	0	91	9

by the principal, other teachers, and students. Both proposals received strong support from the group as a whole. Statement 4 represented a more definite alternative to present practice in that it suggested differential training for "teachers" and "master teachers." Overall group opinion, however, was that the adoption of this suggestion was unlikely.

The remaining proposal (Statement 5) outlines an approach which, if seriously implemented, would imply a marked change from present practice. The essence of the suggestion is that increasing use be made of "natural" teachers in society (for example, parents) under the guidance of professional educators who would adopt the role of directors of student learning. This proposal received strong support from subjects (91 percent) as a likely direction in which policy might move in the future.

Reasons given in support of proposals ranged from arguments which merely extrapolated the present into the future (increased complexity will call for more training), through emotional statements of subjects' bias (too many dull, incompetent, and semi-educated individuals are presently the sole teachers of our children), to more reasoned arguments of alternative procedures (education cannot afford to ignore the excellent resource personnel--scientists, writers, et cetera--who can make a worthwhile contribution to the world of teaching and learning). No arguments were put forward which indicated that subjects were envisioning a markedly different societal condition in twenty years' time from that which pertains now.

Group II responses. Results for Group II (shown in Table 15)

Table 15

Percentage Frequency of Responses for Group II Concerning Agreement with Policies Related to a University Based System of Teacher Preparation

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Teachers virtually constitute a single group all of whom achieve the status of teacher through undergoing a minimum of three years of training in a university faculty of education	1	10	0	0	40	30	30	0	40	60
	2	11	0	0	27	18	55	0	27	73
2. Years of teacher training to be increased and certification to be withheld until satisfactory completion of an internship period	1	11	18	27	36	9	9	0	82	18
	2	11	18	27	46	9	0	0	91	9
3. Teachers to be differentiated by giving the more highly trained greater responsibility and status, and by making greater use of teacher aides and "intern" teachers	1	10	10	70	10	0	10	0	90	10
	2	11	9	55	27	0	9	0	91	9
4. Length of university training to be increased to 4 years, but other people with specialized training to be added to the teaching body	1	9	22	56	11	11	0	0	89	11
	2	11	0	64	27	9	0	0	91	9
5. An informal system to be developed in which the concept of "teacher" as we know it today will cease to exist. Anyone who has a skill or interest to pass on will be a teacher. The professional educator will become a guide and consultant to both students and "natural" teachers or "resource agents."	1	11	9	36	9	27	0	18	55	45
	2	11	18	9	18	18	27	9	45	55

reveal that the majority of subjects, like those in Group I, felt that the present policy would not be applicable in the future. As alternatives they put forward two proposals which consisted essentially of extrapolating present trends into the future--increasing years of teacher training (Statement 2), and making greater use of teacher aides and "intern" teachers (Statement 3). Statement 4 represented a more striking alternative to present trends in that though it advocated increased years of training, it also emphasized the use of specialized non-teachers in the teaching force. Statement 5 took this notion much further by advocating that a teacher be regarded as anyone who has a skill or interest to "pass on." Professional educators would then assume a guiding role similar to that ascribed to them by Statement 5 in the policy proposals of Group I. Group opinion while going in favour of the first three suggestions remained divided on the last more controversial proposal.

The reasons given in support of the proposed policies tended to cover much the same ground as those discussed for Group I above. Three differences, however, are noteworthy. One was the re-emergence in this group of the view of the future as being technologically different from the present. The second was the description of a markedly different social condition from the present--one in which people who wish to help others to appreciate themselves and enjoy life will replace teachers. The third difference from Group I was the appearance of an argument urging the inclusion of study of potential future problems in the training of teachers.

Group III responses. Group III responses (shown in Table 16) reveal an initial tendency to assert that present policy will continue, though final opinion--as in the other two groups--tended to go in the

Table 16

Percentage Frequency of Responses for Group III Concerning Agreement with Policies Related to a University Based System of Teacher Preparation

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. Teachers virtually constitute a single group all of whom achieve the status of teacher through undergoing a minimum of three years of training in a university faculty of education	1	11	0	27	27	18	18	9	55	45
	2	11	0	0	46	18	27	9	45	55
2. Teachers to be trained by spending five years studying a variety of arts subjects, a major subject, and teaching theory; in the first three years they would also spend up to two months per year in schools in supervisory situations (e. g. cafeteria and halls) to become accustomed to students before, in the last two years, actually teaching	1	10	0	30	20	20	10	20	50	50
	2	11	0	18	18	27	27	9	36	64
3. The training of teachers to be extended to at least four years	1	11	0	64	18	0	9	9	82	18
	2	11	0	73	18	0	0	9	91	9
4. A system based on merit pay and differentiated staffing to be developed	1	10	10	20	30	0	40	0	60	40
	2	11	0	9	27	18	46	0	36	64

Table 16 (Continued)

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
5. Teachers to comprise of persons who have demonstrated expertise irrespective of whether their training was at a university, by means of practice, or through self-study	1	11	0	73	18	9	0	0	91	9
	2	11	0	64	27	9	0	0	91	9
6. A system to be developed which, (1) provides for trained teachers similar to but better than the present, and (2) allows for greater involvement by members of the community in the teaching area	1	11	36	46	18	0	0	0	100	0
	2	11	36	46	18	0	0	0	100	0
7. A policy to be developed which recognizes three principles: (1) that a teacher is anyone who facilitates the learning process for someone; (2) that the learner is in the key position to select the opportunities and experiences he desires; (3) that learning can take place outside schools without a certified teacher being present	1	11	18	55	18	9	0	0	91	9
	2	11	18	46	27	9	0	0	91	9

direction of favouring some alternative. The first of these alternatives (Statement 2) was based mainly on present and past approaches to teacher training (increased training and custodial role for the teacher) and was rejected as unlikely future policy by 64 percent of the subjects. Statement 3, on the other hand, which simply advocated increased training, was seen as being applicable by more than 90 percent. Differentiated staffing--another example of extrapolation of present educational ideas--was, however, rejected, again by 64 percent of the subjects.

The remaining three proposals (Statements 5, 6, and 7), all of which received high overall agreement, represented more definite alternatives to present practice. The main thrust in these proposals was that policy in the future will move away from insisting on teaching as being the sole prerogative of a person called a teacher, towards a more flexible arrangement in which the importance of specialized training for all who teach will be diminished and increased responsibility will be placed on learners for choosing their learning experiences.

As in Groups I and II, arguments were put forward which reflected both limited and comprehensive views of the future. The latter were more prominent and pointed towards a diverse form of education in the future which would recognize the contributions of such other agencies as museums, media, and various "non-educational" organizations. They also rejected the view that society would remain static and that current vested interests must necessarily retain their power.

Selection of Teacher Trainees

The final policy issue which subjects were asked to consider dealt with the selection of teacher trainees. Group responses are presented in Tables 17, 18, and 19.

Group I responses. Results for Group I are shown in Table 17. After three rounds of interaction 64 percent of the subjects indicated that the present policy of selecting teachers basically on academic qualifications would not be applicable in the future period under consideration. This final position reversed the overall opinion on the first response which had tended in the direction of retaining present policy. That many subjects continued to hold reservations at the end of the interaction is, however, shown by the relatively high proportion (36 percent) who indicated "disagree somewhat" as their response.

Only two alternatives to present policy were proposed and both received support from more than 80 percent of the subjects. The first consisted of a restatement of present educational ideas about measuring candidates' skills and maturity in the human relations area. The second marked a slightly stronger departure from present thinking in that it implied that a person without high academic qualifications ought not to be denied the opportunity to become a teacher simply on account of that deficiency. Both proposals were supported mainly by arguments reflecting subjects' biases against the present policy. There was little evidence that a comprehensive view of the future had acted as the basis for any proposal put forward.

Group II responses. From Group II results (shown in Table 18), it can be seen that a clear majority of subjects (73 percent) on both responses felt that the present policy would not remain applicable. Three alternatives were proposed (Statements 2 to 4), the first two of which were given strong support by subjects, while opinion on the third remained divided.

Table 17

Percentage Frequency of Responses for Group I Concerning Agreement with Policies Related to the Selection of Teacher Trainees

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. All teacher trainees selected basically on academic qualifications	1	10	10	20	30	10	30	0	60	40
	2	11	0	18	18	36	27	0	36	64
2. In addition to measures of academic ability, instruments to be used which provide measures of a candidate's skills as well as awareness and maturity in the human relations area	1	10	30	60	10	0	0	0	100	0
	2	11	18	64	9	9	0	0	91	9
3. Selection of teacher trainees to take into account the whole man and not deny opportunity to someone for lack of paper credentials	1	11	9	18	27	18	27	0	55	45
	2	11	0	27	55	9	9	0	82	18

Table 18

Percentage Frequency of Responses for Group II Concerning Agreement with Policies Related to the Selection of Teacher Trainees

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. All teacher trainees selected basically on academic qualifications	1	11	0	9	18	18	46	9	27	73
	2	11	0	9	18	9	46	18	27	73
2. Teacher trainees to be selected not only on the basis of academic qualifications but also on the basis of personal attributes	1	11	18	73	9	0	0	0	100	0
	2	11	9	91	0	0	0	0	100	0
3. The truly professional educator--that is, one of the few co-ordinators and facilitators of learning--to be selected on the basis of intellectual ability, academic qualifications, the desire to work, and technical knowledge	1	11	27	18	36	9	9	0	82	18
	2	11	36	27	27	9	0	0	91	9
4. Teachers at large to be selected on their ability to communicate with others about a specific field of interest	1	11	0	36	18	18	27	0	55	45
	2	11	9	36	0	27	27	0	45	55

Statement 2 repeated current arguments of basing selection of trainees on personal attributes as well as on academic qualifications. This received unanimous support from subjects. Though the proposal itself is not new, it is important to note that supporting arguments for it from Group II showed evidence that subjects were linking this alternative with various views of the future--in particular with a future where self-directed learning is the norm and where "characteristics emphasized will be a humanitarian, non-machine-centred view of man; co-operativeness; and the ability to see the world as a single system."

The remaining two proposals somewhat complement each other. The first (Statement 3) refers to various qualities desired in those few who become co-ordinators and facilitators of learning, while the second implies that there will also be "teachers at large" for whom the main selection criterion will be their ability to communicate with others about a specific field of interest. The argument supporting this last proposal pointed out that it was based on the further policy that anyone who has a specific skill or interest will be enabled to tell others who are interested in the same field of endeavour about it. The implication was that this approach will become in the future a central thrust in the educative process instead of remaining the largely coincidental activity that it is today. Though 45 percent of the group felt strongly that this was the direction in which policy would go, the remainder indicated that they felt it to be too much of a departure from established practice to be either workable or acceptable.

Group III responses. Results for Group III (shown in Table 19) reveal that a clear majority of subjects (73 percent) indicated on the

Table 19

Percentage Frequency of Responses for Group III Concerning Agreement with Policies Related to the Selection of Teacher Trainees

Statement	Response	N	SA	A	AS	DS	D	SD	Agree	Disagree
1. All teacher trainees selected basically on academic qualifications	1	11	0	27	18	9	9	36	45	55
	2	11	0	9	18	9	18	46	27	73
2. Teacher trainees to be selected on the basis of personal attributes, attitudes to education, and academic qualifications--interviews and tests to be used	1	11	27	46	9	9	0	9	82	18
	2	11	36	36	9	9	0	9	82	18
3. Teacher trainees to be selected on the basis of a desire to teach, having something to contribute, and possessing empathy for the goals of education	1	10	30	30	0	30	0	10	60	40
	2	11	9	36	36	9	0	9	82	18
4. Provision to be made for two types of teachers: (1) those trained and selected much as at present; (2) those drawn from all walks of life and given short training programs to equip them to better impart whatever it is they have to contribute to someone's learning	1	11	18	36	46	0	0	0	100	0
	2	11	0	46	55	0	0	0	100	0
5. Anyone wishing professional training in teaching to be provided that opportunity	1	11	18	9	18	18	27	9	45	55
	2	11	9	18	18	9	46	0	45	55
6. The policy to be essentially different from present practice in that learners will seek out teachers according to what experience, knowledge, or skills the learner requires	1	11	27	0	27	36	9	0	55	45
	2	11	18	0	27	36	18	0	45	55

second response that they considered it unlikely that present policy on the selection of teacher trainees would continue into the medium to long-range future.

Two alternative proposals (Statements 2 and 3) represented the somewhat standard response to this issue that had also been put forward by Groups I and II--namely, that academic qualifications should be supplemented with desirable personal attributes and attitudes to education. However, as with Group II, it is important to note that these proposals were being put forward in the context of alternative views of the future--increased complexity, reduced population growth, increased necessity to continually re-learn, and a growing emphasis on the ability to relate to one another at the human level and to adopt a future orientation. All of these arguments were regarded as having high validity by a majority of subjects.

Statement 4 in Table 20 presents an alternative which both continues the present practice of selecting teachers but at the same time is based on the notion that "teachers" in the future will not be a single group and that therefore different selection criteria will be needed for "other teachers." This is a similar position to that expressed by Group II.

In Statements 5 and 6 the departure from present practice in the direction of increased flexibility and freedom is taken further. Statement 5 advances the position that anyone wishing professional training in teaching should be provided with that opportunity, while Statement 6 argues that the primary impulse in the educative process should come from the learner's desire to learn something from someone else rather than from someone's desire to impose something on someone else.

Reasons given in support of these proposals were based on views of the future in which attitudes toward "knowledge, education, school, man, and teacher" would be different from what they are at present. Overall group reaction to these proposals was divided with opinion going slightly against the adoption of such policies. The general tenor of the opposing arguments was one of sympathetic restraint--movement in this direction is desirable, but the policies as proposed are too "wide open" to be acceptable as alternatives.

SUMMARY

Differences among Groups

The analysis conducted in this chapter has focussed on the extent to which subjects in the three different group treatments presented policy suggestions that constitute definite alternatives to present practice, and the extent to which their deliberations were characterized by comprehensiveness of future perspective.

On the question of alternatives, the relative performances of the three groups is summarized in Table 20. In terms of a tendency to extrapolate present policy into the future little difference was found among them as far as actual numbers of proposals were concerned. Both of Groups I and II advanced a total of ten suggestions that fell in this category while Group III put forward eight. However, in terms of total output these figures represented more than half for Group I (59 percent), slightly less than half for Group II (48 percent), and less than one-third for Group III (27 percent). This means that Group III manifested a much greater tendency to advance suggestions that could be regarded as definite alternatives to present policy. Subjects in this group proposed twenty-

Table 20

Summary of Alternative Proposals

Group	Extrapolations of Present Policy	"Definite" Alternatives to Present Policy
I	10 (58.8%)	7 (41.2%)
II	10 (47.6%)	11 (52.4%)
III	8 (26.6%)	22 (73.4%)

two such statements (73 percent of their output) compared with eleven (52 percent) and seven (41 percent) for Groups II and I respectively.

The greater tendency of Group III to propose policies that imply definite changes from present practice was associated with a tendency for this group to display a more comprehensive view of the future. With one or two notable exceptions subjects in Group I revealed that they were not envisioning a future which differed markedly from the present, except with respect to a particular factor that was uppermost in their minds. In contrast, subjects in Group III--and to a lesser extent, those in Group II--provided many examples that they were recognizing the possible existence of different societal and technological conditions in the future, and that they were considering education's interactions with such exogenous variables as ecological imbalance and attitudes towards work and material well-being. Whereas there was a tendency for subjects in Group I to operate on a level of personal bias or criticism of the

present way of doing things, subjects in the other two groups--and particularly in Group III--took a more comprehensive view of the future and developed positions based on convictions that policy will move in a certain direction because this is the way in which a more viable future for mankind lies.

The above comments indicate that in terms of comprehensiveness of future perspective Group I was somewhat apart from Groups II and III. In addition, however, there was a clear difference between the latter two groups in that Group III tended consistently to consider a greater array of factors than did Group II. Though both had their share of subjects who took a restricted view of the future, it was nevertheless generally apparent that at the end of three rounds of interaction on each of the policy issues considered, subjects in Group III had "debated" the question more thoroughly: they had raised all of the points raised by Group II and had advanced all of the positions put forward by Group II, and then had gone further. In terms of Ziegler's (1970a) classification of planning "attitudes," Group II usually spread along the continuum from viewing the future as being fundamentally the same as the present to viewing the future as presenting an alternative to the present on certain variables, while Group III frequently got beyond this point to a consideration of a wider range of alternatives and a greater number of interacting factors.

Differences Associated with Policy Areas

The above comments summarize the findings pertaining to the principal research questions being considered in this chapter. In addition, however, the analysis revealed another finding which indicated

that comprehensiveness of future perspective as well as being related to the extent of exposure to information about alternative futures, was also associated with the policy area being considered.

The sense in which this latter relationship was found was the extent to which subjects raised arguments about education's playing a determining role in the overall future of society. When policy questions concerned with the curriculum were considered, all three groups expressed opinions that policy changes in this area could affect the future in obvious ways. Though these assertions were made most forcefully by subjects in Groups II and III, there was nevertheless clear evidence that all groups saw a relationship between the curriculum and the future of society.

However, when policy issues in the area of organization were examined, there was little evidence--even in Group III--that subjects were assessing proposed changes from the point of view that they would make a significant difference in the future to the betterment of society. The issue of compulsory education, for example, was not really debated in terms of whether the abandonment of this principle would lead to a freer or more enlightened society. Similarly, the question of whether schools should continue to exist as places in which the young are brought together was not seriously considered in the light of what a society that abandoned this practice might be like. With regard to the policy area of teacher preparation, arguments which took into account the impact of changes on the future of society were put forward by subjects in Groups II and III, though again this aspect was not as apparent as in the deliberations on curriculum.

To sum up, it could be said that the subjects who tended to

associate educational policy with the determination of a better (or worse) future were those who had been exposed to information about alternative futures, but even with these the tendency varied over policy areas. It was most in evidence when curriculum matters were being considered and least apparent when subjects examined the two organizational factors of compulsory education and the setting up of schools.

Chapter 5

GROUP DIFFERENCES ON SELECTED VARIABLES

The purpose of the present chapter is to report findings pertaining to the last three research questions stated in Chapter Three. The analysis focusses on group differences with respect to policy variables and interaction factors in the Delphi procedure; on changes which occurred within and among groups concerning attitude toward selected concepts; and on the effect of integrative complexity and dogmatism within group treatments on interaction and attitude variables.

POLICY AND INTERACTION VARIABLES

In addition to the differences in group output examined in the preceding chapter, the effect of exposing subjects to futures material was studied by comparing groups on two sets of selected variables: (1) those related to the proposing of policies, and (2) those related to various features of the Delphi interaction process. The results are reported below.

Support of Present Policy

The first policy variable considered was the support of present policy. Each subject was assigned a score which could range from 0 to 6 according to the number of times he asserted on the first round that present policy would remain applicable in the future. Since subjects in Group I were not provided with any materials designed to stimulate comprehensive thought about the future, it was expected that this group would achieve a higher score on the variable than either of the other

two groups; that is, that they would manifest a stronger tendency to assert that present policy would remain in force. Results of t-test analyses of data are shown in Table 21.

Inspection of the data reveals that the three mean present policy scores were low, showing a greater tendency by all groups to propose alternatives rather than advocate the continuation of existing policy. The score for Group I was higher than that of the other two groups, but differences were not significant. The lowest score was achieved by Group II, which indicates that the increased intensity of exposure to futures material experienced by subjects in Group III did not have the effect of causing them to support present policy less than Group II.

Some additional evidence of a slight tendency for Group I to advocate the continuation of existing policy more than the other groups is obtained by examining data from the last Delphi round. A summary of Tables 2 to 19 in Chapter Four reveals that at the conclusion of the

Table 21

T-test Comparisons of Group Scores Relating to the Support of Present Policy

Group I $\bar{X}$ Score	Group II $\bar{X}$ Score	Group III $\bar{X}$ Score	t	P (One-tailed)
1.82	1.64		0.25	0.402
1.82		1.73	0.14	0.446

policy development exercise a majority of subjects in Group I had indicated some measure of agreement that present policy on three issues would remain applicable in the future and that three policies would not remain applicable. The first three were compulsory education, establishment of schools, and orientation of the curriculum; the second three were non-integrated curriculum, preparation of teachers, and selection of teacher trainees. With regard to the other two groups, however, a majority of subjects supported only two statements of present policy (compulsory education and establishment of schools) while they asserted that all four other policies would not remain applicable.

Proposal of Alternative Policies

A second policy variable examined was the extent that subjects proposed alternatives. Each subject was assigned a score which could range from zero to an indefinite upper limit depending on the number of alternatives he put forward on the first round. Since subjects in Group I had no access to materials presenting an alternative futures approach, it was expected that they would achieve a lower mean score on this variable than subjects in the other two groups. Results of t-test analyses of data are shown in Table 22.

As expected, the mean alternatives score for Group I was lower than that of the other groups. Though the difference from Group II was not significant ($p = 0.408$), the probability level ($p = 0.268$) for the difference between Group I and Group III indicated a trend for the latter group to propose a greater number of alternative policies.

Further evidence of this trend on the part of Group III is provided by the data from Tables 2 to 19 summarized in Table 23.

Table 22

T-test Comparisons of Group Scores Relating to the Proposing of Alternative Policies

Group I $\bar{X}$ Score	Group II $\bar{X}$ Score	Group III $\bar{X}$ Score	t	P (One-tailed)
4.18	4.36		-0.23	0.408
4.18		4.64	-0.63	0.268

Table 23

Number of Alternative Policies Proposed

Group	Number of Alternatives
I	17
II	22
III	30

From Table 23 it can be seen that Group III's output of alternatives almost doubled that of Group I and was considerably greater than that of Group II. Such wide differences on the total number of proposals compared with less appreciable differences on mean scores, is indicative of a tendency on the part of subjects in Group III to put forward suggestions which were qualitatively different from proposals being put forward by other members of their group. Whereas subjects in Group I, and to a lesser extent in Group II, tended to put forward similar suggestions which could therefore be combined into single alternatives for the group, subjects in Group III tended to differentiate in their suggestions with sufficient detail to make combination of them unwarranted. The overall result was a considerably greater output of material from Group III.

Convergence of Opinion

The above discussion indicates that Group I tended to manifest more compactness in behaviour than either of the other groups in that subjects proposed fewer discrete alternatives. Additional evidence of greater initial compactness in Group I is provided by examining various aspects of group behaviour in the Delphi interaction process. If the data from Tables 2 to 19 are considered in terms of group ability to achieve an overall two-thirds majority opinion on individual statements of policy, a distinct trend is observed. The pertinent data are presented in Table 24.

From the data it can be seen that on both rounds where opinions about statements were called for, subjects in Group I displayed the greatest tendency to come to a decision on individual statements, while

Table 24

Percentage of Statements on Which a Two-Thirds Majority Opinion Was Achieved in Rounds 2 and 3

Group	Round 2	Round 3	Increase from Round 2 to Round 3
I	65.2%	73.9%	8.7%
II	60.7	71.4	10.7
III	55.5	69.4	13.9

subjects in Group III displayed the least tendency to do this. However, the differences between the groups narrowed quite markedly in going from Round 2 to Round 3, with Group III displaying a greater increase (14 percent) in the percentage of statements "agreed" upon than either of the other groups. In short, the inclusion of Round 3 resulted in greater convergence of opinion for the groups that were least in agreement on Round 2. Moreover, groups least in agreement on Round 2 were those with the most alternatives to consider. In this way, it would seem that the inclusion of Round 3 was conducive to enabling subjects to move toward consensus, especially when they were being asked to consider a large number of alternatives.

Change of Opinion between Responses

Further evidence of a tendency for groups to differ with regard to stability of opinion over rounds is provided by the summary statistics reported in Table 25. These data were derived by computing mean agreement scores for each group on each policy statement in Rounds 2 and 3 and

Table 25

Probabilities of Differences between Mean Agreement Scores on Rounds 2 and 3

Group	$p < 0.05$	$0.05 < p < 0.15$	$0.15 < p < 0.30$	$p > 0.30$	Total
I	0[a] (0%)[b]	2 (8.7%)	4 (17.4%)	17 (73.9%)	23 (100%)
II	0 (0%)	4 (14.3%)	4 (14.3%)	20 (71.4%)	28 (100%)
III	1 (2.7%)	4 (11.1%)	6 (16.6%)	25 (69.6%)	36 (100%)

[a]Number of statements

[b]Number of statements expressed as a percentage of the whole

examining differences between means using the t-test for correlated samples.

Examination of Table 25 reveals that subjects in general across all groups tended not to change opinion to any appreciable extent between responses. Differences between mean scores were not significant for the majority of statements in each group. The least tendency for change was exhibited by Group I which had only 26 percent of its mean scores differing at a probability level of less than $p = 0.30$, compared with 29 percent for Group II and 30 percent for Group III.

The data in Table 25 in conjunction with those presented in Tables 22 to 24 reveal an overall pattern of groups differing in a progression from Group I to Group III. Group I was the least conscious of future alternatives and the most willing to settle on a decision

which would not be swayed by further interaction. In contrast subjects in Group III appeared to be the most conscious of future alternatives and the most likely to change opinion after giving the issue further consideration. Group II reactions on these variables fell between those of the other two groups.

Conforming to Majority Opinion

As a consequence of the above discussion the question can be raised of whether the greater tendency for Groups II and III to change or converge in opinion can merely be attributed to subjects in these groups tending to move into majority response categories from the previous round. However, evidence from the study on this point indicates that subjects in Groups II and III were less likely to behave in this way than were those in Group I.

Behaviour on this variable was examined by computing a percentage conforming score for each group. The number of times a majority of replies fell in a single response category on Round 2 were found, then the behaviour on Round 3 of those subjects who lay outside the majority opinion was examined to see if they had moved into the majority opinion or if they continued to stay outside. The number of times subjects actually moved to the majority view was then expressed as a percentage of the number of times it was possible for them to do so. The result was called the group's percentage conforming score. The outcome for the three groups is shown in Table 26.

From the data it can be seen that Group III, which had recorded the greatest increase in agreement on Round 3 and the greatest shift in opinion between rounds, recorded the least percentage conforming score.

Table 26

Percentage Conforming Scores of Each Group

Group	Score
I	70.9%
II	65.2%
III	60.0%

Similarly, Group II, which had also been higher than Group I on the first two variables, was lower than Group I on the third. It would therefore appear that greater willingness for subjects in Groups II and III to change opinion after further interaction is not to be explained simply by "blind" conforming to majority opinion. Rather, this kind of behaviour was more likely to be found in Group I.

Certainty of Response

Another variable on which group differences were assessed was the degree of certainty which subjects expressed concerning their first-round judgments on the future applicability either of present policy or of various alternatives which they themselves had advocated. This variable is of interest in studies dealing with the development of policy because it presumably gives some indication of respondents' commitment to certain lines of action and therefore may be one factor in the ultimate determination of policy.

In the present study the expectation was that subjects in Group III would express the greatest certainty of response since they would

have had the benefit of a preceding round of interaction which forced them to focus on future implications for education. In addition, it was expected that subjects in Group II would be least certain of their responses because they would confront the questions in Round 1 immediately after reading the futures material and without the benefit of an intervening round to clarify some of the issues. Results of t-test analyses of data on this variable are shown in Table 27.

Inspection of the data reveals that the expectation of highest mean score for Group III and lowest mean score for Group II was upheld. Considering that the possible score was 42, the fact that all groups recorded means of more than 33 indicates that subjects generally were reasonably confident about their judgments. Nevertheless, there was a marginally significant difference ($p = 0.119$) between Group III and

Table 27

T-test Comparisons of Group Scores Relating to Certainty of Response

Group I $\bar{X}$ Score	Group II $\bar{X}$ Score	Group III $\bar{X}$ Score	t	p (One-tailed)
34.09	33.82		0.28	0.394
34.09		35.18	-0.95	0.176
	33.82	35.18	-1.21	0.119

and Group II, and a trend ($p = 0.176$) for Group III to be more confident than Group I. The difference between Groups I and II, however, was not significant.

Agreement with the Proposals of Others

Another interaction variable on which it was expected that Group III would achieve higher scores than the other two groups was subjects' tendency to agree with statements other than their own. This score was computed in two forms. In one version it was derived simply by giving a subject a score of one for each time he checked one of the three agreement categories (in Round 3) for a statement of policy other than one he had put forward himself. The score was then expressed as a percentage of the possible score he could have attained if he had agreed with every proposal other than his own. In the second version, responses were weighted by giving a value of three for a response of "strongly agree," two for "agree," and one for "agree somewhat." The final score was then expressed as a percentage of the possible score a subject could have obtained had he indicated "strongly agree" for each proposal other than his own.

As stated above, it was expected that Group III would score higher on both versions of this variable because of this group's greater opportunity for interaction. It was also expected that Group II would score lowest because of lack of opportunity to consider collectively the implications for education of futures material. Results of t-test analyses of data on this variable are shown in Table 28.

Inspection of the data reveals that group differences were in the expected direction. The relatively low score of Group II resulted in

Table 28

T-test Comparisons of Group Scores Relating to Agreement and Weighted Agreement with Statements of Policy Other than a Subject's Own

Variable	Group I $\bar{X}$ Score	Group II $\bar{X}$ Score	Group III $\bar{X}$ Score	t	P (One-tailed)
Agreement	58.24	45.00		1.91	0.036
Weighted Agreement	32.95	26.35		1.25	0.114
Agreement	58.24		65.68	-1.10	0.143
Weighted Agreement	32.95		36.98	0.80	0.218
Agreement		45.00	65.68	-2.45	0.012
Weighted Agreement		26.35	36.98	-1.84	0.041

significant differences between this group and Groups I ($p = 0.036$) and III ($p = 0.012$) respectively. The difference between Group I and Group III was only marginally significant ($p = 0.143$).

The effect of weighting the scores was generally in the direction of reducing the differences between groups, though the basic relationships of mean scores remained unchanged. In addition, it can readily be seen that the weighted scores were considerably lower than the unweighted scores--a finding which reflects the tendency of subjects in all groups to express only limited agreement for proposals other than their own. If these weighted scores are compared with weighted scores of subjects' agreement with their own proposals, a considerable contrast is apparent—as shown by Table 29. Subjects in all groups tended to view their own proposals much more favourably than they did the proposals of others. Moreover, there was very little difference between groups in their tendency to do this.

Table 29

Comparison of Weighted Scores for Agreeing with Others' Proposals and One's Own Proposals

	Group I $\bar{X}$ Score	Group II $\bar{X}$ Score	Group III $\bar{X}$ Score
Agreement with others' proposals	32.95	26.35	36.98
Agreement with one's own proposals	66.58	64.40	66.14

ATTITUDE AND ATTITUDE CHANGE

From a consideration of group differences with respect to policy and interaction variables, the report now turns to findings bearing on the fifth specific research question embraced by the study, namely, the changes which occurred within and among groups concerning attitudes towards the concepts of "the future," "change," and "educational policy-making." As explained in Chapter Three, the question was examined by means of a pre-test, post-test design which utilized a semantic differential format.

Attitude Changes within Groups

Since the treatments applied to the three groups varied in the intensity with which subjects were indirectly forced to confront the concepts under examination, different expectations were held concerning the effect of such treatment on group attitudes.

The Future. As far as the concept of "the future" was concerned, it was not expected that there would be any appreciable change in the attitudes of Group I subjects since no material was presented to them which was likely to change their overall outlook towards the future. However, with respect to Groups II and III it was expected that exposure to the futures material would make them less positive about the future, this effect being more pronounced for Group II than for Group III. The expectation for Group II was based on the fact that this group was confronted with material expressing concern about the future but was not given the opportunity to "discuss" the material directly. This, it was felt, would leave subjects basically confused and somewhat negative to

concepts related to that material.

Results of t-test analyses of data (correlated samples) pertaining to "the future" are presented in Table 30. The probability for a two-tailed, non-directional test is shown for Group I results while the probability for a one-tailed, directional test is shown for the results of Groups II and III.

Inspection of the data reveals that, contrary to expectations, Group I recorded a trend towards decreased positiveness ($p = 0.253$). With Group II the change was in the predicted direction of a less positive attitude on the post-test and the difference between mean scores was marginally significant ($p = 0.109$). For Group III, however, the change between pre-test and post-test attitudes was again contrary to expectations in that it represented a slight though insignificant move towards a more positive attitude ($p = 0.486$).

The contrast in behaviour between Groups II and III may perhaps

Table 30

T-test Comparisons of Three Groups' Pre-test and Post-test Scores Relating to the Concept of "the Future"

Group	Pre-test $\bar{X}$ Score	Post-test $\bar{X}$ Score	t	p (One-tailed)	p (Two-tailed)
I	58.91	57.27	1.21		0.253
II	60.27	58.09	1.32	0.109	
III	56.09	56.18	-0.04	0.486	

be explained in part by the latter's increased opportunity to examine the relevance of future problems and to consider educational approaches to those problems. Such activity, while not necessarily leading to a marked increase in optimism about the future, might well be conducive to a feeling that the problems are not insurmountable.

Change. An allied concept to "the future" is "change." Because of this association it was expected that group changes with respect to "change" would be similar to those relating to "the future"--that is, no appreciable change was expected for Group I, while changes for Groups II and III were expected to go in the direction of less positive attitudes on the post-test, the effect being more pronounced for Group II than for Group III. Results of t-test analyses for this variable are shown in Table 31.

The data reveal that the expectation of no significant change for

Table 31

T-test Comparisons of Three Groups' Pre-test and Post-test Scores Relating to the Concept of "Change"

Group	Pre-test $\bar{X}$ Score	Post-test $\bar{X}$ Score	t	p (One-tailed)	p (Two-tailed)
I	54.09	54.36	-0.28		0.783
II	57.00	54.55	2.98	0.007	
III	56.18	54.82	1.36	0.102	

Group I was upheld. The changes for Groups II and III were also as expected. For Group II a significant difference between pre-test and post-test mean scores was observed ($p = 0.007$), and for Group III the difference was marginally significant ($p = 0.102$). One possible explanation of the tendency for Group II to move more strongly than Group III in a negative direction is similar to that discussed above for "the future." The material distributed to both groups placed considerable emphasis on the turbulence likely to occur in the future because of increases in the rate of change. With only limited opportunity to consider the implications of this trend, Group II subjects may well have taken a more negative view than they had done at the outset. Group III, on the other hand, by considering the implications of change in more detail may have come to the conclusion that "change" is not much less desirable than they had first felt.

Educational Policy-Making. The third concept groups were asked to consider was "educational policy-making." The expectations held with respect to this variable were based on the researcher's anticipations of group reactions to the policy development procedure through which they were taken. With Groups I and II no significant changes towards "educational policy-making" were expected since the treatments both groups received were somewhat incomplete and may well have left a feeling of indifference towards the policy-making process. With Group III, however, a more positive attitude towards policy-making on the post-test was expected, since subjects were given greater opportunity to reflect on policy specifically aimed at coping with future problems. Results of t-test analyses on this variable are presented in Table 32.

Table 32

T-test Comparisons of Three Groups' Pre-test and Post-test Scores Relating to the Concept of "Educational Policy-Making"

Group	Pre-test $\bar{X}$ Score	Post-test $\bar{X}$ Score	t	p (One-tailed)	p (Two-tailed)
I	54.09	54.36	0.21		0.835
II	57.36	56.36	0.97		0.357
III	53.91	56.55	-1.68	0.063	

Inspection of the data reveals that, as expected, no significant changes were recorded by Groups I and II, though the fact that both moved slightly in a negative direction would seem to indicate that participation in the study did nothing to dispose them more favourably towards the policy development process. In contrast, Group III moved in the anticipated direction of a more positive post-test attitude, the difference between mean scores being marginally significant ($p = 0.063$).

Attitude Differences among Groups

In order to obtain additional information bearing on the changes within groups discussed above, group mean scores on both the pre-test and post-test were examined for differences. A summary of the results of one way analyses of variance (shown in Table 33) reveals that there were no significant differences among groups in their attitudes towards the three concepts in either testing period.

Despite this finding, some changes in relationships among groups

Table 33

Analyses of Variance of Pre-test and Post-test Group Attitude Scores Relating to Three Concepts

Concept	Pre-test		Post-test	
	F	p	F	p
The Future	0.88	0.426	0.28	0.760
Change	0.91	0.412	0.02	0.979
Educational Policy-Making	1.26	0.301	0.79	0.464

on the two testing situations can nevertheless be noted. As shown by Table 34, Group II was the most positive of the three groups on each of the concepts before participation, but afterwards remained most positive on only one, "the future." Group III had moved into first place on each of the other two.

More striking, however, is the fact that despite Group II's significant move in a negative direction on "change," its score on this variable on the post-test was still only slightly different from that of the other two groups. Similarly, Group III's marginally significant move in a positive direction on "educational policy-making" brought it only slightly above Group II's score on this variable on the post-test. There was, in short, a levelling-out process taking place, a fact which is further indicated by the comparatively lower F scores in Table 33 on post-test data. This would suggest that participation in the study, irrespective of the treatment applied, resulted in groups coming closer

Table 34

Relationships of Group Mean Scores for Three Concepts on Pre-test and Post-test Data

Concept	Pre-test		Post-test	
The Future	Group II	(60.27)*	Group II	(58.09)*
	Group I	(58.91)	Group I	(57.27)
	Group III	(56.09)	Group III	(56.18)
Change	Group II	(57.00)	Group III	(54.82)
	Group III	(56.18)	Group II	(54.55)
	Group I	(54.09)	Group I	(54.36)
Educational Policy-Making	Group II	(57.36)	Group III	(56.55)
	Group I	(54.64)	Group II	(56.36)
	Group III	(53.91)	Group I	(54.36)

* $\bar{X}$ Score

together in attitudes on each of the three concepts.

The above observation needs to be borne in mind when interpreting the meaning of the changes noted in Tables 30 through 32, for it suggests that part of the change which occurred could have been due to slight initial differences among groups. In other words, there is no clear evidence from the study that Group II, for example, would not have moved significantly in a negative direction on "change" if either of the other two treatments had been applied to it, simply because its initial score was higher than the scores of the other two groups. Alternatively, if the treatment applied to Group II had been applied to Group I, it is possible that no significant difference would have resulted. Thus, a causal relationship between changes within groups and the treatment applied cannot be inferred from the evidence provided by this study.

The Meaning of the Concepts

As well as indicating that mean scores were close for each individual concept, the data in Table 34 reveal that group scores across concepts were not far apart. This suggests that all groups viewed the three concepts similarly. Further evidence of this tendency is obtained by examining group reactions on individual scales.

As far as "the future" was concerned, all groups on the pre-test tended to see it as worthwhile, reasonable, fair, full, profound, and progressive. They were noticeably less positive about its being kind, sweet, or beautiful; and they clearly saw it as tending towards being hard, tense, and violent. On the post-test these overall orientations did not change, though scores on individual scales moved slightly in both directions.

A basic similarity of outlook among groups also pertained with respect to "change." Moreover, the meaning of this concept was almost identical with "the future"--the same scales were scored similarly for both concepts, with the exception that on the post-test all groups moved toward the "cruel" end of the "cruel-kind" scale.

"Educational policy-making," too, was viewed similarly by the three groups and again the scales scored positively and negatively were the same as for the other two concepts. The most notable exception was a tendency on both the pre-test and the post-test to score the "full-empty" scale less positively than had been the case for the other two concepts.

All of the above suggests that subjects, irrespective of groupings, tended to view the three concepts similarly. Further evidence of this tendency is provided by the intercorrelation matrix presented in Table 35, which shows the correlation coefficients and associated probability levels from comparisons of total group pre-test and post-test scores on each of the three concepts. All scores are positively correlated; subjects who scored high on one variable scored high on the others. With the exception of "the future" pre-test and "educational policy-making" post-test relationship, the associated probability level of the correlation coefficients was $p = 0.05$ or lower.

PERSONALITY VARIABLES

The final specific research question addressed by the study was concerned with relationships between the two independent personality variables and several dependent variables generated by the study. As discussed in Chapter Two, the constructs of integrative complexity and

Table 35

Correlation Coefficients and Associated Probability Levels from Comparisons of the Pre-test and Post-test Total Group (N = 33) Attitude Scores on "the Future," "Change," and "Educational Policy-Making"

	The Future Pre-test	Change Pre-test	Educational Policy-Making Pre-test	The Future Post-test	Change Post-test	Educational Policy-Making Post-test
The Future Pre-test		0.641 (0.000)*	0.434 (0.012)	0.590 (0.000)	0.551 (0.001)	0.280 (0.114)
Change Pre-test	0.641 (0.000)		0.535 (0.001)	0.458 (0.007)	0.777 (0.000)	0.474 (0.005)
Educational Policy-Making Pre-test	0.434 (0.012)	0.535 (0.001)		0.549 (0.001)	0.527 (0.002)	0.584 (0.000)
The Future Post-test	0.590 (0.000)	0.458 (0.007)	0.549 (0.001)		0.538 (0.001)	0.477 (0.005)
Change Post-test	0.551 (0.001)	0.777 (0.000)	0.527 (0.002)	0.538 (0.001)		0.600 (0.000)
Educational Policy-Making Post-test	0.280 (0.114)	0.474 (0.005)	0.584 (0.000)	0.477 (0.005)	0.600 (0.000)	

*Associated probability level

dogmatism were selected as two personality variables likely to be associated with an individual's performance in the policy development process. As expected from theory the constructs were found to be significantly and negatively correlated ($r = -0.436$; $p = 0.011$) and the analysis conducted was therefore aimed at investigating how well each construct performed as a predictor of subject behaviour on selected interaction and attitude variables. Moreover, since groups were matched on the two independent variables, it was possible to examine how the different group treatments affected the relationships being investigated.

Association of Integrative Complexity and Dogmatism with Other Variables

Adhering to present policy. With respect to the relationship found between scores on the independent variables and present policy, a distinct difference between Group I and the other two groups was noted. As shown in Table 36 present policy scores in Group I were negatively and significantly correlated ($r = -0.632$; $p = 0.037$) with integrative complexity scores, and positively correlated ($r = 0.550$) at a marginal level of significance ($p = 0.080$) with dogmatism scores. In each of the other groups, however, no significant relationships were found between present policy scores and either of the independent variables.

The above finding indicates that both integrative complexity and dogmatism were reasonably good predictors of subjects' tendency to advocate the retention of present policy under Group I conditions. Integratively complex persons tended to state that present policy would not remain applicable in the future while more integratively simple subjects were inclined to favour the retention of present policy.

Table 36

Correlation Coefficients and Associated Probability Levels from Comparisons of the Present Policy Scores of Three Groups with Their Scores on Integrative Complexity and Dogmatism

Group	N	Integrative Complexity		Dogmatism	
		r	p	r	p
I	11	-0.632	0.037	0.550	0.080
II	11	0.132	0.699	-0.142	0.676
III	11	0.119	0.727	0.134	0.692

Similarly, subjects who scored high on dogmatism tended to advocate the continuation of present policy while low dogmatism scorers were inclined to reject the notion that present policy would remain applicable. Under conditions operating in Groups II and III, however, variations in subjects' levels of integrative complexity and dogmatism did not bear any consistent relationship with present policy scores.

One possible explanation for the above difference between groups is that the futures material supplied to both of Groups II and III, while it did not have the effect of markedly decreasing subjects' tendency to advocate the retention of present policy, did have the effect of washing out differences between high and low integratively complex subjects and high and low dogmatism subjects in their tendency to behave in this way.

Advocating alternatives. Associated negatively with the tendency to argue for the retention of present policy was the tendency to propose

alternatives. Correlations between scores on this variable and scores on integrative complexity and dogmatism for each group are shown in Table 37.

As would be expected, results for Group I went in the opposite direction to the relationships reported in Table 36. In this group a significant positive correlation ($r = 0.632$; $p = 0.037$) was found between subjects' alternatives scores and their integrative complexity scores. Also, a negative correlation ($r = -0.550$) at a marginal level of significance ($p = 0.080$) occurred with dogmatism. In the other two groups no significant correlations resulted.

Agreement with the proposals of others. The significant correlations reported above for Group I indicate that under those conditions both integrative complexity and dogmatism were almost equally good as predictors of present policy and alternatives scores. In each case

Table 37

Correlation Coefficients and Associated Probability Levels from Comparisons of the Alternatives Scores of Three Groups with Their Scores on Integrative Complexity and Dogmatism

Group	N	Integrative Complexity		Dogmatism	
		r	p	r	p
I	11	0.632	0.037	-0.550	0.080
II	11	-0.173	0.610	0.133	0.695
III	11	0.109	0.748	0.263	0.433

integrative complexity was slightly better. However, with respect to another variable--subjects' tendency to agree with the proposals of others--dogmatism proved to be the only predictor with any consistency. Correlation coefficients resulting from comparisons of this variable with integrative complexity and dogmatism are shown in Table 38.

Again, the only association which approached significance was in Group I. Under those conditions subjects' agreement scores were positively related to dogmatism ($r = 0.524$) at a marginal level of significance ($p = 0.120$). This finding indicates that subjects in Group I who scored high on dogmatism tended to agree more with the proposals of others than did subjects of low dogmatism. However, when the agreement was weighted, the relationship was greatly reduced ($r = 0.215$; $p = 0.550$).

The fact that the positive association was limited both to

Table 38

Correlation Coefficients and Associated Probability Levels from Comparisons of the Agreement Scores of Three Groups with Their Scores on Integrative Complexity and Dogmatism

Group	N	Integrative Complexity		Dogmatism	
		r	p	r	p
I	11	-0.392	0.262	0.524	0.120
II	11	-0.256	0.474	0.187	0.605
III	11	-0.052	0.884	0.019	0.957

Group I and to indications of partial agreement may be interpreted as an indication of a tendency for subjects high in dogmatism to give some credence to most proposals when no structured input of alternative futures was provided. In other words, such subjects may have found it more convenient to agree slightly with most suggestions rather than establish a point of view of their own. The fact that no significant relationship was found in the other groups suggests that the input of futures material in those treatments had the effect of counteracting any disproportionate influence which may otherwise have been exerted by dogmatism.

Attitude. Two other variables which showed some definite relationship with integrative complexity--but not with dogmatism--were attitudes toward "the future" and toward "change." This relationship, however, was limited to only one group--in this instance, Group II. Correlation coefficients resulting from a comparison of Group II attitude scores on three concepts with scores on integrative complexity are shown in Table 39.

Inspection of the data reveals that scores on all three concepts were negatively related to integrative complexity scores on both the pre-test and the post-test. However, the relationship was significant ($p = 0.040$ and $p = 0.050$) only on "change." As far as dogmatism was concerned all relationships were positive but none attained a significance level lower than $p = 0.130$. In the other two groups no clear association was established between any of the attitude scores and scores on either integrative complexity or dogmatism.

The finding reported in Table 39 that Group II subjects of

Table 39

Correlation Coefficients and Associated Probability Levels from Comparisons of Group II Pre-test and Post-test Attitude Scores on Three Concepts with Scores on Integrative Complexity

Concept	Pre-test		Post-test	
	r	p	r	p
The Future	-0.261	0.437	-0.574	0.064
Change	-0.625	0.040	-0.602	0.050
Educational Policy-Making	-0.481	0.134	-0.291	0.385

high integrative complexity tended to be less positive about "change" than subjects of low integrative complexity is difficult to explain in terms of the treatments applied in this study. The fact that the association persisted in both the pre-test and post-test would indicate that the treatment applied was not the cause of the association.

As far as attitude change was concerned--that is, whether subjects increased or decreased in positiveness between the pre-test and the post-test--again no significant relationships were found with either of the independent variables.

Certainty. The remaining major dependent variable generated by the study was subjects' tendency to express certainty about their judgments. Though it might be expected that this variable would be associated with degrees of integrative complexity and dogmatism, no evidence was obtained from the study that any such association exists.

Association of Integrative Complexity and Dogmatism with Comprehensiveness of Future Perspective

In addition to examining the independent variables' relationships with various quantified variables, their association with subjects' tendency to manifest a comprehensive future perspective was investigated.

Though the data available are not sufficiently precise to come to clear conclusions on the existence of relationships, there is some evidence of a link between both integrative complexity and dogmatism and the perspectives displayed by subjects at the two ends of what might be called a narrow and comprehensive continuum. Subjects at the narrow extreme would be those who across the six policy issues consistently put forward reasons and proposals which reflected a preoccupation with present concerns, an absence of consideration for possible changes in social and educational conditions in the future, and a tendency to think in specific educational terms rather than link social and educational factors. In contrast, subjects at the comprehensive end of the continuum would be those who consistently showed evidence that they were thinking in terms of alternative futures which could be different from the present depending upon the interaction of social and educational variables. In general, the comprehensive subjects were those who were considering more factors and subsequent interactions as they advocated proposals or presented reasons for agreeing or disagreeing with the suggestions of others.

An examination of the output of individual subjects in the three groups reveals that in Group I three subjects could be identified as reasonable fits to the classification described above--one tending toward comprehensiveness and two toward narrowness. In Group II, two

subjects were identified as being comprehensive and two as narrow, while in Group III three subjects manifested comprehensive thinking and two tended towards narrowness. The remainder of the subjects fell in between the two extreme positions in that their responses did not consistently go one way or the other.

The twelve subjects classified into comprehensive and narrow perspectives were then compared on the basis of their integrative complexity and dogmatism scores. In each case the comparison was based on a division of scores into high and low categories according to whether the scores fell above or below the median. The overall comparison of the three variables is presented in Table 40.

Examination of the data reveals that all six subjects classified as comprehensive in perspective had high integrative complexity scores, and the six subjects classified as narrow had low integrative complexity scores. Hence, in this way a clear positive association emerged between comprehensiveness and integrative complexity, irrespective of the group treatment applied.

With regard to dogmatism, four of the six subjects classified as comprehensive fell in the low dogmatism category and two had high dogmatism scores. Of the six subjects classified as narrow five had high dogmatism scores and the remaining one scored low on dogmatism. Hence, a tendency toward a negative relationship between dogmatism and comprehensiveness was apparent, though the evidence was not as clear as it was for integrative complexity.

The above data, though limited in scope, provide some evidence that integrative complexity (and to a lesser extent, dogmatism) may be a predictor of an individual's ability to engage in comprehensive

Table 40

Comparison of Selected Subjects from Three Groups on Integrative Complexity, Dogmatism, and Comprehensiveness of Future Perspective

Group	Subjects	Future Perspective		Integrative Complexity		Dogmatism	
		Comprehensive	Narrow	High	Low	Low	High
I	A	X		X		X	
	B		X		X		X
	C		X		X		X
II	D	X		X		X	
	E	X		X		X	
	F		X		X		X
	G		X		X		X
III	H	X		X			X
	I	X		X			X
	J	X		X		X	
	K		X		X	X	
	L		X		X		X

analysis of future possibilities. The fact that high comprehensiveness was associated with high complexity across the three groups provides an indication that the ability was somewhat independent of group treatment. By the same token, however, the fact that Group III subjects as a whole displayed greater comprehensiveness in outlook than either of the other groups, even though all groups were matched on integrative complexity, is an indication that this facility was not entirely independent of group treatment. Rather, it may well be that the two factors complement each other through interaction with the result that Group III's performance in the policy development process was characterized throughout by a tendency to bring more factors into the deliberations. In contrast, in the other groups--and in Group I in particular--because of the limited treatment applied, the full potentiality of integratively complex thinkers may not have been brought to bear on the task.

ASSESSMENT OF PARTICIPATION

The preceding sections have reported findings pertaining to the principal research questions examined in the study. Additional data were, however, secured concerning subjects' assessment of participation in the study. Since these data also reflect differences among groups according to treatments applied, pertinent findings are reported below under the different questions asked in the Respondent Assessment Sheet.

Question 1

The first question to which subjects were asked to respond was concerned with participation in educational policy development. The general feeling of all three groups was that participation should be as wide as possible, and it was particularly emphasized in Groups II and III

that non-educators must be included, otherwise old patterns emerge as the continuation of past practices is advocated. It was also of interest to note that seven subjects in Group III and two in Group II specifically mentioned that participation in policy development was a rewarding and stimulating experience. No such response was recorded by anyone in Group I.

Question 2

In Question 2 subjects were asked for their opinions on whether the Delphi approach as used in the present study was a useful means for developing educational policy. Subjects in Group II were unanimous in their support of the procedure. With the exception of one reservation on the basis of too much structure all responses in Group III were also affirmative. In Group I, however, only seven subjects expressed support, while the remaining four indicated doubt as to the value of the procedure. Subjects in both Groups II and III also mentioned specifically that the approach be used with people in power who are in a direct position to affect policy.

Question 3

Responses to the above two questions provide some evidence that subjects in Group I were less positive about their participation in the study than were subjects in the other two groups. Additional evidence of this difference was provided in responses to Question 3 in which subjects were asked if they had gained any particular insights into the educational policy development process from participating in the study. Whereas all subjects in each of Groups II and III indicated that they had gained something from the experience, only eight were of this

opinion in Group I, while two expressed uncertainty and one stated definitely that he had gained no insights from participation.

Predominant among the benefits of participation listed by various subjects was an appreciation of the range of opinion that could exist among such a small group on matters of policy. It was also expressed by many that they had benefited from being forced to explicate their own positions and to consider the alternative proposals of others. Several references were made to an awareness that had emerged of policy development as an information-getting and bargaining procedure, and one respondent in Group III stated that he had been conscious of a gradual shifting towards consensus.

Question 4

Whereas the preceding three questions were related to the policy development process, Question 4 was more specifically methodological in that it asked subjects what difficulties they had experienced in responding to the various instruments. In general, the comments received in reply to this question referred to lack of time to consider matters thoroughly, occasional uncertainty about the meaning of a comment or statement, and a tendency to agree with a point of view in part, but not in total. One respondent in Group II felt that he was being forced to go along with the majority and was unhappy about it. In contrast, a subject in Group III reported a tendency in Rounds 2 and 3 to look for his own comments and agree with them regardless of what others said. Akin to this impression was a concern expressed by several respondents in all groups that they were being inconsistent with their original position. They seemed to want to resist being influenced by what others had to say.

Question 5

The remaining three questions on the assessment sheet referred specifically to the input of futures material provided to Groups II and III, and they were therefore not asked of subjects in Group I. Question 5 requested opinions on whether the futures material was useful in developing educational policy. All subjects in Group II asserted that it was and all but one in Group III expressed the same opinion. Four subjects qualified their assertion by saying that although they had personally found the material very helpful to them in clarifying their ideas about future policy directions, they doubted if the material would have much impact on the way things are done in the real world. Specific comments concerning the usefulness of the material asserted that it provides a valuable starting point for awakening concern, that it places education in perspective as it relates to large global problems, and that it focusses attention on the need to anticipate the future.

Question 6

In Question 6 the intent was to obtain subjects' opinions as to whether they felt more intensive exposure to futures material through a course offered by the Department of Educational Administration would be worthwhile. All subjects in both groups agreed that such a course would be valuable. The reasons given in support of this recommendation stated that it would benefit administrators by helping them to move policy towards a future orientation; that considerable emphasis in the Department is currently placed on the past and more is needed on the future; that such an approach puts education in a societal perspective; that it would be valuable at the undergraduate as well as the graduate level; and that

it would be of significance not only to policy development courses but to curriculum development courses as well. In addition, two subjects in Group III recommended combining academic aspects of such a course with practical exercises in which students and people in the field could be involved in planning the future.

Question 7

The final question attempted to obtain indirectly subjects' perceptions of the extent to which the procedure that they had been exposed to had provided them with a useful learning experience. The question was based on notions expressed by Weaver (1971) and Folk (1972) that Delphi-type interactions are powerful pedagogical devices. Accordingly, subjects in the present study were asked whether they thought they would be better prepared to write a position paper on educational policy for the future after having been through the Delphi exercise.

A noticeable difference between the two groups was observed in replies to this question. The results shown in Table 41 indicate that subjects in Group III were much more positive about this aspect of the procedure than were those in Group II. Eighty-two percent of the former stated that they felt much better prepared, compared with only 36 percent from Group II. No subject in either group indicated that he felt no better prepared.

The contrast between the two groups noted above is consistent with findings reported earlier of Group II's comparative uncertainty about the output coming from the group, and Group III's significant increase in positive attitude towards educational policy-making. Reasons

Table 41

Percentage Frequency of Responses from Groups II and III Concerning Assessment of Whether Participation Had Better Prepared Subjects for Writing a Position Paper on Educational Policy

Group	Response		
	Much Better Prepared	Little Better Prepared	No Better Prepared
II	36%	64%	0%
III	82%	18%	0%

from both groups given in support of responses referred to benefits gained from being encouraged to take an idealized position, then to analyze the sequential steps that might bring it about, and finally to examine one's position in the light of reactions by others. Other statements commented on the technique's emphasis on the need for something to be done to influence man's present course, its emphasis on placing education in perspective, and its value in enabling an individual to crystallize his random opinions.

Chapter 6

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

SUMMARY

Faced with the prospect of an ever increasing rate of change and the uncertainty generated by it, administrators in many fields of human endeavour have in recent years begun to look towards the future with considerable seriousness of purpose. There has been an upsurge of interest in long-range planning coupled with an intent to develop policy in the present which will carry mankind forward to a more secure rather than increasingly precarious future. One result of this long-range orientation has been the emergence of a "proto discipline" generally known as futures research, which is concerned with discovering and articulating an array of alternative futures and estimating the consequences of present and contemplated policies. In a comparatively short time this activity has led to the proliferation of a vast and ever expanding volume of information about possible and probable futures, which is now available for incorporation into the policy development process.

The present study sought to examine the effect that exposure to information about the future has upon those engaged in the task of developing educational policy. In doing so it was also concerned with investigating a means through which such futures material might be utilized in the policy development process.

Procedures

A research design calling for three distinct group treatments

was employed. Each group essentially confronted the same task, namely, the applicability of six key statements of educational policy in Alberta during a time horizon of fifteen to twenty years. These statements were concerned with policies in the areas of overall organization (compulsory education and the establishment of schools), curriculum, and teacher preparation.

Subjects who participated in the study were thirty-three graduate students in the Master of Education program in the Department of Educational Administration at The University of Alberta. They were divided into three equal-sized groups on the basis of results from a preliminary testing session designed to ascertain their current familiarity with futures research, their degree of integrative complexity, and their dogmatism scores. The personality variables of integrative complexity and dogmatism were selected as independent variables on the basis of work reported by Weaver (1969), Schroder et al (1967), and Rokeach (1960), which linked these constructs to an individual's ability to engage in abstract thinking about the future. Integrative complexity was measured using Tuckman's (1966) Interpersonal Topical Inventory and dogmatism by the Short-Form Dogmatism Scale developed by Troldahl and Powell (1965).

When groups had been established, three separate treatments were applied. In Group I, subjects participated as a Delphi panel which was given no guidelines other than a description of the policy development task described above. Three rounds of interaction were used. In Group II, subjects again operated as a Delphi panel confronting the same task as Group I over the same three rounds of interaction. However, before they began to consider the task they were provided with an input of

futures material in the form of a review of key works in social and educational futures. With Group III the same Delphi format and the same futures material were used, but subjects were provided with an additional round of interaction designed to intensify the exposure to the information about the future. Each treatment was administered in group sessions performed in sequence, beginning with Group I and followed by Groups II and III in that order.

To obtain data on subjects' possible change of attitude during participation the researcher developed a test which used the semantic differential format. It was administered to each group prior to and following participation in the policy development task. In addition, a Respondent Assessment Sheet designed to elicit subjects' reactions to participating in the study was administered.

Findings

Results of the study are summarized below according to the specific research questions examined.

Group differences on policy proposals. The first research question was concerned with the extent to which groups manifested different tendencies in proposing policy alternatives. Though it was found that all groups tended to put forward proposals that would move educational policy in the direction of less structure and more "naturalism," Group III was much more inclined than the others to advance suggestions that could be regarded as definite alternatives to present practice. In contrast, Group I manifested the greatest tendency to extrapolate present policy into the future, while Group II

fell between the others on both trends.

Group differences in future perspective. In the second research question differences among groups in future perspective were investigated. It was found that Group III manifested the greatest tendency to display a comprehensive view of the future and Group I the least. With one or two exceptions subjects in Group I indicated that they were not envisioning a future which differed markedly from the present, and that in proposing policy they were not considering to any great extent education's interaction with society. In contrast, subjects in Group III--and to a lesser extent, those in Group II--provided many examples that they were recognizing the possible existence of different societal and technological conditions in the future, and that they were considering education's interactions with such exogenous variables as ecological imbalance and attitudes towards work and material well-being.

Differences between Groups II and III on comprehensiveness. The extent to which comprehensiveness of future perspective was related to the intensity of exposure to futures material was examined in the third research question. It was found that Group III tended consistently to consider a greater array of factors than did Group II. The former, in general, "debated" the issues more thoroughly. Group III subjects would generally raise all of the points raised in Group II and advance all of the positions put forward by Group II, and then go further to consider a greater number of interacting factors.

Differences associated with policy areas. With respect to policy proposals, an ancillary finding to those growing out of the specific research questions revealed that policies in the three different areas of

organization, curriculum, and teacher preparation were viewed differently by all groups. The sense in which this distinction was found was in the extent to which subjects raised arguments about education's playing a determining role in the overall future of society. In general, it was found that all groups linked changes in curriculum to a notion of developing a "better" societal future. There was, however, little evidence that subjects, even in Group III, related changes in organization to such a notion. Changes with regard to teacher preparation fell between these two positions.

Group differences on policy and interaction variables. The fourth specific research question was concerned with group differences on selected policy variables and on various features of the Delphi interaction process. The findings on these variables revealed the following group characteristics. Compared to the others, Group I showed a slightly greater tendency to support existing policy, proposed fewer alternatives, came to a decision more often on Round 2, was less likely to change opinion between rounds, and showed a greater tendency to be influenced by majority opinion. In contrast, Group III was least likely to support existing policy, proposed the greatest number of alternatives, came to a decision least often on Round 2, changed opinion most frequently between rounds, was least likely to be influenced by majority opinion, expressed the highest certainty of judgment, and manifested the greatest tendency to express some measure of agreement with the proposals of others. In general, Group II fell between the others with two notable exceptions: it expressed the least certainty about responses and was least likely to agree with the proposals of others. As far as similarities were concerned,

all groups showed more inclination to propose alternatives than to support existing policy, and in all groups subjects agreed with their own proposals much more frequently than they supported the suggestions of others.

Group changes in attitude. The fifth research question focussed on changes which occurred within and among groups concerning attitudes toward selected, related variables. The findings revealed two marginally significant changes for Group III: an increase in positiveness towards "educational policy-making" and decreased positiveness concerning the concept, "change." Group II recorded a significantly less positive attitude toward "change" after participation, and a marginally significant decrease in positiveness toward "the future." Group I results showed a trend toward decreased positiveness regarding "the future," but no other notable changes. Group mean scores tended to come closer together after participation, though no significant differences among groups were found for any concept on either the pre-test or the post-test.

Relationships between independent and dependent variables. The final research question was concerned with relationships between the two independent variables (integrative complexity and dogmatism) and dependent variables generated by the study. It was found that in several instances different associations occurred in different group treatments. In Group I the tendency to support present policy was found to be significantly and positively related to integrative complexity and negatively related to dogmatism (marginal significance). The opposite kinds of relationships were found between both independent variables and Group I subjects' tendency to propose alternatives. Also in Group I, a marginally

significant positive relationship was found between dogmatism and subjects' tendency to agree with proposals other than their own. None of the above relationships was found in either of Groups II or III. One significant relationship found in Group II but not in the other groups was a negative correlation between integrative complexity and attitude towards the concept, "change."

A final association examined was the extent to which relationships could be detected between the independent variables and subjects' comprehensiveness of future perspective. Though the data were limited, some evidence was found to indicate a positive association between integrative complexity and comprehensiveness irrespective of group treatment. Evidence of a negative relationship between this variable and dogmatism was less clear.

Group differences on opinions concerning participation. In addition to the above specific research questions, group opinions concerning participation were examined. In general, it was found that subjects in Group I were less positive about their participation in the procedure than were subjects in the other two groups. There was a much greater tendency for subjects in this group to qualify positive comments with expressions of reservation about the utility of the process and the benefits that might come from it.

With regard to Groups II and III, all subjects stated that they had gained various insights from participation; all considered the futures material supplied to them to be a valuable input; and all asserted (some most emphatically) that further provision for such experiences should be provided as part of the training program for administrators. The chief contrast between the two groups occurred concerning their

opinions about the extent to which they felt that participation in the study had better equipped them for writing a position paper on educational policy. Whereas only 36 percent of subjects in Group II felt that they were much better prepared to do so, 82 percent were of this opinion in Group III. The remainder in each case indicated that they felt a little better prepared.

CONCLUSIONS

Though the study's experimental design limits the extent to which results can be generalized, its basic concern with investigating the effects of adopting a particular approach to policy development means that both the results and the conclusions based on them have considerable practical significance. It follows, therefore, that the conclusions stated below, all of which are based on results consistent with expectations, may be regarded as propositions and might with benefit be used as a guide to practice, or be tested in subsequent research. In addition, however, it should be noted that these conclusions are not exhaustive and that other relationships discussed in the report may also hold implications for practice and further research.

1. Exposure to information about possible-probable futures through reading summary material tends to influence the output of a Delphi group engaged in policy development.

   a. A group exposed to futures material tends to reject the notion that present policy will remain applicable in the future and seeks to put forward proposals which to a large extent represent clear alternatives to present practice.

   b. A group exposed to futures material tends to manifest greater comprehensiveness of future perspective than a group not so exposed.

   c. A group exposed to futures material displays less tendency to conform to majority opinion than a group not so exposed.

2. Increased exposure to information about possible-probable futures through an additional round of interaction focussing on educational implications, tends to influence the output of a Delphi group engaged in policy development.

a. Increased exposure tends to lead to greater comprehensiveness of future perspective.

b. Increased exposure tends to lead to expressions of greater certainty about judgments.

c. Increased exposure tends to lead to greater willingness to agree with the proposals of others.

d. Increased exposure tends to lead to a more thorough "debate" of issues and greater use of the interaction features of the Delphi technique.

e. Increased exposure tends to lead to a greater feeling of satisfaction regarding participation in the policy development process.

3. The Delphi technique when linked to an input of information about possible-probable futures provides a useful method for achieving interaction on educational policy questions.

a. The technique is an effective means for achieving broad consideration of policy issues.

b. The technique provides a valuable learning experience for participants.

c. If emphasis is placed on reasoning as well as on statements of policy, the potential usefulness of the technique as an aid to decision-making is enhanced.

IMPLICATIONS

Several implications for educational practice and research follow from the conclusions presented above and from other findings reported in the study. These implications are discussed below under headings indicative of the key questions examined.

Educational Policy Issues

With regard to policy issues in general, it was found that all

groups tended to favour proposals which would move education towards greater flexibility. This tendency is consistent with much recent emphasis in educational circles on decentralization of control of decision-making, as evidenced, for example, by the report of Alberta's Commission on Educational Planning, A Choice of Futures. However, because it seems unlikely that education's dependence on financing through public funds will be in any way diminished, decentralization of decision-making will inevitably be associated with strong central co-ordination. The result of such an arrangement will undoubtedly produce tension between local and provincial levels of organization, since, in the absence of specificity of regulations, there will always be doubt as to how flexible local arrangements can become and still receive the support of the funding authority.

Another finding from the study also bears on this point--namely, that although a desire for greater flexibility was expressed, considerable disagreement existed, even within such small intact groups as participated in this study, about the formulation of specific policy to lead in the desired direction. When such disagreement is associated with a minimum of central direction, the overall result could be a climate of contention and controversy unless techniques are developed to manage tension and find common ground between potentially divergent sectors. The implication for educational administration, therefore, is that effort must be directed towards the development of unifying mechanisms that emphasize common concerns which override ideological differences. An initial step in this direction could be the establishment of organizations specifically devoted to educational policy research and analysis. In addition, Delphi studies and other means for establishing broad-based participation

in the policy development process might be utilized.

Another finding from the present study illustrates a central difficulty that is likely to occur. The fact that subjects generally tended to associate changes in curriculum with notions of a "better" future, but failed to explicate the impact on the future of organizational changes, indicates that the consequences of such changes are not easily seen. It therefore seems necessary that as decentralization is encouraged, increasing effort must be expended on analyzing the consequences for the long-range societal future of alternative policy proposals emanating from various vocal sources in a decentralized society.

As far as training programs in educational administration are concerned, it would seem that if they are to be relevant to the climate of the future they must be concerned with producing administrators who understand the "larger" issues and can operate with flexibility and tolerance in what will undoubtedly be very ambiguous situations. The fact that subjects in Groups II and III of the present study gave unanimous support to the suggestions that courses or experiences based on futures material might be included in their programs, is an indication of student interest in this approach. The results of the study have shown that even minimal exposure to futures material brings with it a more comprehensive outlook regarding possible directions for education. More intense exposure through a university based educational program would conceivably go much further in developing the orientation that administrators of the future will need to enable them to function effectively in a turbulent setting of divergent views and competing claims.

Policy Development and Futures Research

From the rather general perspective of the preceding section, the discussion now moves to a consideration of implications growing out of the central problem with which the study was concerned--namely, the effect on Delphi policy development groups of incorporating into the process information about possible-probable alternative futures. Conclusions 1 and 2 stated above express the kinds of differences that were found to exist as a result of the adoption of this procedure--in particular, a greater comprehensiveness of perspective, a greater probing of alternatives, more extensive "debate," and less tendency to conform to majority opinion.

The above findings hold considerable implications for the way Delphi studies are conducted. If the aim of such studies is to obtain reasonably hard data on which to base the formulation of specific policies, it seems important that they be grounded in something more than personal whim and limited perspective of individual respondents. As argued in the preceding section, it seems desirable to use Delphi interaction to obtain widespread participation in the process of developing educational policy; but if participants are not familiar with the central thrust of futures literature, the evidence from the present study indicates that their contribution to the Delphi process will, in general, be limited to the exposition of personal points of view, which have not been framed against a comprehensive background of thought stressing the interaction rather than the independent action of various factors. In short, the implication is that procedures similar to that adopted with Group III in the present research should be utilized in Delphi studies which pertain to policy issues. In particular,

it would seem useful as an initial step to replicate the Group III segment of the present study with a wider range of participants from lay as well as educational circles. The findings of such research could then be circulated to as wide an audience as possible and in this way become an input themselves into policy development.

Personality Variables

The preceding comments suggest that Delphi studies linked with futures input can be useful means for achieving broad-based participation in policy development. However, as Weaver (1969) has shown, factors other than knowledge about the future may come into play during Delphi interactions. For this reason some discussion of the findings of the present study concerning the relationship of personality variables seems warranted.

Integrative complexity. One of the personality variables considered was integrative complexity. Though the study was not primarily concerned with examining its influence on policy development, one finding was that in the absence of futures material integrative complexity tends to distinguish between individuals in the way they view the applicability of present policy in the future.

The more complex person tends to propose alternatives rather than accept that present approaches will remain appropriate. However, the fact that this distinction between the more and less integratively complex person disappeared when futures material was introduced into the process, suggests that such material makes a difference to the way some individuals behave. Further examination of the data revealed that, in general, the person who operates at the abstract level (more integratively

complex), irrespective of whether futures material is present, tends to think in terms of alternatives. In contrast, more concrete thinkers are influenced by futures material in that they increase their consideration of alternatives markedly when such information is introduced. The implication of this finding, therefore, is that if in Delphi studies the intention is to open up rather than limit the discussion of the future, and if no measures of integrative complexity are available, then the use of futures material will tend to promote the objectives of the research.

Further to this point, the fact that, in the presence of futures material, no association was found between integrative complexity and any of the several dependent variables generated by the study, indicates that in this regard differences in integrative complexity among subjects are not important. However, the additional finding that even in the presence of futures material persons of low integrative complexity tend to remain narrow in perspective, suggests that in studies where the intent is to get thorough analysis of future alternatives, only persons of high integrative complexity should be used. This finding also implies that measures of integrative complexity may also be useful as predictors of successful functioning in the task of policy analysis. The incorporation of such measures into the procedures adopted for selection of such personnel might therefore be considered.

Dogmatism. The second personality variable examined in the study was dogmatism. It was found that in the absence of futures material dogmatism had a significant but opposite relationship to subjects' tendency to support existing policy as did integrative complexity. For

this reason the same comments as were made above concerning the advantages of using futures material apply here as well.

It was also found, however, that, in the absence of futures material, a positive association existed between dogmatism and subjects' tendency to show some measure of agreement with the proposals of others in the group. Moreover, when futures material was introduced, dogmatism ceased to be a factor which distinguished between agreement scores, and the relationship which was observed was a tendency for Group III subjects irrespective of dogmatism to display high agreement, and for Group II subjects irrespective of dogmatism to manifest low agreement. It would therefore appear that the introduction of futures material would again be beneficial in removing the influence that might otherwise be exerted by dogmatism.

The above comments on integrative complexity and dogmatism suggest that these variables may under certain conditions be dysfunctional to group interaction on policy questions. However, in order to obtain a better understanding of the relationship between them and the policy development process, it would be necessary to carry out additional research focussing on that specific problem and using a larger sample than was possible in the present study. This is an area which might fruitfully be examined in further studies.

Attitude and Attitude Change

Another question considered in the present study was whether the introduction of futures material affects group attitudes toward certain related concepts.

As far as "the future" and "change" were concerned, there was

some evidence that exposure to futures material had the effect of removing extreme attitudinal positions toward these concepts. The mean scores of Groups II and III came closer together in the post-test than in the pre-test and there was also a tendency for the scores of individuals to cover a narrower range in the second testing session.

One implication of this apparent "equalizing" effect of the futures material on attitude towards "the future" and "change," is that the material could be used in settings wider than those limited to policy development tasks. If such material does in fact modify extreme attitudes, then it may be valuable from an essentially educational standpoint as part of an overall endeavour to establish among the general citizenry an approach to the future which might best be described as one of cautious optimism. On the basis of arguments reviewed in the futures material itself (see Appendix A), such an attitude would appear to be essential at this point of history as a base on which individual lives can be constructed. This would suggest that courses in future studies might with benefit be established in schools, colleges, and universities, care being taken that those responsible for such programs be well-informed in the area and conscious of their responsibility.

With respect to the third concept examined for attitude change, "educational policy-making," it was found that the procedures adopted with Group III were conducive to producing increased positiveness. This finding, together with the indication that various groups may well have negative attitudes toward the policy development process (Group III had a noticeably low mean score on the pre-test), implies that the adoption of the alternative futures approach on a broad, participatory basis may

well have the effect of stimulating an overall improvement in attitude towards the task of developing the kinds of policies needed to provide a more secure and less precarious future.

The Delphi Technique

The final implication to be considered relates specifically to the Delphi technique itself. In preceding sections it has been recommended that this method in conjunction with futures material be used as one means for securing a broad range of opinion on policy issues. This position is consistent with Conclusion 3 in which it was asserted that the Delphi technique is a useful device for achieving broad consideration of policy questions. This does not mean that the method is without its drawbacks (ambiguity, inflexibility in structure), but it does imply that if carefully devised and used to achieve "debate" rather than consensus at any cost, it can be an effective tool for clarifying alternatives and obtaining widespread opinion.

A particular difficulty with the Delphi method as used in the present study was a general tendency for subjects to agree with themselves at the expense, perhaps, of agreeing with more worthwhile suggestions made by others. The problem here is essentially one of trying to minimize the influence of personal bias. It is likely that this is best achieved by emphasizing at the outset that at least in part the exercise entails a learning process, and that respondents should not attach any stigma to the fact that they may wish to change their opinions on certain issues during the course of participation.

As far as the use of the Delphi technique in policy development is concerned, it is recommended that it be used in conjunction with carefully prepared futures material with emphasis placed on having

respondents approach questions with an open mind. In particular, it is felt that no great value is attached to the usual procedure adopted with this method of reminding respondents of their previous responses and asking them to revise those responses in the light of group opinion. This essentially puts the respondent on the defensive and he may feel obliged to support his original stand. It seems likely that a more balanced judgment will be obtained if all respondents are encouraged to participate at the outset in a spirit of give and take. To achieve this end some thought could be given to introducing input from futures research at several points in the interaction (instead of only at the outset) in order to emphasize that where the future is concerned preconceived ideas may well be untenable. Moreover, respondents should be encouraged at all times to support their policy positions with reasons that present evidence rather than expound personal bias.

CONCLUDING REMARKS

The implications and recommendations discussed above draw attention once more to the basic context in which this study was set--namely, concern about the future. The concern referred to is not that which is simply associated with the unknowable quality of the future, but rather that which stems from the relatively recent phenomenon of increasing complexity of structures at a global as well as at local and national levels. This complexity results in part from growing quantitative pressures of people and their creations, and in part from the increasing interdependency of one set of factors with several other sets of factors. The end result is a widespread feeling of uncertainty about the possibility of a viable future, not only for an individual or

community, but also for the whole of mankind.

As a consequence of such uncertainty the realization has emerged among many groups and individuals in advanced societies that a greater need exists today than ever before for the expenditure of effort on anticipatory functions--in particular, on attempting to estimate the consequences of present policy decisions. A complementary realization concerns the immediate need to re-examine certain well-established values, especially the notions that never-ending growth is desirable and that progress is equated with increases in the gross national product.

Because of this basic orientation towards an uncertain and potentially undesirable future, the study was given an operational emphasis; that is, it was at least in part concerned with the exploration of means through which a complex democratic society may plan its future, rather than continuously adjust to unanticipated consequences of past and present actions. The fundamental involvement of the educational system in this larger planning process was recognized by associating the development of educational policy with factors which would have largely lain outside the frame of reference of earlier concepts of educational planning--factors such as ecological balance, human-oriented value systems, unrestrained economic growth, inequitable distribution of benefits, rapid change associated with technological accomplishments, the "shrinkage" of the world through the establishment of highly efficient communication systems, and compounding pressures on the global environment.

In addition to its operational emphasis, the study also manifested a pedagogical bias. It was concerned with examining the extent to which something was learned--the extent to which exposure to ideas about future

developments in the above areas could lead individuals to understand something about the future which would influence their deliberations on educational policy. The pedagogical aspect of the study was further reflected in suggestions put forward concerning the creation of opportunities through which more people--and particularly educators--might become involved in the process of systematically thinking about the future in a manner conducive to societal harmony rather than discord.

In conclusion, a reference to the view held by Arnold Toynbee (1972) after a lifetime devoted to historical research would seem appropriate. In conversation about the doubts and hopes and fears of the rising generation all over the world, Toynbee has pointed out that the task of surviving the future will be more difficult for the present generation of young people in schools and colleges than for any previous generation in recorded history. They are the first inheritors of man's new found ability to enhance or destroy his civilization. It was towards the former rather than the latter eventuality that the research reported here was directed.

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APPENDIX A

Appendix A-1: Futures Material Distributed to Groups II and III

Appendix A-2: Companion to Futures Material

APPENDIX A-1

THE FUTURE: ITS CHALLENGE TO TWENTIETH CENTURY MAN

by

Desmond E. Berghofer

A Review of
Key Works on Social and Educational
Futures

January, 1972

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INTRODUCTION

The future is not what it used to be. The world is riding on the back of a tiger who continuously carries all of us, old and young alike, into unfamiliar territory. The tiger is called Change, his source of energy is technology, and the terrain across which he roams is that marginal country between present and future.

We are just beginning to realize that the ride is rough. While the way ahead remains, as it always was, perpetually shrouded in mist, the speed of our tiger and the directions he takes make us day by day less sure of what to expect behind the mist and less certain that we can cope with it.

Faced with this basic uncertainty about what lies ahead, we are increasingly paying more attention to the future; not so much out of idle curiosity, but rather as a means to better manage human affairs. We are, in short, beginning to realize that under conditions of rapid change the future becomes a legitimate field of inquiry. The purpose of this paper is to discuss this emerging view of the future and to present some arguments of the significance of such a perspective for society in general and for education in particular.

THE FUTURE AS A FIELD OF INQUIRY[1]

The systematic study of the future has given rise in recent years to an activity variously known as futurism, futurology, or futures research. This area of inquiry has already assumed many of the attributes of a proto-discipline and the published literature in the field is now so extensive that no single person could follow it all. Its approach rests on certain basic assumptions about the future.

Some Basic Assumptions about the Future

In the first place, most people working in this field would emphasize that the future has no existence except in the human mind. It is a mental construct, or, as Ziegler (1971) would have it, "the future is a metaphor. It stands for something we cannot get our hands on." Moreover, following de Jouvenel (1967) they would assert that there is no single pre-determined future, but rather an array of possible futures any one of which is open to mankind.

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[1] In the compilation of the information contained in this section, the writer wishes to acknowledge his indebtedness to several sources: R. F. Bundy, personal communication; Bertrand de Jouvenel, The Art of Conjecture (New York: Basic Books, 1967); Robert U. Ayres, Technological Forecasting and Long-Range Planning (New York: McGraw Hill, 1969); and Erich Jantsch, Technological Forecasting in Perspective (Paris: OECD, 1967).

The above suggests that man by his conscious choices can affect how the future actually occurs. That is, the future is influenced by human choices in the present. There is, in effect, a causal and chronological connection between past, present, and future even though this connection cannot be perfectly known.

Forecasting and Long-Range Planning

The relationship of past to future leads man quite naturally to the activity of forecasting. Though strictly speaking we can have positive knowledge only of the past, we continually use such knowledge as raw material for making estimates of the future. This is an essential part of our daily life; so in this sense futures research, or the undertaking of conscious and systematic forecasting, is simply an attempt to effect improvements in a natural activity of the mind.

In primitive societies where the future is expected to be similar to past and present, forecasting is of less importance than in a society dominated by change. Under conditions of movement if we rely on present knowledge alone to guide us into the future, we are like a tourist planning a journey with a guidebook that is already out of date. We can be certain that we will make blunders with possible serious consequences.

The need to foresee consequences of present policy, the need to identify situations in which intervention through policy changes is imperative, and the need to see current problems in a longer range historical perspective, are perhaps the chief reasons why forecasting and long-range planning are most essential in our technologically advanced societies. How capably we respond to these needs will determine, in part, the future that eventuates.

Characteristics of Forecasts

Forecasting, then, is not only essential; it is inevitable. "We have to make wagers about the future: we have no choice in the matter." (de Jouvenel, 1967). However, for a forecast to be useful in making more explicit our choices in the present, it should not attempt to persuade merely on the basis of authority or prestige of the forecaster. A useful forecast should possess certain important characteristics:

(1) Plausibility. A forecast should be reasonable, that is, it should describe a state of affairs which could grow out of the present and be continuous with the present, and which could reasonably occur within the time frame specified in the forecast.

(2) Internal Consistency. A forecast should be coherent in all its parts, that is, no part of a forecast should contradict any other component.

(3) Realism. A forecast should be realistic; it should describe a state of affairs in which it is judged real people can live.

(4) Justifiability. A forecast should clearly reveal the basis on which it rests, that is, is should show what factors have been considered and how the interactions between factors have been weighed.

The above characteristics are the more important criteria on which a forecast can be judged. In a later section of the paper various forecasts will be presented which the reader may care to examine on the basis of these elements.

Classification of Forecasts

Before presenting specific assertions about the future, it may prove helpful to describe in brief two different ways in which forecasts have been classified according to the intentions of the forecaster.

In one classification forecasts may be considered as primary, secondary, or tertiary. A primary forecast is a statement about the future which the forecaster believes will result if present trends continue. Such forecasts often serve as a challenge to provoke action to be taken. A secondary forecast presents what the forecaster believes can be made to happen if there is an intervention in the future state of affairs described by the primary forecast. A tertiary forecast, on the other hand, describes what the forecaster believes will actually happen based on the expected decisions of those in power. Clearly the art/science of making secondary and tertiary forecasts is difficult, but such efforts can serve as powerful tools for making men consider their alternatives for the future.

A second classification describes forecasts as being intuitive, exploratory, or normative. Intuitive forecasts are those made on the basis of judgment, hunches, or guesswork in the absense of any explicit theory, model, or empirical base to support the forecast. They constitute, as it were, a quantum leap into some future time and their plausibility is difficult to ascertain.

Exploratory forecasts, on the other hand, usually rely less on intuition than on projecting into the future from some empirical or theoretical base. They deal with "what if" questions, such as, what if present trends continue, or what if a particular intervention is made.

In the third type of forecast, normative, the emphasis is on the achievement of some goal; so the tendency is to start with the desired end state and move backwards in time describing the steps that would be required to bring about the future state.

Strengths, limitations, dangers, and difficulties inherent in all three approaches to forecasting will be explicated in the next section of the paper.

ASSERTIONS ABOUT THE FUTURE

Having described in brief the basic assumptions underlying the study of the future and the kinds of forecasts stemming from them, it is now proposed to present some specific assertions about the future. We

begin by considering the ways in which the mind transforms knowledge and experience of the past into statements about what is to come.

Ways in Which the Mind Makes Assertions about the Future[2]

Prolongation of a Tendency. Perhaps the simplest view of the future is one which assumes that things will be the same tomorrow as they are to-day, or, that things will change tomorrow in the same direction and at the same rate as they have done in the past. Such simple extrapolation suffers from the obvious difficulty that a reversal or marked change in a tendency is not anticipated.

Analogy. A second approach to the future is through analogy, that is, perceiving two situations as being similar (for example, moral degeneration in America and in the latter period of the Roman Empire) and concluding that they should therefore evolve in the same way. The limitations of this approach arise from the fact that while two situations may resemble each other in causally significant ways, they will likely also differ in ways that are causally significant.

The Railway. A third way of viewing the future has been termed the railway approach. The basic assumption here is that a secular sequence of events in one country indicates a secular sequence of events in another country. Country A, for example, is viewed as being further along the railway track than Country B; therefore the latter can expect to experience the same sets of events (railway stations) as the former. The approach does not seem to have much foundation in reason but it can often be a hidden assumption in forecasts.

Correlation. The use of correlations is another common approach for making assertions about the future. Correlations point to relationships between variables, such that if A varies B can be expected to vary in a predictable way. It should be emphasized, however, that correlations do not prove that a direct causal relationship exists. If the true causal factors change or new causal factors are introduced, the forecast by correlation can cease to be a useful guide to a future course of events.

Simple Causality. In yet another approach to forecasting, a necessary connection is asserted between two phenomena. This can be described as simple causality, and in the social sphere is likely to be misleading unless the conditions under which the causal connection is expected to hold are carefully specified. The assertion, for example, that universal affluence necessarily leads to increasing degenerative behaviour would certainly warrant close examination.

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[2]Material in this section is based on ideas developed by R. F. Bundy, personal communication, and Bertrand de Jouvenel, The Art of Conjecture (New York: Basic Books, 1967).

A-Priorism. It is also possible to approach the future through a-priorism, that is, by beginning with some self-evident truth, bias, or belief on which one bases a forecast in a specific instance. The validity of forecasts based on this approach is independent of observation or support from factual studies. The forecaster believes a-priory, for example, that man will not engage in any activity which will bring about his own total destruction; therefore, there will be no World War III. The weakness of the approach is obvious, but a-priory forecasts can be useful in clarifying current choices.

Systems Forecasting. To conclude this section on ways in which the mind makes assertions about the future, a variety of forecasting approaches may be described under the general heading of systems forecasting. The basic approach here is to identify and understand the dynamics of a system as a way of forecasting the possible future states of a system. The method is related to simple causality, but it attempts to look at the system as a whole rather than at isolated components. One example of systems forecasting is the operations research approach in which a dynamic model of the system is built and then used for forecasting possible future states of the system. Other examples are found in the social, political, and historical theories of such writers as Marx, Aristotle, Sorokin, and Toynbee. Each develops a theory on the basis of certain reasoning, then uses that theory to make assertions about possible future states of society.

Some Specific Assertions about the Future

We turn now to a consideration of some specific assertions about the future. The works reviewed here make use of a variety of the approaches mentioned above on pages 3-5, but the technique most clearly in evidence is that of systems forecasting. We begin with an approach that relies on historical and cultural analysis.

Impoverished Images of the Future. Over ten years ago Fred Polak, a Dutch sociologist, published an exhaustive study of the history of images of the future throughout three thousand years of Western civilization. The central thesis of this voluminous work, entitled The Image of the Future (1961), is that positive images of the future which are conceived in the present have the effect of pulling society towards the future fulfillment of those images. At the same time, the projected future exercises its influence on the present through these images. In this way there is a continuous interaction which affects the construction of revised images of the future.

Now Polak's point is that the present generation in Western society (most notably European and American) has lost the capacity to think positively about the future. He argues that this emasculation is largely the result of the steady erosion of two crucial ways of thinking about the future, namely, through the writing of true Utopias and through a belief in a divine presence promising a future glorification. There are only two possible means for realizing a positive image of the future: human striving or divine intervention. There is no third alternative. But, according to Polak, modern thought considers the first to be illusion and the second a myth.

For Polak, modern man has changed from a God-fearing man to a time-fearing man. He is so preoccupied with the present that he is losing his sixth sense for The Other--the something beyond and better than the present, the positive image that has pulled man forward. "The real sickness of our civilization lies in the lack of belief in its future; in man's deliberate self-incapacitation and unwillingness to free himself from the bonds of the present and in his refusal to allow himself to think anew and systematically about a radically different and better future." (Polak, 1961, Vol. 2:361).

Ironically, but understandably, at a time when man has reached the very zenith of his power over the physical environment, he has suddenly realized his impotence. Moreover, he is literally deluged with conflicting reports and expectations. This predicament of modern man is admirably expressed by Kateb (1971:23), writing ten years later than Polak: "Things get better; things get worse; things get better as they get worse; things get worse because they get better. Everything gets publicized, and we are left dazed by the intolerable but absolutely bewitching flow of communications."

It should be emphasized that it is the imminent disapppearance of Western culture that Polak's analysis leads him to forecast. He argues that the vacuum left by disappearing positive images of the future in our own time cannot long remain. He sees the void being filled by "a new kind of image of the future flowing from Eastern Europe like white-hot lava over large parts of Asia and Africa, engulfing the minds of myriad masses of men." (Polak, 1961, Vol. 2:362).

A concern obviously large in Polak's mind is revealed in the above quotation. He nevertheless believes that Western civilization is not lost beyond the possibility of salvation. What is needed is a counter-movement to find the right answers to the almost overwhelming challenge which the future offers to our time, in the form of powerful, vital, and inspiring images of the future. The task is to reawaken the almost dormant awareness of the future and to find the best nourishment for a starving cultural awareness and creativity.

For a successful outcome to have any chance of occurring, Polak asserts that the above task must be undertaken informally and individually by all members of Western society. He particularly appeals to the intellectuals--whom he sees as the creative minority, irrespective of discipline or occupation--to cease belittling creative thinking about the future. He asserts that "the thinkers, leaders and creators of our age still have all the wealth of the uncensored past and the vast reservoir of the open future to draw upon in creating new visions, plus the opportunity to bring the great mass of the people into responsible partnership in fulfilling these visions. The same educational system and mass media which now threaten to deaden the mind of the average man can also be used to awaken it--if we know what we are doing." (Polak, 1961, Vol. 2:366).

Though Polak does not expand further on the utilization of the educational system for the generating of positive images of the future,

his reference to it is worthy of note. The opinions of other writers concerning the mesh between education and the future appear elsewhere in the paper. By way of concluding Polak's analysis, however, perhaps it is appropriate to mention that his suggestion of giving education a "futures orientation" was put forward even earlier by Margaret Mead (1957). Arguing for the necessity for more vivid Utopias, she went so far as to recommend the establishment in universities of chairs of the Future for those "who will devote themselves as faithfully to the fine detail of what man might very well--in the light of all our knowledge--be, as any classicist or medievalist devotes himself to the texts of Pindar and Horace or to the thought of St. Thomas Aquinas."

Dominance of the Mechanized World Picture. The underlying concern in Polak's analysis, as mentioned above, is his fear of the extinction of Western culture. This preoccupation, however, seems to have distracted him from giving due consideration to another possibility, namely, that Western culture is in a state of atrophy in our present day because it took a wrong turning in an earlier age. Concerning this point, we shall now turn to the work of Lewis Mumford.

For more than thirty-five years Mumford's writings have reflected his concern for what he calls the "miscarriages of megatechnics." His work to date has culminated in The Pentagon of Power published in 1970, in which he challenges the idea that the Power Complex evolved by itself through the action of external forces over which man had no control. Mumford's position is that the thinking of modern man--and particularly Western man--is dominated by a mechanical view of the world which has grown out of deliberate choices made at least as far back as the Middle Ages. It is this Mechanized World Picture, this viewing of man and his world as a complex of interacting machines rather than as living organisms, that has brought man in our present generation to a desperate situation.

According to Mumford, the first distinct turn in the path that led man to his present state occurred with Galileo, who devised the scientific method that denied importance to everything that can be labelled subjective. Descartes made a further significant contribution when he asserted that through "a practical method" men could become "the lords and possessors of nature." It was this spirit that "united the conquistador, the merchant adventurer and banker, the industrialist, and the scientist, radically different though their vocations and their purposes might seem." (Mumford, 1970:78).

With Francis Bacon science became wedded to technology, became, in fact, the agent of technology. Bacon asserted that the final goal of science was "the relief of man's estate" and he foresaw that science in the future would rest increasingly on collective organization. What he did not foresee was that a social system that could make a fuller use of machines might itself take on the characteristics of an increasingly automatic machine--would, in fact, become a society fit only for machines to live in. Mumford asserts that this is what has occurred in our own time.

Science and technology have become wedded to power and productivity. Progress is associated with concepts of more and further and man is forced

to consume and waste and devote his life to the continued operation of the megamachine. In return for this dedication he receives the benefits of material comforts (unevenly distributed) for which he is now paying costs in the form of a deteriorating physical and psychological environment. The perpetuation of the machine has to date been achieved through an educational system based on the mechanistic principles set forth by Comenius in the seventeenth century and first implemented on a large scale under an absolutist military regime in Prussia in the eighteenth century.

Mumford forecasts that the monolithic megamachine cannot long continue. He acknowledges that one trend is towards the complete control of man by the machine, but he believes that long before this could occur there would be planetary collapse, during which technicist thinking may be carried to its logical conclusion, namely, if man has the power to exterminate all life on earth, he will. The matching of the action to the thought is all the more likely the further machine-age man moves from the old world culture that nourished him and continually reminded him that he was human.

However, Mumford asserts that there is an alternative to both of the above depressing scenarios. "For its effective salvation mankind will need to undergo something like a spontaneous religious conversion: one that will replace the mechanical world picture with an organic world picture, and give to the human personality, as the highest known manifestation of life, the precedence it now gives to its machines and computers." (Mumford, 1970:413).

Mumford is essentially talking about a person-centred as opposed to a machine-centred society. In this kind of milieu the organic world picture that men would hold in their minds would acknowledge finiteness and limitation as necessary attributes of life. Its guiding principle would be qualitative richness and self-actualization. Its economy would be an economy of plenitude, which would be different from quantitative affluence in that it would provide for contraction as well as expansion and for continuity as well as change. Its slogan would be that of the New York subway guards in handling a crush of passengers: "What's your hurry? . . . Watch your step!"

Mumford is aware of the enormity of the change proposed in this new world picture. He is not unduly sanguine that it can be accomplished, but he sees elements of its manifestation in various protests and inane acts occurring around the world. He acknowledges that many of these protests unwittingly reinforce the system against which their perpetrators are rebelling but hopes that they might have cumulative value in awakening modern man sufficiently to his actual plight that he might take corrective action. Like Polak, he believes that the making of the future is an essential part of man's self-revelation, but unlike Polak he looks for the emergence of a new world culture rather than the mere saving of a Western culture.

The Emergence of Technological Man. Though Mumford's analysis is authoritative and well documented, he tends by emphasizing modern man's subservience to the megamachine to imply that there is more conformity in modern society than probably, in fact, exists. Men undoubtedly hold the mechanized world picture, but their responses to it are manifested in myriad forms of behaviour. It is this diversity and lack of a collective sense of guiding purpose that another writer in this field sees as one of the great dangers of the future. The analysis, discussed below, is the work of Victor Ferkiss (1969).

Ferkiss is not in disagreement with Mumford's basic position, but his approach is first of all to expose certain generally held opinions as myths. He claims that there are no such things as a mass society, a technical elite, or a world village. His essential argument is that diversity and lack of agreement are rampant in a world controlled essentially by bourgeois (economic-minded, growth-oriented) man who is now in possession of super technological powers.

What emerges as a pattern for the future is neoprimitive man trapped in a technological environment. The real danger is that "the new technology has not produced a new human type, provided with a technological world view adequate to give cultural meaning to the existential revolution. . . . Technological man does not yet exist. His job is to invent not the future but first of all himself." (Ferkiss, 1969:243-44).

Having diagnosed this deficiency in the present condition, Ferkiss asserts that what is needed is a new philosophy of society based on the future's needs. He then goes on to propose three essential elements in a new world view, not inconsistent with the more general outline described by Mumford.

The first basic element of the new philosophy is the new naturalism which would recognize man as being a part of nature--the highest part--and which would not view nature as "the rigid, mindless deterministic machine that earlier ages conceived it to be."

Closely related to the new naturalism is the new holism, that is, the realization of how interconnected everything is. This means that the image of the mechanical universe must give way to the idea of process which implies a recognition that no part is meaningful outside the whole. Mind-body-society-nature is the totality. In thinking about social questions we must think about the whole of society, not just isolated components.

The third element in the new philosophy is the new immanentism by which is understood that the whole is not determined from the outside--as the Judaic-Christian tradition has asserted--but from within. The creative principle of the universe is not an external but an internal one. Life exists within systems and systems create themselves.

Ferkiss asserts that it is essential for technological man to internalize the above principles and make them a part of his instinctive world view. From this perspective, "he can derive ethical norms that, channeled through reformed institutional structures, can become the basis

for policies that will make survival possible." The first of these norms is that man is a part of nature and therefore cannot be its conqueror--a view diametrically opposed to that put forth by Descartes and quoted on page 7 above. Other norms would recognize the desirability of slowing down social and cultural change, of channeling technological and economic innovation to serve the general rather than simply a private good, of limiting growth.

Like Mumford, Ferkiss realizes that his proposals constitute a sharp break with tradition and will meet strong resistance from entrenched habits and firmly held opposing views. However, he believes that the only alternative is certain future disaster. In accord with the philosophy he is proposing, he asserts that the change and restructuring must come from within and sees points of leverage everywhere. One of these points, he suggests, is the educational system; but he is by no means convinced that it is a particularly strong leverage point. "It may well be that only outside formal educational processes can the job be done: perhaps we should hope that McLuhan is right in his insistence that electronic media have already superseded the schools and are reorienting consciousness to the total environment." (Ferkiss, 1969:259).

The Great Transition. While Ferkiss's proposals rest much less on historical analysis than do those of Polak and Mumford, his work clearly supplements that of the others in its emphasis on philosophical and ideological concerns. A fourth analysis now discussed also examines the future through history and ideology, but in addition raises the more concrete issues of population pressures and the difficulty of establishing a stable high-level technology. The work is that of the economist, Kenneth Boulding (1964).

Boulding's thesis is that mankind has undergone two great transitions in its history. The first was from precivilized to civilized society which began to take place five to ten thousand years ago. The second transition is from civilized to post-civilized society, and the twentieth century marks the middle period of it. On the basis of present values post-civilized society can be conceived of as being either one of two polar conditions: tyrannical and corrupt or free and benign. In either case, Boulding believes that there is probably no way back because the growth of knowledge is one of the most irreversible forces known to mankind. At the same time, however, he asserts that there is no inevitability in making the transition as there are a number of traps lying along the way which could prevent it: the war trap, the population trap, and the entropy trap.

As far as the first of these is concerned, Boulding believes, like Mumford, that war has been an essential foundation of civilized society. But now, because of the very real possibility of nuclear or bacteriological extermination of the species, man is faced with the problem of getting rid of war. This, among other things, requires a learning process whereby values and behaviour will change towards long-sightedness and toward a value system which lays stress on the welfare of all mankind. At present "we believe too many things which are not true, we do not know things that are true, and we have values . . . which are inconsistent with the successful management of conflict or the process of human development."

(Boulding, 1964:102). Whether the learning process can become influential this side of disaster remains to be seen.

Concerning the population trap, Boulding's contention is that we have no alternative but to limit birth. Any moral principle which states otherwise is false morality because it denies the sheer fact of arithmetic. In total, though, Boulding tends to be pessimistic about this problem because of the accumulation of forces opposing what must be done.

The third great danger facing mankind in its struggle to achieve the transition to post-civilized society is what Boulding has called the entropy trap, that is, the possibility that civilization will disintegrate because of its inability to attain a stable, closed-cycle, high-level technology. On the whole Boulding seems more confident that man can avoid this trap, though interestingly and significantly enough, he omits from his deliberation any concern for a possible disruption of the ecological balance through the pressures of high-level technology. It is sobering to realize that this phenomenon which figures so strongly in present day forecasts of potential danger was ignored by a thoughtful analysis of only eight years ago.

At the conclusion of his analysis Boulding proposes a strategy for assisting the transition to come about. He recommends that informed people adopt an attitude of critical acceptance toward the idea of post-civilized society--not blind longing for it, nor grudging holding back from it, but critical acceptance mediated through dialogue aimed at modifying conflicting ideologies that impede the learning process. He suggests that there exists in the world an invisible college whose members have the vision of the nature of the transition, and the task is for those people in their varied walks of life to move--by what they think, say and discover--the thinking of vast numbers of the human race towards an understanding of the great transition and what it entails.

Alternative Futures. Two general characteristics are apparent in the four analyses discussed above. First, they all reveal some form of systems approach in that they attempt to pay attention to a combination of factors, and, second, their emphasis is fundamentally normative. In terms of the classifications described on page 3 of this paper, these writers have produced a combination of implicit primary and secondary forecasts. They tend to present a picture of what could happen if present trends continue (cultural disintegration, nuclear holocaust, environmental collapse), then suggest that a more attractive over-all future state of affairs is possible if certain changes, first in outlook and second in policy, are made. Above all they emphasize that the present generation, both as individuals and collectively, is in a position to take action to improve the prospects for succeeding generations.

Another major work in the field of futures research presents an approach that is both similar to and different from that revealed in the above analyses. This is the somewhat discursive The Year 2000 by Kahn and Wiener (1967), now regarded by some as a classic in its field.

The approach adopted by Kahn and Wiener is a form of systems forecasting in that it is built around what they have described as a

basic, long-term multifold trend toward increasingly sensate cultures, increasing worldwide industrialization, increasing tempo of change, and other trends related to these--including increasing capability for mass destruction. To explicate for purposes of policy analysis the implications of this long-term multifold trend, Kahn and Wiener and other staff members of the Hudson Institute have produced a vast mélange of mainly exploratory forecasts interspersed with comments expanding on the implications and alternatives for mankind.

Because the emphasis in this work is on primary forecasting, that is, pushing existing trends into the future along varying trajectories, the over-all flavour that comes through to the reader is one of determinism in the sense that there appears to be very little chance for mankind to get off the long-term trend. This position is re-inforced by the writers themselves when, in the closing pages of the book, they suggest that the Faust legend is a metaphor for a central predicament for modern man. Faust sold his soul to the devil in order to acquire knowledge, power, riches, and women--typical sensate goals. Has man made the same bargain, and will he, like Faust, stick with it, then finally try to repent when it is too late?

Faced with this question, Kahn and Wiener are, understandably, ambivalent. On the one hand they assert that some of the technological innovations and the levels of economic development that make the "nightmares" described by their forecasts possible "are almost surely not reversible by any means short of holocaust." (Kahn and Wiener, 1967:412, italics added). On the other hand, they state, "Yet if the cyle cannot be stopped, if the warring elements cannot be eliminated (as indeed they could not without the elimination of man), we can perhaps hope that they can be moderated." (Ibid.). It would appear that despite the many alternative futures delineated by their forecasts, the only true alternative that Kahn and Wiener are projecting is the choice between disaster and perpetually impending disaster.

Interestingly enough, their position in their last paragraph is not dissimilar in some respects from that presented in the analyses discussed previously in this paper. In their own words," what is necessary is an unflagging respect for the world as we find it and for dissent and diversity, even for ornery individual stubborness, in spite of the mounting impressiveness of the technological-rational structure bourgeois, sensate society is building." In conclusion, it can be said that the strength of Kahn and Wiener's analysis is that they have made explicit the problems that face the world in our time, but the deficiency of their work is that they have not suggested a philosophical base from which we can operate in order to deal with those problems. Moreover, they have given no adequate consideration to the fact that a marked change in outlook, such as suggested by Mumford and Ferkiss, could distinctly, even in our time, change the nature of the long-term trend.

Complexity, Turmoil, Scarcity. With Kahn and Wiener our review of futures literature moved in the direction of technological determinism. Still somewhat on the edge of that camp, we turn now to another writer who emphasizes that the foreseeable future will be characterized by complexity, turmoil, and scarcity. The writer is Donald Michael and the

work referred to is The Unprepared Society (1968).

Michael's general agrument is that the convergence of social and technological trends will lead to much more extensive use of long-range planning even though society is ill-prepared to do it. The need for planning stems from growing interdependence of societal elements which is further complicated by increasing quantitative pressures combined with ever-broadening diversity. The kind of planning he is talking about involves more than "simply drawing up a set of diagrams and recommendations for what a particular situation should be like five or twenty years from now . . . it also involves planning and vigorous participation in the development of the means for attaining the recommended ends." (Michael, 1968:68). His emphasis is on a participatory form of on-going planning which also takes cognizance of forecasts of alternative futures so that men may be led to act in the present in ways which make a preferred future more likely.

Despite his insistence on the need for this kind of planning, Michael is not overly optimistic that it can be accomplished. The main reason for doubt stems from the notion he has of scarcity. In an era that might otherwise give a superficial appearance of abundance, he asserts that two crucial requirements will be in desperately short supply: (1) people skilled in being human and in the ability to think systemically, and (2) time in which such people can act. Concerning the latter we can do very little apart from starting now and hoping that it is not already too late. Concerning the former, Michael believes that education has an important role to play.

His approach to the educational aspects of the problem grows out of his conviction that forces are already at work which have determined that "we will live in a period of tremendous turmoil." This means that we are faced with the question of what, if anything, can be done through the processes of education to provide a generation of leaders and citizens better able to cope with such a tumultuous world.

Michael's reaction is not to try to conjure up a set of recommendations to overcome "the ornately interlinked pattern of weaknesses in our educational system," but rather to deal with only one aspect of the situation: "an approach to educating a special cadre of intellectually and emotionally highly skilled people who thereby will possess necessary if not sufficient resources to apply more wisely what we know to the long-range planning of our society." (Michael, 1968:107). His point is that society will have to make a conscious choice between continuing to emphasize education "across the board" or, in addition, trying "to select out and bring together the teachers and students who can best grow together for the specific purpose of providing the core of skilled leadership and skilled citizens we must have tomorrow." (p. 123).

The kind of education he would have these students receive is the kind he feels they cannot get in to-day's public educational institutions with their personal and societal vested interests. He would have the students exposed to teachers who are not passive, neutral persons but rather who are in themselves impressive lessons in learning: persons who teach styles of life as much or more than the "facts" of life.

With regard to intellectual abilities he would have the students educated to have long-range perspectives, to think in terms of many variables, to think logically, to be familiar with the history of ideas and of comparative ethics. With regard to the feelings he would educate for "empathy, compassion, trust, nonexploitiveness, nonmanipulativeness, for self-growth and self-esteem, for tolerance of ambiguity, for acknowledgement of error, for patience, for suffering." (p. 109).

The elitism explicit in Michael's proposals is something he claims not to embrace willingly. Ideally he would give this kind of education to all, but he does not believe that the time or resources are available in the quantities required. He therefore urges that serious consideration be given to his proposal, such consideration to include exploring the possible consequences for the majority as well as for the "elite" of establishing such a system.

Future Shock. Michael's basic position can perhaps not unfairly be summed up as follows: a complex, tumultuous future awaits us; guidance and control are necessary, but we shall be short of both time and capable leaders; our best bet is to try to train the latter now in the hope that they can see us through the critical period ahead. We turn now to a writer who shares Michael's expectations for a tumultuous future, but who puts forth much broader proposals for action. The writer is Alvin Toffler and his major work is the "runaway best seller" entitled Future Shock (1971).

It is precisely because Toffler's book has received such a wide distribution--and is therefore, presumably, likely to exert some influence--that its central argument deserves close examination. He asserts at the outset that his book is about change, but unfortunately it is not easy to pin down his central argument--partly because of the way the book is organized, and partly, one suspects, because his argument, like the topic he is writing about, seems to keep moving.

Toffler does not state the thesis of his book until he is three-quarters of the way through. He begins by emphasizing that for three hundred years Western society has been caught up in "a firestorm of change." The rate of change has increased tremendously in our time and is reaching critical limits in the highly technological societies of the world--most obviously in America. These societies are, in fact, in the midst of a highly significant revolution from industrialism to super-industrialism. Toffler asserts that within these societies the convergence of three factors--transience, novelty, and diversity--sets the stage for what he calls a historic crisis of adaptation. So far, however, his thesis is not clearly stated.

The major proportion of the book is devoted to an exhaustive description of the elements which define the three major factors mentioned above. Concerning transience these elements include a throw-away mentality applied not only to things, but also to places and even to people. With respect to novelty, the problem of the future is not whether man can survive regimentation and standardization, but rather whether he can survive freedom--the freedom to manipulate his own biological structure; the freedom to replace real environments with simulated environments, to replace nonvicarious experience with vicarious experience; the freedom to

explore a variety of family structures. Finally, concerning diversity, future men are faced with the burden of overchoice--choosing among a surfeit of material goods, subcults, and life-styles.

The cumulative impression given by this penetrating diagnosis of technological society is that the future is already determined. In isolated places Toffler has stated that there is nothing inevitable about what he is saying, but such assertions pale into insignificance beside the vast array of evidence which seems to suggest otherwise. It is at this point that Toffler finally states his thesis clearly, namely, "that there are discoverable limits to the amount of change that the human organism can absorb, and that by endlessly accelerating change without first determining these limits, we may submit masses of men to demands they simply cannot tolerate. We run the high risk of throwing them into that peculiar state that I have called future shock." (Toffler, 1971:326).

For the remainder of the book Toffler asserts his belief that man can control his future and that his best course is "to hasten the controlled--selective--arrival of tomorrow's technologies." Though this would appear to be a refutation of the principle of determinism, Toffler continues to confuse the issue by starting out with an emphasis on man's need to adapt to what is coming. A significant part in this adaptive process, according to Toffler, should be played by education. He asserts that the prime objective of education "must be to increase the individual's 'cope-ability'--the speed and economy with which he can adapt to continual change." (p. 403, italics added).

Within this adaptive framework, Toffler makes many suggestions for radically altering the educational system. Like Michael he regards present education as a hopeless anachronism "cranking out industrial man;" but unlike Michael he offers guidelines for a universal overhaul. His principal suggestion is that a "Council of the Future" be created in every school and community: "teams of men and women devoted to probing the future in the interests of the present." This council movement would be democratic and must involve students. It would pursue three objectives--"to transform the organizational structure of our educational system, to revolutionize its curriculum, and to encourage a more future-focused orientation."

In the area of organization Toffler questions the validity of many current assumptions: Should education take place in schools? Should it be compulsory? Should extensive participation in community activities be excluded? What about life-long education? Can mentors be drawn from the adult population outside of schools? Should there be a rigid system of scheduling and grouping?

With respect to curriculum, he questions the current approach of organizing teaching around fixed disciplines--why not organize it around stages of the human life cycle? He suggests that a wide diversity of data be taught, but emphasizes the need for inculcating three basic skills: learning, relating to others and the world, and choosing. The last of these leads him to assert that education should not continue to shrug off value questions, but rather help the student define, explicate, and test his values whatever they are.

Above all, though, education should be future oriented; but when Toffler deals with this aspect he suddenly seems to be speaking about education more as a creative than an adaptive process. In fact, he appears to be echoing Polak as he advocates the propagation of dynamic images of the future and the making of speculation about the future respectable. He suggests that if schools offer courses in history, they should also offer courses in "Future"--courses in which the possibilities and probabilities of the future are systematically explored.

However, it is not until the last two chapters of his book that Toffler finally makes it clear that he believes a pathological universal state of future shock can be averted, not through adaptive mechanisms, but through policy and control mechanisms aimed at preventing the conditions which produce future shock from occurring in the first place. On this theme he speaks of the necessity to develop a science policy, to anticipate consequences of innovations, to create political machinery to control technology, to establish a technological ombudsman.

Finally, he advocates a strategy which he calls "social futurism." In this context he denounces present technocratic planning (where it exists at all) as being overly concerned with economic and national power. Suddenly, he is talking about a new ethos surrounding super-industrialism--an ethos in which other goals begin to gain parity with, and even supplant those of economic welfare. Some of these goals he identifies as self-fulfillment, social responsibility, aesthetic achievement. Suddenly, his position seems to be very close to that of Mumford, a writer he has previously singled out as being anti-technological and past-oriented.

He urges the need for "social indicators" (also proposed by Ferkiss); for special agencies to watch over the indicators of change in the quality of life, for a multiplicity of visions, dreams, and prophecies; for a rebirth of Utopian thinking (compare Polak)--even collaborative Utopianism; for the establishment of more centres to study the future. In the final instance he links futurism to the political process and suggests the convening in nations, cities, and neighbourhoods of "democratic constituent assemblies" charged with social stocktaking. Such "social future assemblies" would bring people back into political life and confront them directly with the profound ethical issues that the future raises.

Summing up, then, Toffler's final position seems to be much closer to that of Polak, Mumford, and Ferkiss than is suggested by a casual reading of his book. The important difference, however, is that while Toffler has suggested mechanisms for dealing with the future, he has not built these methods on a philosophical base. Whereas Mumford and Ferkiss make it clear that they see the necessity for a new way of looking at things, Toffler rests his case on a new way of doing things. One wonders if his proposed mechanisms, as admirable as they might appear, can in fact lead to any destination other than a state of future shock unless they are grounded in a philosophy that will alter the mental modes that are impelling man towards that undesirable future state.

A Crisis of Worldwide Proportions. It may be, however, that in placing his emphasis on the catchy notion of "future shock," Toffler has side-tracked the discussion of the future from the most powerful argument of all: that man because of past and present behaviour is on a collision course with ecological disaster. What awaits large masses (if not all) of mankind may not be the kind of future shock that Toffler has hypothesized, but rather the shock of having no future at all.

At the forefront of those who are presenting this line of argument--and backing it up with factual evidence--are members of the scientific community, most notably the biologists. A recent publication by two Canadian-based researchers, Brinkhurst and Chant (1971), puts the case very clearly. They point out that the biologist takes a very different view of man and the world from the traditional notion of men as "the lords and possessors of nature." From the biologist's perspective, man, despite his technological accomplishments and his demonstrated capacity to proliferate his species, has not escaped his ecology and must consider his environment and its living components as parts of a biological system wherein his own species--like it or not--is but a component.

From this biological view of reality the crisis of our time is that man is now so abundant and his demands on the world supply of non-living material and living things is so great that he can actually affect the global cycles upon which all life on this planet depends. In Brinkhurst's and Chant's words: "Life for any species is always a compromise between the need to use the environment and the need to preserve it unaltered for continued existence. We are already altering too much the atmosphere, the heat, the light, the finite resources, the fragile renewable resources. Our population is exploding. Our industrial sophistication is increasing. A fatal collision with our environment is inevitable if these trends continue." (Brinkhurst and Chant, 1971:57).

In speaking of approaches to deal with the situation, Brinkhurst and Chant point out that the greatest difficulty is "the sheer totality of the problem." They emphasize that what they are really talking about is "the need to adjust our whole way of life to accommodate an entirely new, global view of the earth that man inhabits." They suggest that, preoccupied with notions of growth and nurtured in a religion that grants us dominion over nature, we are totally lacking an Environmental Ethic. They further urge that the development of such an ethic should be the worldwide goal of our educational institutions if we are to survive. "The biblical promise has come true at last. Man has dominion over the earth, God grant that he may now learn to have dominion over himself."

Man: the Pest. The warnings of Brinkhurst and Chant are clear enough, but it should not be thought that concern for the environment is the prerogative of the biologist alone. Similar conclusions to the above, with only a slight alteration in emphasis, have been made recently by S. R. Eyre (1971), a British geographer, in his presidential address to the Geography Section of the British Association for the Advancement of Science.

Eyre's primary concern is that man is recklessly squandering his

non-renewable resources on the non-scientific belief that "technology is omniscient, and even if resources are used up, substitutes will eventually be found." He points out that there has been only a small amount of fundamental change in the resource basis of industry in the past quarter of a century. When one compares this with the enormous revolution that appears to be necessary over the next quarter, the tasks ahead seem [illegible] insuperable.

To emphasize the confounding ethical dilemma the world faces because of current attitudes and behaviour, Eyre points out that "concentrated pollution of the more insidious kind is being discharged into the marine ecological systems, at the present time, by a relatively small percentage of the world's rivers--primarily those of North America and Europe. If, in an effort to raise agricultural productivity the other peoples of the world begin to apply biocides to the land in anything like the same concentration, the effect could be very serious. If these also expand their industrial capacity and begin to emit industrial waste in materially greater quantities, then the results could be catastrophic." (Eyre, 1971:21).

Like Brinkhurst and Chant and other writers reviewed earlier, Eyre sees the need for "a revolution of unprecedented speed in attitudes and activities" to take place within the next generation. Two conditions are imperative: reduced consumption of primary mineral material and a cessation of population increase. He is frankly pessimistic about the chances of these happening fast enough to avoid catastrophe. Given the values extant in Western countries he doubts that these populations could be persuaded in the time available to accept the drastic reduction in material standard of living that would be necessary so that conservation policies of worldwide scope could be effected.

In conclusion, and seemingly in desperation, he calls for planning at the most fundamental level. "But any planning that ignores either of the two fundamentals in the equation--amounts of people and amounts of raw materials--must be baseless. Practitioners of superficial planning are wielding their bows in competition with Nero, and the developing conflagration promises to be a holocaust." (p. 27).

A World-Systems View of the Crisis. The key variables mentioned by Brinkhurst, Chant, and Eyre are population, natural resources, and pollution. These writers have demonstrated that the above variables are interacting to produce an impending world crisis. However, the hidden complexity of their interactions and the sheer inevitability of man-induced disaster unless changes are made, has been demonstrated most graphically not by a biologist or earth scientist, but by an exponent of the new profession of social dynamics, Jay Forrester (1971).

Forrester's approach is an excellent example of the operations research method of systems forecasting mentioned on page 5 of this paper. It consists essentially of building a model of the world viewed as a system. By a world system is meant man, his social systems, his technology, and the natural environment. To construct the model, Forrester chose five levels of world structure: the three mentioned above--population, natural resources, pollution--and two related ones--capital investment and fraction of capital devoted to agriculture. Each of these levels represents the principal variable in a major subsystem of world structure.

They interact in multiple ways.

Forrester focusses on population as the key determinant of the future. His point is that population growth cannot continue indefinitely in a finite world. Moreover, the consequences of exponential growth do not appear until quite suddenly. If, for example, population had been doubling as shown in Figure 1, then it would not be until the 600th year that it reached half of the crisis level. "Then suddenly in one more 50-year interval, in a mere instant of history, the upward-thrusting curve crosses the crisis level. In less than one lifetime, all traditions and expectations are shattered." This is the kind of situation which the world faces in our time.

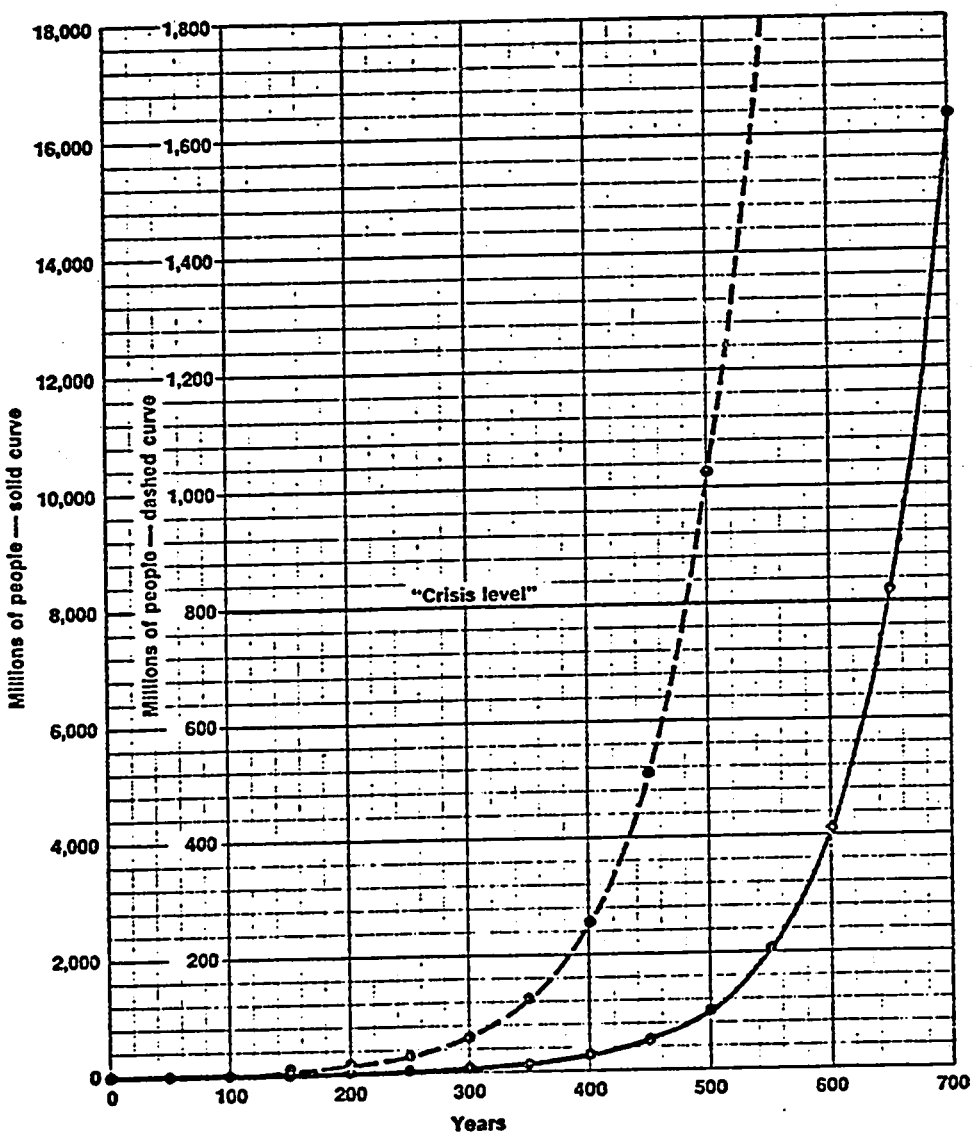

Figure 1

Population Growth with a Doubling Time of 50 Years

(Reproduced from Forrester, 1971:4)

The crisis level is determined by a number of factors. In Forrester's words: "It is certain that resource shortage, pollution, crowding, food failure, or some other equally powerful force will limit population and industrialization if persuasion and psychological factors do not. Exponential growth cannot continue forever. Our greatest immediate challenge is how we guide the transition from growth to equilibrium. There are many possible mechanisms of growth suppression. That some one or combination will occur is inevitable. Unless we come to understand and to choose, the social system by its internal processes will choose for us. The internal mechanisms for terminating exponential growth appear highly undesirable. Unless we understand and act soon, we may be overwhelmed by a social and economic system we have created but cannot control." (Forrester, 1971:8, italics added).

Having said that, Forrester shows one possible future predicted by his model which he programmed on a computer. This is illustrated in Figure 2. Here population and capital investment grow until natural resources decline far enough to inhibit expansion. As resources decline still further, the world is unable to sustain the peak population, which then declines along with capital investment. Quality of life--defined as being dependent on material standard of living, food supply, crowding, and pollution--falls because of the pressures created by the shortage of natural resources.

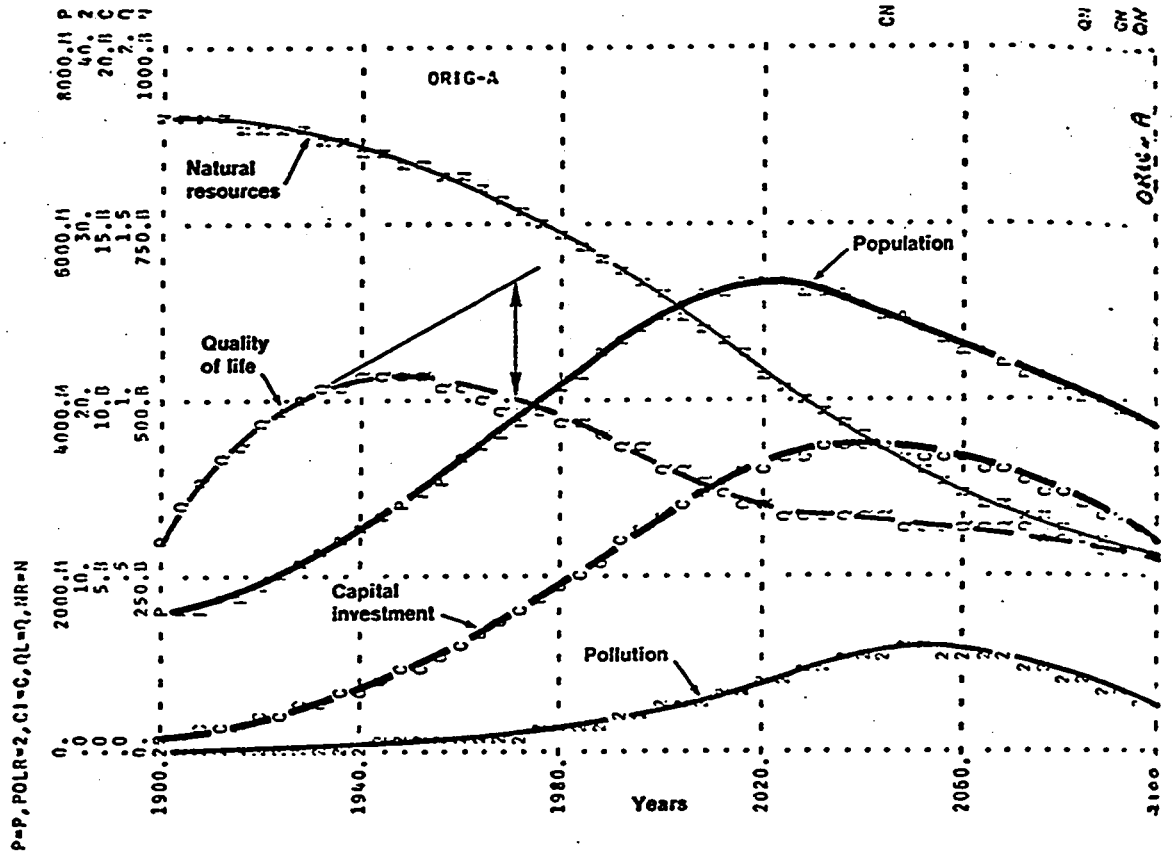

Figure 2

Population Decline Imposed by Depletion of Natural Resources

(Reproduced from Forrester, 1971:70)

But perhaps technology can find ways to sustain the standard of living without a rapid depletion of irreplacable resources. In that case, another future is possible. This is shown in Figure 3 in which the only change is that after 1970 resources are assumed to be expended at only 25 percent of the rate assumed in Figure 2.

"But the picture becomes even less attractive. If resources hold out, Figure 3 shows population and capital investment rising until a pollution crisis is created. Pollution then acts directly to reduce birth rate, increase death rate, and to depress food production. Population, which according to this simple model peaks at the year 2030, has fallen to one-sixth of its highest level within an interval of 20 years. Such a plunge would be a world-wide catastrophe. Should it occur, one can speculate on which sectors of the world population would suffer most. It is quite possible that the more industrialized countries, from which the pollution comes, would be the least able to survive such a disruption to environment and food supply. They might be the ones to take the brunt of the collapse. There is now developing a strong undercurrent of doubt about technology as the savior of mankind. There is a basis for such doubt. We see in Figure 3 how one technological success (reducing our dependence on natural resources) can merely save us from one fate only to make us the victims of something worse (a pollution catastrophe)." (p. 11)

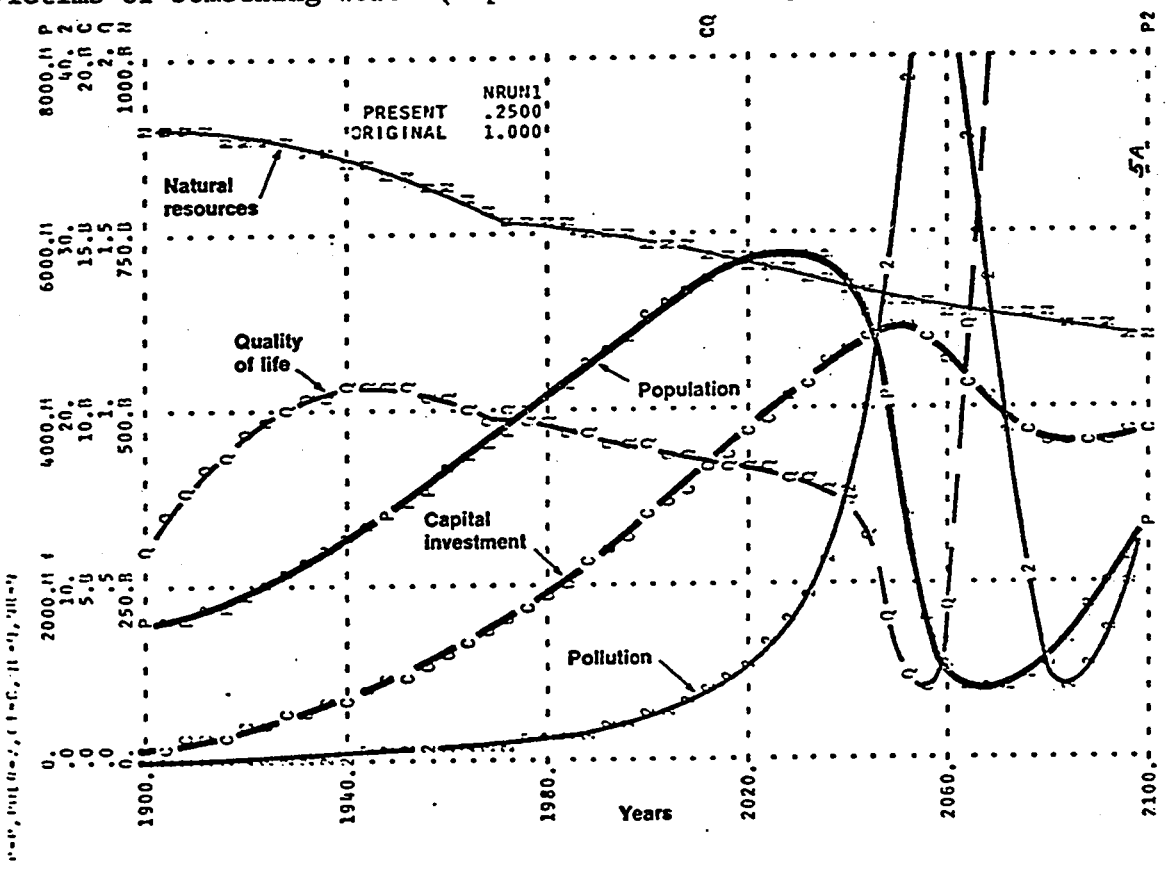

Figure 3

Reduced Usage Rate of Natural Resources Leads to a Pollution Crisis

(Reproduced from Forrester, 1971:75)

Forrester argues that the value of the modelling approach is that it "combines the greatest strength of the human mind, its ability to perceive the surrounding world, and eliminates the greatest weakness of the human mind, its inability to estimate the dynamic consequences of even a correct set of system assumptions." The human mind is used to dealing with simple systems; but the world is not a simple system, and human judgment is likely to be seriously at fault in anticipating the consequences of policy decisions in the world context.

He illustrates this fact by making run after run on the computer using various "conventional" approaches to restricting population growth. All fail, however, until he produces the combination shown in Figure 4 which contains the following changes (after 1970) from the original model shown in Figure 2: natural-resource-usage rate reduced 75 percent; pollution generation reduced 50 percent; capital-investment generation reduced 40 percent; food production reduced 20 percent; and birth rate reduced 30 percent. With these drastic and sudden changes implemented, the quality of life stabilizes at a value slightly higher than the 1970 value.

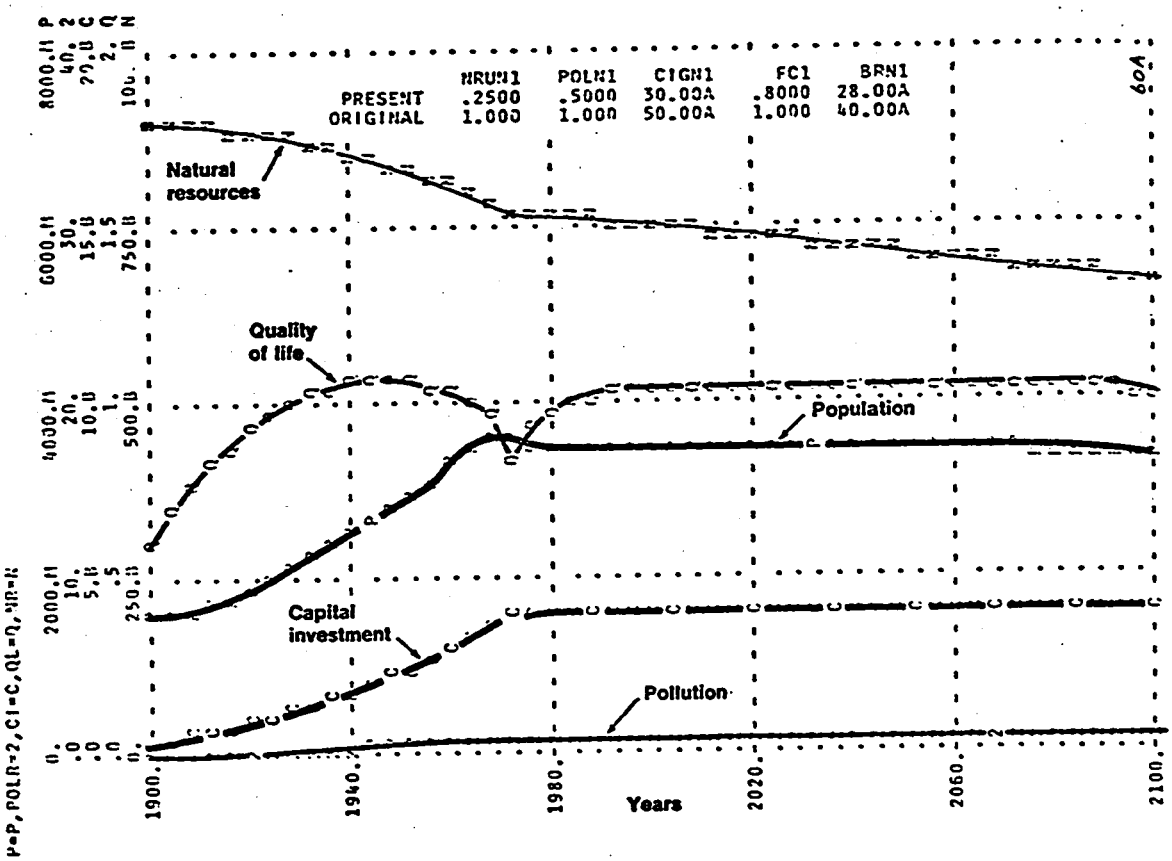

Figure 4

A Higher Quality of Life Resulting from Several Drastic Changes

(Reproduced from Forrester, 1971:120)

The point, however, is that the changes made mean an end to both population growth and a rising standard of living, and they suggest a reversal of the emphasis on economic development. Would such changes be acceptable? Moreover, as Forrester points out, "reduction of investment rate and reduction in agricultural productivity are counterintuitive and not likely to be accepted without extensive system studies and years of argument--perhaps more years than are available."

In conclusion, it should be stressed that Forrester makes no claims of infallibility for his model. He admits that it is a simplification of reality, but points out that it is much more comprehensive than the models we carry in our heads and on which we presently base decisions. He makes no final recommendations and expresses no opinion on whether mankind can take the steps necessary to avert disaster. He does suggest, however, that we need to invest resources in getting a better understanding of social systems and that armed with such understanding we somehow find ways to implement the policy necessary to give us better alternatives than those to which the "natural" socio-technical-economic-political system is now leading.

Saving Spaceship Earth. In the context of this review, Forrester's analysis appears as a clear, precise, mathematical statement confirming the essential arguments raised by most of the other writers discussed. In this sense it is a culmination of all that has gone before. But rather than leave the discussion of man's future on a note of somewhat cold systems analysis, perhaps it would be more fitting to give the last word to a biologist and political scientist who develop the theme that the earth is a spaceship in deep trouble which can be saved only by the co-operative actions of all of us on board. The writers are Paul Ehrlich and Richard Harriman and their book is entitled How to be a Survivor: A Plan to Save Spaceship Earth (1971).

Ehrlich and Harriman, though they make no reference to Forrester's work, come out forcefully in support of the directions suggested by his analysis. In particular, they unequivocally state that "over-developed countries" (ODC's) must be de-developed. Specifically included in this category are the United States, Canada, Australia, Japan, Western Europe, and the Soviet Union. On the other hand, under-developed countries (UDC's) while they must give up all aspirations for the kind of wasteful extravagance evident in the above ODC's, must be developed at least to the point where their peoples do not live perpetually on the edge of starvation and deprivation.

Perhaps the most useful notion put forward by Ehrlich and Harriman is that the world ecosystem in aggregate should be thought of as a gigantic commons. Up to and including the present we have been wilfully mistreating the commons. Now we must understand that such freedom brings ruin to all. Our only hope is mutual coercion, mutually agreed upon, and a first step in that direction would be the creation of a climate of opinion within nations which favours some relinguishment of sovereignity of national governments. In view of the present national and international situations the task looks almost hopeless, but such "an educational process is absolutely essential if men are to accept a truly functional international control system."

Like other writers reviewed above, Ehrlich and Harriman pin most of their hopes for change on the creation of a new breed of man. Ferkiss called him "Technological Man"; Ehrlich and Harriman call him the "Spaceman" who will co-operate with his fellows to guide the ship. The key to the new life styles would be a shift of emphasis from material to human values. Such new men would understand that competition and acquisitiveness are not genetically programmed human behaviour. Rather they are the outcome of a berserk econocentric culture based on a Judeo-Christian heritage.

In the new society education will be of great importance. Children will learn early that their well-being depends on that of other human beings and upon the well-being of the world's ecological systems. They will consider it their duty to spend some of their time serving their fellows and growing and maintaining their life-support systems. "They will also expect to continue their education throughout their lives so as to maximize the value both of their contribution to society and of their own existence." (Ehrlich and Harriman, 1971:132).

In conclusion, it should be stated that Ehrlich and Harriman are well aware that their vision is Utopian, but they make no apologies for that, pointing out that the choice is basically between new men or no men. What small hope they see for the future stems from the "utterly unprecedented generation gap which now separates many of our young people from most of their elders." While they by no means support the violent protest by youth (which only strengthens a violent government), they nevertheless assert that the most serious indictment of to-day's young people is that the majority of them may well turn out to resemble their parents. If that happens, then there would appear to be no chance of Spaceship Earth averting disaster.

WHERE DOES EDUCATION FIT IN?

Are we on a collision course with catastrophe? Has mankind, like the sorcerer's apprentice, set in motion an uncontrollable force which has given short-range benefit but promises long-range destruction? Is it impossible for an advanced technological society to persist indefinitely in a closed ecological system? How long can a diversity of societies ranging from primitive to post-industrialized exist side by side on the same planet before forces are unleashed which bring about planetary collapse?

Such questions lie at the heart of the analyses reviewed above. The questions were there at the beginning, and they still remain at the end--unanswered. Such is the reward of those who would probe the future.

This basic uncertainty which attends all efforts to investigate the future is perhaps sufficient explanation for why planners have traditionally refrained from venturing more than a few years ahead. The near future was all that they felt competent to handle; the more distant future would have to take care of itself. What the analyses reviewed in this paper illustrate, however, is the high probability that the way in which the long-range future takes care of itself will be through a

cataclysm occurring within the lifetimes of the present generation. Whether that cataclysm will be sudden and violent, or whether it takes the form of a slow turn towards some version of "brave new world," or towards the premature extinction of the species--whichever form it takes the analyses have exposed it as a factor which can no longer be omitted from the decision-making models of men of power. How that factor gets manipulated in the models of countless administrators throughout the world will, in the absence of some non-human intervention, determine the outcome.

The value, then, of the above analytic studies of the future is that they sketch in a background against which decisions can be made. Though the background is blurred and gaping with holes, it is at least there. The task of further analysis will be to try to fill in the gaps--in particular to try to understand the implications of proposed changes for three key areas of human activity: economics, education, and politics. None of the above studies has dealt adequately with this aspect. Toffler, perhaps, came closest, but his analysis was seriously weakened because his technological bias led him to side-step the ecological question.

But while further analysis is being carried out human affairs will not stand still. Policy decisions are being made continuously. Such decisions, it can reasonably be argued, ought to take into account as much of the relevant field as possible, particularly if they appear to have extensive implications. For this reason, in the remainder of the paper a shift in emphasis is made from social futures to the second area of interest as stated at the outset--educational futures. In doing so, the intent will not be to treat the subject exhaustively, but rather to gather several somewhat loose threads of material together and try to relate them to the preceding studies.

Since most of the writers already discussed make reference to education in their general analyses, we shall begin by reviewing what has gone before.

Review of Previous References to Education

The idea of orienting established educational systems towards the future was proposed by Polak, Mead, and Toffler. Both Polak and Toffler see schools involving students in the process of projecting positive, dynamic images of the future--encouraging Utopian thinking. Mead feels that universities should be concerned as much with what man might be as they are with what man has been.

Both Toffler and Mumford have drawn attention to the mechanistic structure of existing educational systems. Mumford points out that the model for educational systems generally found throughout the Western world was conceived by technicist thinking and first implemented on a large scale under an absolutist military regime in Prussia in the eighteenth century. Toffler refers to this system as an anachronism cranking out industrial man. For this reason he questions the validity to post-industrial society of such organizational factors as compulsory education, isolation from the community, emphasis on youth, exclusive rights of teachers to teach, rigid systems of scheduling and grouping. In the area

of curriculum he suggests that organizing material in rigid disciplines is another example of antiquated industrialized thinking. On the subject of values he believes that the school should help the student to define, explicate, and test his values whatever they are. To focus schools on the future he suggests the establishment of a Council of the Future in each school.

On the question of whether formal educational structures can be a powerful force in creating a new world picture, varying opinions are expressed. Ferkiss doubts that much can be accomplished within the formal system and places more hope on electronic media. Michael sees personal and societal vested interests as being too heavy a burden on public education systems to enable them to become responsive soon enough to make a difference. For that reason he proposes some form of elitist arrangement so that those who do have an idea of what is at stake can begin to prepare the leaders of tomorrow.

Brinkhurst and Chant urge that the development of an Environmental Ethic be made the worldwide goal of educational institutions, but they do not suggest ways in which this might be achieved. Finally, Ehrlich and Harriman, though they have little to say about how educational systems might be a force in bringing in the changes they feel are necessary, nevertheless assert that formal education will play an important part in developing outlooks necessary to maintain a steady-state world system which emphasizes human as opposed to economic values.

Specific Educational Factors

The above references suggest possible directions that education might take or move away from in the future. In order to get a broader perspective of what is involved, we turn now to some current thinking on education's place in the over-all scheme of things.

The Education Complex. Research recently undertaken at the Educational Policy Research Center at Syracuse has adopted a systems approach to viewing education. This approach, summarized by Ziegler (1970:16-21), emphasizes that the domain of education in an advanced technological and democratic society includes much more than the traditional system of schools and colleges. The education complex is comprised not only of these so-called "core" institutions but has come to include as well a wide variety of "peripheral" activities--for example, vocational training programs set up by industry, educational television, various forms of adult and child education operated by different groups. Even further out on the periphery are such informal sources of education as the national media, local cultural facilities, and opportunities for travel.

The essential point of all this as far as policy is concerned is that no one person or office speaks unilaterally for education. Any policy formulated at whatever level or subunit of the system must take into account that education at that level is not being conducted in isolation. A multitude of other influences are at work which essentially modify what is done elsewhere. We must realize that when we speak of the

educational process we are no longer talking exclusively about what goes on in schools and colleges. If our thinking is guided by outmoded concepts, policies so developed will have little relevance to reality.

Education As a Life-Long Process. Abandoning the notion that the formal schooling system is the major depository of education and learning, necessitates re-thinking views on whether education can be conceived of as largely a terminal activity concentrated in the early portion of one's life, or whether it is a life-long process. Confronting this question means challenging the validity of diplomas and degrees offered by core institutions as adequate indicators of talent and ability.

One view on this rather fundamental question has been put bluntly by Drucker (1969): "There is no reason to believe that the diploma certifies too much more than that the holder has sat a long time." The point that Drucker is getting at is that by paying homage to the credential and by insisting that the credential can be obtained only by those who stay on in school and through college, we are denying opportunity to those who choose not to stay on--even though we know that many of them are individuals of superior ability and capacity to achieve.

An even more penetrating analysis of what we are in fact doing when we couple access to opportunity with years of sequential education has been provided by Green (1971). Discussing the emerging problem, of the increasing need for people to stay in school longer, Green points out that if everyone were to stay in school until, for example, grade twelve, then the advantage for any individual to stay in school until grade twelve would be zero. Moreover, since no society in the world has been able to expand its educational enterprise to include participation of the lower class in proportion to their numbers until the system is first saturated by the upper and middle classes, this means that as the group of last entry approaches their target, the target will move.

In the United States and Canada we are reaching the point where growth at the top can occur only in the post-secondary sector. But uncritical adoption of growth policies for post-secondary education means that we will merely defer the point at which further upward growth is again triggered. At what point do we call a halt before the whole structure collapses? How much of a person's life should be spent in schools--half? one-third? three-quarters? "There is a limit at some point, a limit to what it is educationally valuable to do."

Green suggests that the only way of coming to grips with the problem is not to ask how do we extend the system, but rather to ask how do we alter the structure of the system and therefore change its pattern of growth. He suggests that the sensitive points to attack are the assumptions that the system should be sequential and that it should be selective beyond grade twelve.

Accordingly, he proposes policy "that provides for each individual a litigous claim to fifteen years of education at public expense. But this intention should be framed with no assumption that those years will be spent consecutively in formal schools, nor should there be any but the most general restrictions at the upper levels as to what the content

should be or whether it occurs in core or peripheral institutions. . . . Such a direction of change should be accompanied by lowering the school leaving age to fourteen, and subsequently with the removal of compulsory education laws from grade one progressively up." One consequence of such measures would be that the attainment of education would tend to be distributed over shorter spans of time in the entire life cycle of an individual, which would facilitate the human demand to be able to change direction in the course of a single life.

Student Disaffection. Green has confronted the problem of exponential growth of an unwieldy structure. His argument is supported indirectly by yet another indication of internal stress in the present monolithic organization of formal education. This is the comparatively recent phenomenon of articulated student protest. In discussing this factor, Tussing (1971) has drawn attention to the danger of regarding the disaffected as being one group, with a common set of attitudes and causes.

On the contrary, Tussing distinguishes between three distinct groups of students: (1) those who use the schools successfully to "make it" in life--the makers; (2) those who fail to use the schools successfully, even though they would wish to do so--the non-makers; and (3) those who reject the traditional purposes of the school as a means for "making it" in life--the post-makers.

Tussing's point is that policy directed at one group will not work for the other groups. The post-makers in particular pose a perplexing problem for traditional educational approaches because this group comes from affluent family backgrounds and takes material well-being for granted. For them the quest for economic security has ceased to be a central task of life and they wish to use the schools for other purposes. The indications are that this trend is as prominent in Canada as it is in the United States (see, for example, It's Your Turn . . ., 1971), and, moreover, that it is likely to increase.

Speculating about what such a development might mean for education--particularly when the post-makers themselves become educators--is hazardous, but it does seem evident that rigid, inflexible structures will not suffice and that "take it or leave it" attitudes on the part of teachers and administrators will only intensify the problem.

The Interface of Education with Economic Growth and Technology. However, the difficulty posed to educational policy by the existence of the post-maker group is really symptomatic of a much more complex problem--that of economic growth. The post-maker group presumably could not exist in its present proportions if it were not for the affluence which has come as a result of economic growth which in itself is an outcome of increased productivity deriving largely from improved technology. Undoubtedly better technology stems to a large extent from the present massive commitment to specialized education. Though it should not be assumed that simple cause and effect relationships exist between these factors, there is no doubt that the linkages suggested above do exist.

It is precisely at this point--at the interface between education,

economic growth, and technology--that policy questions become most clouded. None of the writers reviewed in this paper has been able to deal holistically with this relationship. Most have either stated or implied that current reliance on technology and economic growth are triggering forces likely to precipitate disaster. However, none of them has carried out a detailed examination of education's participation in this process.

In fact, only Toffler attempted to deal with education at all in any detail. However, his position--and he is supported by Drucker in this--is that we need more technology, not less. But both writers omit from their analyses any adequate consideration of the key problems of diminishing resources, rising worldwide population, and ecological pressures. In short, they retreat to what Eyre (1971) has scathingly referred to as a belief in the omnipotence of technology. Therefore, the kind of educational structures they are proposing, and the kind that Green and Tussing are hinting at, are essentially grounded in the notion that we are moving from an industrialized to a post-industrialized society. Their analyses do not confront the possibility that super-industrialization may not be viable. They are all omitting from their deliberations the kind of systemic thinking illustrated in Forrester's approach. In other words, they are not taking a world view--a mistake which, if Forrester is right, must inevitably lead to precipitating undesirable internal mechanisms for restricting growth.

It would seem, in fact, that whether it is implicit or explicit, an assumption of continuing economic growth and ever-improving technology underlies most thinking about education for the future. Moreover, nowhere is that kind of thinking more evident than in the province of Alberta, which, in a further stroke of irony, also ties economic growth to the exportation of non-renewable resources. The precarious nature of this arrangement is clearly implied in two sentences from Seastone's (1971) Economic and Demographic Futures in Education: Alberta 1970-2005: "In the matter of provincial funding of post-secondary education, one of the crucial determinants of public revenues will be the level of these sales and royalty receipts from mineral industries, particularly petroleum and natural gas. Should anything happen to lower or even to stabilize the level of provincial receipts from this source, the financial structure of the province would have to be entirely revised." (p. 122).

The dilemma, then, of educational policy is quite evident. We apparently need a massive structure of formal education to maintain economic growth to produce the technology to carry us into post-industrialism. However, there is a clear possibility that the kind of specialized education required to produce the technology will preclude the kind of holistic, long-range, imaginative thinking demanded by the complexity we are producing. As a result, we may fail--through the very efforts of our educational enterprise--to make the transition, and instead succeed only in precipitating some form of planetary collapse.

Deschooling Society. A good example of the difficulty educational reformers get into when they attempt to confront these issues is revealed in the recent penetrating analysis by Ivan Illich (1971), Deschooling Society. Illich attacks his subject with the kind of bold imagination which appears to be necessary if one is not to be intimidated by standing

too close to the problem. However, his analysis eventually turns out to be weakest at precisely the point on which his whole argument rests, namely, that we can have both a radically different form of education and a super-technology which does not ultimately consume the earth.

Illich bypasses current approaches to educational reform by refusing to accept the assumption that education has to be institutionalized. He critizes reformers who merely seek to optimize an existing framework which they never question--a framework which has the syntactic structure of a funnel for teaching packages. The teaching packages are the obligatory curriculum imposed on students who are forced to swallow them as they shoot out the end of the funnel. The whole process, according to Illich, assumes that learning is passive and that it must be programmed from above.

He defines the present concept of school as "the age-specific, teacher-related process requiring full-time attendance at an obligatory curriculum." One of its results has been the mass production of childhood, which Illich regards as being entirely artificial and feasible only in the contrived mechanistic milieu of industrial society.

Moreover, there is a hidden curriculum of schooling which is even more insidious than the packaged, child-oriented aspects--simply because it is not immediately obvious. This hidden curriculum, according to Illich, is the ceremonial of schooling which serves as a ritual of initiation into a growth-oriented consumer society. The principal task of institutionalized education is the engineering of consumers; its prop of support is the myth of unending consumption--the existence of schools produces the demand for schooling; it gives almost unlimited opportunity for legitimated waste; it is the planned process which tools man for a planned world; it is the principal tool to trap man in man's trap.

Such a sweeping condemnation of institutionalized schooling leads Illich to propose a radical alternative. He would replace the syntactic structure of the funnel for teaching packages with a network or web for the autonomous assembly of resources under the personal control of each learner. This proposed alternative is based on a conceptualization of institutions as lying along a continuum from convivial at one end to manipulative at the other. Schools--instead of being true public utilities at the convivial end of the spectrum as, for example, are telephone link-ups--are false public utilities and are located at the manipulative end. Moreover, they are the most insidious of the false utilities because they create a demand for the entire set of modern institutions which crowd the manipulative end.

In developing his proposal for creating learning or opportunity webs, Illich asserts that a good educational system should have three purposes--purposes which sound rather different from traditional statements of the goals of educational institutions. They are, (1) to "provide all who want to learn with access to available resources at any time in their lives;" (2) to "empower all who want to share what they know to find those who want to learn it from them;" and (3) to "furnish all who want to present an issue to the public with the opportunity to make their challenge known." (p. 75). His point is that the planning of

an educational system should not start with the question, "What should someone learn?" but with the question, "What kinds of things and people might learners want to be in contact with in order to learn?"

Accordingly, he proposes four different approaches to enable the student to gain access to any educational resource which may help him to define and achieve his own goals. The approaches are: (1) Reference services to educational objects, such as libraries, laboratories, museums, theatres, factories, airports, farms, et cetera; (2) skill exchanges whereby those who have a skill impart it to others according to mutually agreed upon terms; (3) peer-matching achieved through a communication network which permits persons to describe the learning activity in which they wish to engage, in the hope of finding a partner for the inquiry; (4) reference services to educators at large, who would be listed in a directory.

To facilitate the above arrangements, Illich suggests that "students could be furnished with educational vouchers which entitle them to ten hours yearly private consultation with the teacher of their choice--and for the rest of their learning, depend on the library, the peer-matching network, and apprenticeships." He sees peer-matching as the beginning of breaking down the dependence of citizens on bureaucratic civic structures, not only in education but in other fields as well. As the schoolmaster vanishes, the independent educator would emerge to guide parents and other "natural educators," to give individual assistance, and to operate the networks. This could be the beginning of a return to the individual of greater control over his life. The whole approach is essentially based on the notion of a move from passive collective consumerism to active individual autonomy.

Will it work? Is it possible to build and maintain a complex technological society by giving so much liberty to the individual? The question is not adequately discussed by Illich. It is evident from his references to computer-assisted networks that he is assuming the existence of high-level technology. From this he makes the leap of faith that that technology can be applied to institutional life to reverse the trend he sees towards rampant manipulation of humanity. He does not address the issue of the need for a high degree of expensive specialized education that appears to be necessary to produce the technology he would use to enable the learner to choose what he wishes to learn.

Basically, Illich is driving at the same point raised by Mumford and others--the need to break the megamachine which is poisoning nature, making society inhumane, invading the inner life, and smothering personal vocation. Illich's unique contribution to the debate is that he sees the deschooling of society as being at the root of any movement for human liberation. His ambivalence at the end of his argument is the ambivalence of all who in the last third of the twentieth century would seek to hold on to the benefits of the technological way of life and at the same time avoid the costs.

Illich sees modern man as caught up in the Promethean ethos. He has stolen fire and defied the gods; now he attempts to create the world in his image, to build a totally man-made environment. However, he is

finding it necessary to remodel himself in order to fit the world he is making. "We now must face the fact that man himself is at stake." We must remember that Prometheus who stole fire and taught men to forge, ended up in chains.

Illich's answer to this challenge is to seek the emergence of a new man (compare Mumford, Ferkiss, Ehrlich and Harriman). He calls him Epimethean man, after Epimetheus, the brother of Prometheus. This new man would value hope (trusting faith in the goodness of nature) above expectations (reliance on planning). He would love people more than products; would love the earth on which he can meet the other; would collaborate in lighting the fire and shaping the iron, but would do so in order to wait upon the other.

At that point Illich rests his argument. In the end his position is that Epimethean man and super-technology are not mutually exclusive. The assumption is open to question. However, in order for it to be tested mankind would be forced to embark on an adventure which would take it in a markedly different direction from where man has been going at least for the past several hundred years. If he does move in this direction, he will essentially be seeking an answer to the question of whether it is possible to have both a technological and a human society. The point for the present generation to decide is whether that question is worth exploring. If it is, then the move will have to be made soon before the option to do so is removed forever by forces already in motion.

SUMMARY AND CONCLUSION

Whatever path we decide to follow into the future, it seems that we can be sure of two things. One is that it will be hazardous, and the other is that we will be increasingly conscious of not walking it alone; for better or for worse, the great diverse mass of world humanity is destined to become more and more aware that the activities of one group in one place can have extensive impact upon the activities of all groups everywhere. This growing interdependence of human affairs as it pertains to alternative futures has been at the heart of the material reviewed in this paper.

Essentially, the intent of the paper was to do three things: (1) to present the case that the future, though unknowable, is determined essentially by the decisions men make in the present; (2) to review, and to some degree integrate, certain key works that have emerged during the past decade of re-awakened interest in the future; (3) to relate these analyses to the phenomenon we call education in order to show that what happens in this field has a dynamic relationship with other activities, all of which are interacting to shape the future of mankind.

By deliberately de-emphasizing traditional concerns of educational planners (such as numbers of students and numbers of teachers) in place of a focus on fundamental problems of human survival, the intent has been to gain as wide a perspective as possible against which to view questions of educational policy development.

If we understand that mankind as a whole is experiencing what Platt (1969) has called "a crisis of crises" (persistent threat of nuclear holocaust, exploding global population, worldwide pressures on the physical environment, growing gap between rich and poor), and if we view education as both contributing to and being affected by these simultaneously occurring crises, then we at least have a clearer understanding of what is at stake when educational policy is developed and implemented. When we add to this the realization that education has ceased to be the almost exclusive domain of the isolated teacher in the isolated classrrom, then we may, like Green and Illich, be increasingly inclined to ask not how do we extend or adapt the system, but rather how do we alter the structure of the system.

The basic educational question that the material presented in this paper leads us to ask is: to what extent can education move from a primarily adaptive to a primarily inventive mode? Several of the writers specifically urge that education become future oriented, that it involve its clients in activities which stimulate them to think about the future in positive ways. They imply that education can become involved in inventing a future which would be different from the apparently undesirable possibilities that their analyses lead them to foresee.

In essence, what they are suggesting is that the future be used as a lens through which we examine our acts. Further, they advocate that the public educational system be one of the means--perhaps the most important of the means--through which this process of examination takes place. Such a concept of education would presumably involve changes in present policies which determine the way education is conducted in our society. What those policy changes might be--if they are to be made at all--would appear to be worthy of serious consideration given the high stakes now involved in the way human affairs are conducted.

In conclusion, it would seem appropriate to re-emphasize one salient point. Running through the works reviewed in this paper has been the theme that a potentiality currently exists for a shift away from a vision of reality that has dominated the thinking of Western man for several centuries. That education will be inextricably involved in the cut and thrust of conflicting positions revolving around this issue is certain. What the outcome will be is by no means certain. If the shift does not go in the direction that the Mumford's, Ferkiss's, Ehrlich's, and Illich's prefer, then it will presumably be because their arguments found insufficient support among the mass of humanity.

However, if a change in the vision of reality does, in fact, take place, then--in the words of Willis Harman (1971)--"It is all of us who [will] need to educate ourselves . . . to the awareness that . . . the strains on the social structure will be such as to demand, for successful passage [of the new vision] , unusual understanding and dedication."

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APPENDIX A-2

Name: _____

COMPANION TO

The Future: Its Challenge to Twentieth Century Man

THE FUTURE AS A FIELD OF INQUIRY

Some Basic Assumptions about the Future

Ziegler's position:

de Jouvenel's position:

Forecasting and Long-Range Planning

Three reasons why forecasting and long-range planning are necessary:

(1)

(2)

(3)

Characteristics of Forecasts

Four characteristics of forecasts:

(1)

(2)

(3)

(4)

Classification of Forecasts

One classification:

(1)

(2)

(3)

Another classification:

(1)

(2)

(3)

ASSERTIONS ABOUT THE FUTURE

Ways in Which the Mind Makes Assertions about the Future

(1)

(2)

(3)

(4)

(5)

(6)

(7)

Some Specific Assertions about the Future

Polak's argument:

Mumford's argument:

Ferkiss's argument:

Boulding's argument:

Kahn and Wiener's argument:

Michael's argument:

Toffler's argument:

Brinkhurst and Chant's argument:

Eyre's argument:

Forrester's argument:

Ehrlich and Harriman's argument:

WHERE DOES EDUCATION FIT IN

Review of Previous References to Education

Polak:

Mead:

Toffler:

Mumford:

Ferkiss:

Michael:

Brinkhurst and Chant:

Specific Educational Factors

The Education Complex:

Green's argument:

Tussing's argument:

The Interface of Education with Economic Growth and Technology:

Illich's argument:

APPENDIX B

Appendix B-1: Identification Data Sheet

Appendix B-2: Futures Familiarity Questionnaire

Appendix B-3: Interpersonal Topical Inventory

Appendix B-4: General Opinion Questionnaire (Short-Form Dogmatism Scale)

Appendix B-5: General Impression Survey (Semantic Differential Attitude Test)

APPENDIX B-1

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

EDUCATIONAL POLICY DEVELOPMENT STUDY

Attached are four questionnaires which constitute the first stage of the Educational Policy Development Study.

Information obtained from this stage is essential to later phases of the study.

All responses will be regarded as confidential.

Your co-operation in carefully completing all items on each questionnaire is sincerely appreciated.

D. E. BERGHOFER

APPENDIX B-2

FUTURES FAMILIARITY QUESTIONNAIRE

In this questionnaire you are asked to indicate your familiarity with concepts and materials associated with futures research. Please examine each item carefully, then indicate your familiarity with it by circling the appropriate response, according to the following guidelines:

Very Familiar (VF): I have a thorough working knowledge of this concept; or, with respect to a book or article, I have read this material carefully and have a thorough grasp of the arguments and supporting evidence.

Familiar (F): I have some familiarity with this concept but cannot claim to have a thorough working knowledge of it; or, with respect to a book or article, I have read this material but cannot claim to be very familiar with it.

Unfamiliar (U): I have heard of this concept but I am by no means sure of its precise meaning; or, with respect to a book or article, the title sounds familiar but I cannot claim to be familiar with the contents.

Totally Unacquainted (TU): I have never heard of this concept or book or article.

SECTION I

Please indicate your familiarity with the following concepts by circling the appropriate response.

1.	Futures Research	VF	F	U	TU
2.	Futurism	VF	F	U	TU
3.	Futurology	VF	F	U	TU
4.	Alternative Futures	VF	F	U	TU
5.	Primary Forecast	VF	F	U	TU
6.	Secondary Forecast	VF	F	U	TU
7.	Tertiary Forecast	VF	F	U	TU
8.	Intuitive Forecast	VF	F	U	TU
9.	Exploratory Forecast	VF	F	U	TU
10.	Normative Forecast	VF	F	U	TU
11.	Trend Extrapolation	VF	F	U	TU

12. Systems Forecasting VF F U TU

13. Operations Research VF F U TU

14. Delphi Technique VF F U TU

15. Cross-Impact Matrix VF F U TU

SECTION II

Please indicate your familiarity with the following books and articles by circling the appropriate response.

1. Ayres, Robert U. Technological Forecasting and Long-Range Planning. New York: McGraw Hill, 1969. VF F U TU

2. Baker, Harold S. The Future and Education: Alberta 1970-2005. Edmonton: Human Resources Research Council, 1971. VF F U TU

3. Boulding, Kenneth E. The Meaning of the Twentieth Century: The Great Transition. New York: Harper and Row, 1964. VF F U TU

4. Brinkhurst, Ralph O. and Donald A. Chant. This Good, Good Earth: Our Fight for Survival. Toronto: MacMillan, 1971. VF F U TU

5. de Jouvenel, Bertrand. The Art of Conjecture. New York: Basic Books, 1967. VF F U TU

6. Drucker, Peter F. The Age of Discontinuity: Guidelines to Our Changing Society. New York: Harper and Row, 1968. VF F U TU

7. Dyck, Harold. Social Futures: Alberta 1970-2005. Edmonton: Human Resources Research Council, 1970. VF F U TU

8. Ehrlich, Paul R. and Richard L. Harriman. How to Be a Survivor. New York: Ballantine Books, 1971. VF F U TU

9. Eyre, S. R. "Man the Pest: The Dim Chance of Survival," The New York Review of Books, XVIII (November 18, 1971), 18-27. VF F U TU

10. Ferkiss, Victor C. Technological Man: The Myth and the Reality. New York: George Braziller, 1969. VF F U TU

11. Forrester, Jay W. World Dynamics. Boston: Wright-Allen, 1971. VF F U TU

12. Green, Thomas F. "Breaking the System: The Redistribution of Educational and Non-Educational Goods." Syracuse, New York: Educational Policy Research Center, 1971. (Mimeographed). VF F U TU

13. Harman, Willis W. "Educational Alternatives for the Future." Menlo Park, California: Educational Policy Research Center, 1971. (Mimeographed). VF F U TU

14. Illich, Ivan. Deschooling Society. New York: Harper and Row, 1971. VF F U TU

15. It's Your Turn . . . A Report to the Secretary of State by the Committee on Youth. Ottawa: Information Canada, 1971. VF F U TU

16. Jantsch, Erich. Technological Forecasting in Perspective. Paris: OECD, 1967. VF F U TU

17. Kahn, Herman and Anthony J. Wiener. The Year 2000: A Framework for Speculation on the Next Thirty-Three Years. New York: MacMillan, 1967. VF F U TU

18. Kateb, George (ed.). Utopia. New York: Atherton Press, 1971. VF F U TU

19. Mead, Margaret. "Towards More Vivid Utopias," Science, CXXVI (November 8, 1957), 957-61. VF F U TU

20. Michael, Donald N. The Unprepared Society: Planning for a Precarious Future. New York: Basic Books, 1968. VF F U TU

21. Mumford, Lewis. The Pentagon of Power: The Myth of the Machine. New York: Harcourt Brace Jovanovich, 1970. VF F U TU

22. Platt, John Rader. "What We Must Do," Science, CLXVI (November 28, 1969), 1115-21. VF F U TU

23. Polak, Fred L. The Image of the Future. New York: Oceana, 1961. VF F U TU

24. Seastone, Don. Economic and Demographic Futures in Education: Alberta 1970-2005. Edmonton: Human Resources Research Council, 1971 VF F U TU

25. Toffler, Alvin. Future Shock. New York: Bantam Books, 1971. VF F U TU

26. Tussing, A. Dale. "Campus Disaffection, Present and Future." Syracuse, New York: Educational Policy Research Center, 1971. (Mimeographed). VF F U TU

27. Ziegler, Warren L. An Approach to the Futures Perspective in American Education. Syracuse, New York: Educational Policy Research Center, 1970. VF F U TU

28. Ziegler, Warren L. "On the Uses of Metaphor for Policy-Making," Notes on the Future of Education, II, Spring, 1971. VF F U TU

SECTION III

If you have read any books of articles dealing with the future (other than the works listed in Section II above) which you feel make a significant contribution to thought in this field, please give the author and title below. The work may deal with the future either in general or from a specifically educational point of view. Please indicate also your familiarity with the contents by using the same rating scheme as in Sections I and II above.

APPENDIX B-3

INDIVIDUAL TOPICAL INVENTORY

Instructions

In this questionnaire you are asked to indicate your opinion concerning certain situations and topics.

On the pages that follow there are 36 pairs of responses. There are six pairs to each set.

Please select one response from each pair, the one that more accurately shows your opinion or feeling.

Record your choice by circling A or B.

Be frank and indicate, in each case, your true feeling or opinion or the reaction you would actually make in the situation. DO NOT INDICATE HOW YOU SHOULD FEEL OR ACT; rather indicate how you DO feel or act.

Make sure you are aware of the situation or topic that each set of responses refers to. You will find the situation or topic appearing at the top of that set. Each set has a different situation or topic at the top.

1. Note the situation or topic at the top of the set.
2. Answer that set by selecting one response from each of the six pairs on that set.
3. Record your choices by circling the letter (A or B) that corresponds to each choice.
4. Go to the next set and note the situation or topic at the top of that set. Answer this set as you did the first. Continue in this way to the end of the 36 pairs.

Do not omit any pairs of statements!

Work at your own rate of speed but work straight through the inventory without stopping. Once you have completed a set DO NOT RETURN TO IT.

1. Imagine that someone has criticized you. Choose the response from each pair that comes closest to your feelings about such criticism. Indicate your choice by circling either "A" or "B".

When I am criticized . . . .

Pair No.	A	B
(1)	I try to take the criticism, think about it, and value it for what it is worth. Unjustified criticism is as helpful as justified criticism in discovering what other people's standards are.	I try to accept the criticism but often find that it is not justified. People are too quick to criticize something because it doesn't fit their standards.
(2)	I try to determine whether I was right or wrong. I examine my behavior to see if it was abnormal. Criticism usually indicates that I have acted badly and tends to make me aware of my own bad points.	It could possibly be that there is some misunderstanding about something I did or said. After we both explain our viewpoints, we can probably reach some sort of compromise.
(3)	I listen to what the person says and try to accept it. At any rate, I will compare it to my own way of thinking and try to understand what it means.	I feel that either I'm not right, or the person who is criticizing me is not right. I have a talk with that person to see what's right or wrong.
(4)	I usually do not take it with good humor. Although, at times, constructive criticism is very good, I don't always think that the criticizer knows what he is talking about.	At first I feel that it is unfair and that I know what I am doing, but later I realize that the person criticizing me was right and I am thankful for his advice. I realize that he is just trying to better my actions.
(5)	I try to ask myself what advantages this viewpoint has over mine. Sometimes both views have their advantages and it is better to combine them. Criticism usually helps me to learn better ways of dealing with others.	I am very thankful. Often I can't see my own errors because I am too engrossed in my work at the time. An outsider can judge and help me correct the errors. Criticism in everyday life usually hurts my feelings, but I know it is for my own good.
(6)	It often has little or no effect on me. I don't mind constructive criticism too much, but I dislike destructive criticism. Destructive criticism should be ignored.	I try to accept and consider the criticism. Sometimes it has caused me to change myself; at other times I have felt that the criticism didn't really make much sense.

2. Imagine that you are in doubt. Choose the response from each pair that comes closest to your feelings about such doubt. Indicate your choice by circling either "A" or "B".

When I am in doubt . . . .

A	Pair No.	B
I become uncomfortable. Doubt can cause confusion and make one do a poor job. When one is in doubt he should ask and be sure of himself.	(7)	I find myself wanting to remove the doubt, but this often takes time. I may ask for help or advice if I feel that my questions won't bother the other person.
I don't get too upset about it. I don't like to ask someone else unless I have to. It's better to discover the correct answer on your own.	(8)	I usually go to someone who knows the correct answer to my question. Sometimes I go to a book which will set me straight by removing the doubt.
I first try to reason things out and check over the facts. Often I approach others to get ideas that will provide a solution.	(9)	I think things over, ask questions, and see what I can come up with. Often several answers are reasonable and it may be difficult to settle on one.
I realize that I'll have to decide on the correct answer on my own. Others try to be helpful, but often do not give me the right advice. I like to judge for myself.	(10)	I usually try to find out what others think, especially my friends. They may not know the answer, but they often give me some good ideas.
I look over the problem and try to see why there is a doubt. I try to figure things out. Sometimes I just have to wait awhile for an answer to come to me.	(11)	I try to get some definite information as soon as possible. Doubt can be bad it if lasts too long. It's better to be sure of yourself.
I consider what is best in the given situation. Although one should not rush himself when in doubt, he should certainly try to discover the right answer.	(12)	I act according to the situation. Sometimes doubt can be more serious than at other times and many of our serious doubts must go unanswered.

3. Imagine that a friend has acted differently toward you. Choose the response from each pair that comes closest to your feelings about such an action. Indicate your choice by circling either "A" or "B".

When a friend acts differently toward me . . . .

A	Pair No.	B
I am not terribly surprised because people can act in many different ways. We are different people and I can't expect to understand all his reasons for acting in different ways.	(13)	I am usually somewhat surprised but it doesn't bother me very much. I usually act the way I feel towards others. People worry too much about others' actions and reactions.
I find out why. If I have done something wrong I will try to straighten out the situation. If I think he's wrong, I expect him to clear things up.	(14)	I feel that I may have caused him to act in a different way. Of course, he may have other reasons for acting differently which would come out in time.
I first wonder what the trouble is. I try to look at it from his viewpoint and see if I might be doing something to make him act differently toward me.	(15)	It is probably because he has had a bad day, which would explain this different behavior; in other cases he may just be a changeable kind of person.
It is probably just because something is bothering him. I might try to cheer him up or to help him out. If these things didn't work I would just wait for him to get over it.	(16)	I try to understand what his different actions mean. I can learn more about my friend if I try to figure out why he does things. Sometimes the reasons may not be very clear.
There has to be a definite reason. I try to find out this reason, and then act accordingly. If I'm right I'll let him know it. If he's wrong, he should apologize.	(17)	I usually let him go his way and I go mine. If a friend wants to act differently that's his business, but it's my business if I don't want to be around when he's that way.
I don't get excited. People change and this may cause differences. It is important to have friends, but you can't expect them to always be the same.	(18)	I like to get things back to normal as soon as possible. It isn't right for friends to have differences between them. Whoever is at fault should straighten himself out.

4. Think about the topic of people in general. Choose the response from each pair that comes closest to your thoughts about people. Indicate your choice by circling either "A" or "B".

This I believe about people . . . .

A	Pair No.	B
Whatever differences may exist between persons, they can usually get along if they really want to. Although their ideas may not agree, they probably still have something in common.	(19)	People can learn from those who have different ideas. Other people usually have some information or have had some experience which is interesting and can add to one's knowledge.
People can act in all sorts of ways. No single way is always best, although at certain times a particular action might be wiser than others.	(20)	Each person should be able to decide the correct thing for himself. There are always a few choices to be made and the individual himself is in the best position to pick the right one.
Some people think they know what's best for others and try to give advice. These people shouldn't make suggestions unless asked for help.	(21)	There are certain definite ways in which people should act. Some don't know what the standards are and therefore need to be straightened out.
I can tell if I am going to get along with a person very soon after meeting him. Most people act either one way or another and usually it is not difficult to say what they are like.	(22)	It's hard for me to say what a person is like until I've known him a long time. People are not easy to understand and often act in unpredictable ways.
People have an outside appearance that usually isn't anything like what can be found on the inside, if you search long and hard enough.	(23)	Each person is an individual. Although some people have more good or bad points than others, no one has the right to change them.
People can be put into categories on the basis of what they're really like. Knowing the way a person really is helps you to get along with him better.	(24)	People are unlike one another in many respects. You can get along with people better and better understand them if you are aware of the differences.

5. Think about the general topic of leaders. Choose the response from each pair that comes closest to your thoughts about leaders. Indicate your choice by circling either "A" or "B".

Leaders . . . .

Pair No.	A	B
(25)	Leaders do not always make the right decisions. In such cases, it is wise for a man to look out for his own welfare.	Leaders are necessary in all cases. If a leader cannot make the right decisions another should be found who can.
(26)	Leaders cannot provide all the answers. They are like other people--they have to try to figure out what action is necessary and learn from their mistakes.	Leaders make decisions sometimes without being sure of themselves. We should try to understand this and think of ways to help them out.
(27)	I like a leader who is aware of how the group feels about things. Such a leader would not lead any two groups in exactly the same way.	A person should be able to put his confidence in a leader and feel that the leader can make the right decision in a difficult situation.
(28)	There are times when a leader shouldn't make decisions for those under him. The leader has the power to decide things, but each man has certain rights also.	A leader should give those under him some opportunity to make decisions, when possible. At times the leader is not the best judge of a situation and should be willing to accept what others have to say.
(29)	Some leaders are good, others are quite poor. Good leaders are those who know what is right for the men under them. These leaders deserve the respect of every man.	Leaders cannot be judged easily. Many things go to make up good leadership. Most people fall short in some way or another, but that is to be expected.
(30)	Leaders are needed more at certain times than at others. Even though people can work out many of their own problems, a leader can sometimes give valuable advice.	Some people need leaders to make their decisions. I prefer to be an individual and decide for myself, when possible. Most leaders won't let you do this.

6. Imagine that someone has found fault with you. Choose the response from each pair that comes closest to your feelings about such a situation. Indicate your choice by circling either "A" or "B".

When other people find fault with me . . . .

A	Pair No.	B
It means that someone dislikes something I'm doing. People who find fault with others are not always correct. Each person has his own ideas about what's right.	(31)	It means that someone has noticed something and feels he must speak out. It may be that we don't agree about a certain thing. Although we both have our own ideas, we can talk about it.
I first wonder if they are serious and why they have found fault with me. I then try to consider what they've said and make changes if it will help.	(32)	If enough people point out the same fault, there must be something to it. I try to rid myself of the fault, especially if the criticizers are people "in-the-know."
They have noticed something about me of which I am not aware. Although criticism may be hard to take, it is often helpful.	(33)	They are telling me something they feel is correct. Often they may have a good point which can help me in my own thinking. At least it's worthwhile to consider it.
I may accept what is said or I may not. It depends upon who is pointing out the fault. Sometimes it's best to just stay out of sight.	(34)	I accept what is said if it is worth-while, but sometimes I don't feel like changing anything. I usually question the person.
I like to find out what it means; since people are different from one another, it could mean almost anything. A few people just like to find fault with others but there's usually something to be learned.	(35)	There is something to be changed. Either I am doing something wrong or else they don't like what I'm doing. Whoever is at fault should be informed so that the situation can be set straight.
I don't mind if their remarks are meant to be helpful, but there are too many people who find fault just to give you a hard time.	(36)	It often means that they're trying to be disagreeable. People get this way when they've had a bad day. I try to examine their remarks in terms of what's behind them.

CHECK AND MAKE SURE THAT YOU'VE CHOSEN ONE MEMBER OF EACH PAIR
(A TOTAL OF 36 CIRCLES)

Individual Topical Inventory Scoring Key

Pair No.	System		Pair No.	System	
	A	B		A	B
1	3	2	19	3	4
2	1	4	20	4	2
3	3	1	21	2	1
4	2	1	22	1	4
5	4	3	23	3	2
6	2	4	24	1	3
7	1	3	25	2	1
8	2	1	26	4	3
9	3	4	27	3	1
10	2	3	28	2	4
11	4	1	29	1	4
12	2	4	30	3	2
13	4	2	31	2	4
14	1	3	32	3	1
15	3	2	33	3	4
16	3	4	34	1	2
17	1	2	35	4	1
18	4	1	36	2	3

Norms For Individual Topical Inventory

(Obtained from 461 Naval Trainees - Tuckman)

Decile	Systems			
	I	II	III	IV
10	13+	12+	12+	13+
9	12	11	11	12
8	11	10	10	11
7	10-11	9	9-10	10-11
6	9-	8-	8-	9-

System Scoring:

If S scores 9th or 10th Decile in one system and 8th or lower in all others, classify him in his highest system.

If nesessary, Ss who score 8th Decile in one system and 6th or lower in all others may also be classified in highest scoring system.

APPENDIX B-4

GENERAL OPINION QUESTIONNAIRE

In this questionnaire you are asked to indicate the extent to which you agree or disagree with certain general opinions.

There are four possible answers for each statement. They are:

Strongly Agree (SA) Disagree (D)

Agree (A) Strongly Disagree (SD)

For each general opinion circle the answer which you feel comes closest to describing your personal belief.

1.	In this complicated world of ours the only way we can know what's going on is to rely on leaders or experts who can be trusted.	SA	A	D	SD
2.	My blood boils whenever a person stubbornly refuses to admit he's wrong.	SA	A	D	SD
3.	There are two kinds of people in this world: those who are for truth and those who are against the truth.	SA	A	D	SD
4.	Most people just don't know what's good for them.	SA	A	D	SD
5.	Of all the different philosophies which exist in this world there is probably only one which is correct.	SA	A	D	SD
6.	The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent.	SA	A	D	SD
7.	The main thing in life is for a person to want to do something important.	SA	A	D	SD
8.	I'd like it if I could find someone who would tell me how to solve my personal problems.	SA	A	D	SD
9.	Most of the ideas which get printed nowadays aren't worth the paper they are printed on.	SA	A	D	SD

10.	Man on his own is a helpless and miserable creature.	SA	A	D	SD
11.	It is only when a person devotes himself to an ideal or cause that life becomes meaningful.	SA	A	D	SD
12.	Most people just don't give a "damn" for others.	SA	A	D	SD
13.	To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.	SA	A	D	SD
14.	It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.	SA	A	D	SD
15.	The present is all too often full of unhappiness. It is only the future that counts.	SA	A	D	SD
16.	The United States and Russia have just about nothing in common.	SA	A	D	SD
17.	In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.	SA	A	D	SD
18.	While I don't like to admit this even to myself, my secret ambition is to become a great man like Einstein, or Beethoven, or Shakespeare.	SA	A	D	SD
19.	Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary to restrict the freedom of certain political groups.	SA	A	D	SD
20.	It is better to be a dead hero than a live coward.	SA	A	D	SD

Name: _____ APPENDIX B-5

GENERAL IMPRESSION SURVEY

The purpose of this questionnaire is to obtain your general impression of three concepts.

In each case the concept appears above a number of scales. You are to give your impression of the concept by placing an X on each of the scales which appear beneath it. Each scale is defined by a pair of words. You are asked to place an X on each of the scales in one of the seven spaces which best describes the concept to you.

Two examples are given below:

PATRIOTISM

good :____:_X_:____:____:____:____:____: bad

futile :____:____:____:____:____:____:_X_: worthwhile

WAR

good :____:____:____:____:____:_X_:____: bad

futile :____:_X_:____:____:____:____:____: worthwhile

IMPORTANT

(1) Be sure to check every scale for every concept--do not omit any.

(2) Do not put more than one X on a single scale.

(3) Place the X in the middle of the space, not on the boundaries.

(4) Work quickly through the instrument. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that are important. On the other hand, please do not be careless, because we want your true impressions.

(5) Complete the concepts in the order in which they are presented.

THE FUTURE

futile	:____:____:____:____:____:____:____:	worthwhile
soft	:____:____:____:____:____:____:____:	hard
reasonable	:____:____:____:____:____:____:____:	ridiculous
fair	:____:____:____:____:____:____:____:	unfair
tense	:____:____:____:____:____:____:____:	relaxed
cruel	:____:____:____:____:____:____:____:	kind
sweet	:____:____:____:____:____:____:____:	bitter
violent	:____:____:____:____:____:____:____:	gentle
full	:____:____:____ :____:____:____:____:	empty
superficial	:____:____:____:____:____:____:____:	profound
ugly	:____:____:____:____:____:____:____:	beautiful
progressive	:____:____:____:____:____:____:____:	regressive

CHANGE

futile	:____:____:____:____:____:____:____:	worthwhile
soft	:____:____:____:____:____:____:____:	hard
reasonable	:____:____:____:____:____:____:____:	ridiculous
fair	:____:____:____:____:____:____:____:	unfair
tense	:____:____:____:____:____:____:____:	relaxed
cruel	:____:____:____:____:____:____:____:	kind
sweet	:____:____:____:____:____:____:____:	bitter
violent	:____:____:____:____:____:____:____:	gentle
full	:____:____:____:____:____:____:____:	empty
superficial	:____:____:____:____:____:____:____:	profound
ugly	:____:____:____:____:____:____:____:	beautiful
progressive	:____:____:____:____:____:____:____:	regressive

EDUCATIONAL POLICY-MAKING

futile	:____:____:____:____:____:____:____:	worthwhile
soft	:____:____:____:____:____:____:____:	hard
reasonable	:____:____:____:____:____:____:____:	ridiculous
fair	:____:____:____:____:____:____:____:	unfair
tense	:____:____:____:____:____:____:____:	relaxed
cruel	:____:____:____:____:____:____:____:	kind
sweet	:____:____:____:____:____:____:____:	bitter
violent	:____:____:____:____:____:____:____:	gentle
full	:____:____:____:____:____:____:____:	empty
superficial	:____:____:____:____:____:____:____:	profound
ugly	:____:____:____:____:____:____:____:	beautiful
progressive	:____:____:____:____:____:____:____:	regressive

APPENDIX C

Appendix C-1: Illustrative Pages of the Round 1 Delphi Instrument Used with All Groups

Appendix C-2: Illustrative Pages of the Round 2 Delphi Instrument Used with All Groups

Appendix C-3: Illustrative Pages of the Round 3 Delphi Instrument Used with All Groups

Appendix C-4: Illustrative Pages of the Preliminary Delphi Instrument Used with Group III

Appendix C-5: Illustrative Pages of the Instrument Used with Group III for Reporting the Results of Their Preliminary Delphi Round

Appendix C-6: Respondent Assessment Sheet Used with Group I

Appendix C-7: Respondent Assessment Sheet Used with Groups II and III

APPENDIX C-1

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

EDUCATIONAL POLICY DEVELOPMENT STUDY

PART I

INTRODUCTION

The way public education is conducted in a society is determined by the view that the society holds concerning education--its nature, its purposes, its over-all place in social affairs. This view is made manifest through educational policy, both explicit and implicit.

In this study we shall be concerned with the question of educational policy development. The method to be employed in examining various aspects of this subject will be a modification of the Delphi technique. It involves three rounds of interaction. Round one takes place to-day.

THE TASK

When looking at policy questions it should be remembered that policy developed and implemented now has impact on the future. Therefore, in developing policy it is important to have in mind some future state of affairs. Accordingly, in this study you will be asked to look ahead over a period of 15 to 20 years and in that context deliberate on questions of educational policy.

On the following pages appear six statements which in broad terms describe some key aspects of educational policy (elementary and secondary) in Alberta to-day. You are asked to consider these statements carefully; then think about the next 15 to 20 years and decide if each individual statement is a description of policy that will be applicable during that period. If you conclude that the policy will not remain applicable, you are asked to propose alternatives.

In either case--whether advocating the continuation of existing policy or proposing alternatives--you are asked to provide reasons to support your position.

Further instructions on procedure accompany each policy statement.

Please make sure that you respond to every statement.

Your co-operation is sincerely appreciated.

D. E. BERGHOFER

POLICY STATEMENT NO. 1

Below is a statement of present educational policy in Alberta. Do you think the policy will be applicable during the next 15 to 20 years?

> COMPULSORY EDUCATION FOR ALL CHILDREN BETWEEN THE AGES OF SIX AND SIXTEEN

Will the policy AS STATED ABOVE remain applicable during the next 15 to 20 years?

Yes_____ No_____

If you answered "No" omit the remainder of this page and proceed directly to the next page.

If you answered "Yes" give your reason(s) below and if possible refer to source(s) of information.

Why do you believe that the policy as stated above will remain applicable?

How certain do you feel that the above policy will remain applicable? Please indicate on the scale below.

Certain :_____:_____:_____:_____:_____:_____:_____: Uncertain

Source(s) of Information

Did you consciously refer to or take into account some specific source(s) of information in deciding that the above policy will remain applicable? If so, please describe the source(s) below.

YOU HAVE COMPLETED POLICY STATEMENT NO. 1.
PROCEED DIRECTLY TO POLICY STATEMENT NO. 2.

ALTERNATIVE POLICY

Since you do not believe that the policy stated on the preceding page will remain applicable:

(1) State ONE OR MORE alternative policies

(2) Give your REASON(S) for proposing each alternative

(3) If you propose more than one alternative, PLACE THEM IN ORDER OF PRIORITY.

1. What alternative to or modification of the existing policy would you propose?

Why do you think your proposed policy will be applicable?

How certain do you feel that your proposed policy will be applicable? Please indicate on the scale below.

Certain :____:____:____:____:____:____:____: Uncertain

IF YOU WISH TO PROPOSE A SECOND ALTERNATIVE, CONTINUE AT THE TOP OF THE NEXT PAGE.
IF NOT, PROCEED DIRECTLY TO THE LAST QUESTION ON THE NEXT PAGE.

2. What alternative to or modification of the existing policy would you propose?

Why do you think your proposed policy will be applicable?

How certain do you feel that your proposed policy will be applicable? Please indicate on the scale below.

Certain :____:____:____:____:____:____:____: Uncertain

IF YOU WISH TO PROPOSE ADDITIONAL ALTERNATIVES, DO SO ON THE REVERSE SIDE OF THIS PAGE. GIVE REASONS AND DEGREE OF CERTAINTY IN EACH CASE. UPON COMPLETION ANSWER THE QUESTION IMMEDIATELY BELOW.

Source(s) of Information

Did you consciously refer to or take into account some specific source(s) of information in proposing your alternative(s)? If so, please describe the source(s) below.

EDUCATIONAL POLICY DEVELOPMENT STUDY

PART II

INTRODUCTION

Welcome to the second--and next to last--round of the Delphi Educational Policy Development Study. All suggestions made in round one have been collated and are now displayed, along with their supporting reasons, for your further consideration.

THE TASK

In round two we are concerned with trying to get greater clarification of points raised. You are therefore asked to do several things:

(1) Read each policy statement and the accompanying reasons

(2) Indicate on a six-point scale whether you agree or disagree with the policy

(3) Rate the validity of each of the reasons as a basis for supporting the policy

(4) If you disagree with the policy, give your reason for disagreeing

(5) If you agree with the policy, but for a markedly different reason from any of those given, give your reason. If you basically agree, but have some reservations, indicate those too.

Thank you for your continuing co-operation.

D. E. BERGHOFER

POLICY STATEMENT NO. 1

Interpretation of Scales

COMPULSORY EDUCATION FOR ALL CHILDREN BETWEEN THE AGES OF SIX AND SIXTEEN

Validity of Reasons: For each reason, please circle one of the numbers 1 2 3 4.
1: very high validity; 2: high validity; 3: low validity; 4: very low validity

Agreement-Disagreement with Policy: For each policy, please check the appropriate response

SA	Strongly Agree	DS	Disagree Somewhat
A	Agree	D	Disagree
AS	Agree Somewhat	SD	Strongly Disagree

Policy	Reasons	Validity of Reasons	Agreement-Disagreement with Policy						Reasons for Disagreeing or Agreeing with Policy
			SA	A	AS	DS	D	SD	
The policy as stated above will remain applicable	1. Employment problems will be compounded in the next 15 to 20 years and there will be a concentrated effort to keep people at school and off the employment market.	1 2 3 4							
	2. Citizens must acquire at least a basic of ten years of education if they are to be able to cope with life in general. It is fallacious to assume that parents, if left to their own devices, will ensure that their children acquire basic education.	1 2 3 4							
	3. Retention of this policy is the only way that the state can have a say in the education of the people. This influence is necessary because of the relationship of education to economics--in fact, to the over-all development of the country.	1 2 3 4							
	4. Prestige of education will increase as years go by; therefore this much compulsory education will be retained, at least.	1 2 3 4							
	5. Vested interests will resist change.	1 2 3 4							
	6. Education industry provides much employment.	1 2 3 4							

POLICY STATEMENT NO. 1 CONTINUED

Policy	Reasons	Validity of Reasons	Agreement-Disagreement with Policy						Reasons for Disagreeing or Agreeing with Policy
			SA	A	AS	DS	D	SD	
Compulsory education to be lowered to include four year olds --compulsory kindergarten.	1. Public demand	1 2 3 4							
	2. Government "promises."	1 2 3 4							
	3. Societal trends--working mothers	1 2 3 4							
	4. Failure of alternative voluntary scheme	1 2 3 4							
Compulsory education for all children between the ages of five and twelve.	1. Growing public dissatisfaction with the high cost of education and complaints regarding the irrelevance of the curriculum and anachronistic methods of instruction will increase pressure for a change.	1 2 3 4							
	2. Vested interests in teacher organizations and the orientation of the present adult generation will result in an organized effort to retain the status quo.	1 2 3 4							
	3. Out of (1) and (2) above will come a compromise making education compulsory in the elementary schools only.	1 2 3 4							

EDUCATIONAL POLICY DEVELOPMENT STUDY

PART III

INTRODUCTION

We have come at last to the final stage of the Delphi Educational Policy Development Study. The results of the previous round have been collated and are now displayed for your consideration. In Part III you will find:

(1) The original policy statements and the proposed alternatives

(2) Reasons given in support of the various policies

(3) Reasons given for disagreeing with various policies

(4) The percentage of group responses which fell in each of the agree-disagree categories on Part II.

THE TASK

Round three is designed to provide you with the opportunity to make a final decision regarding each policy statement, bearing in mind the opinions of other group members. You are therefore asked to:

(1) Examine each policy statement in the light of the supporting and dissenting reasons

(2) Note the way the group responded on Part II

(3) Record your own final agreement or disagreement with each policy statement by using the six-point scale at the bottom right hand corner of each page.

Remember that your decision is to be made concerning the applicability of the policy for Alberta during the next 15 to 20 years.

Your co-operation throughout the study is sincerely appreciated.

D. E. BERGHOFER

POLICY STATEMEMT NO. 1

COMPULSORY EDUCATION FOR ALL CHILDREN BETWEEN THE AGES OF SIX AND SIXTEEN

Policy	Reasons for Agreeing with Policy	Reasons for Disagreeing with Policy	Percentage Frequencies of Responses on Part II
The policy as stated above will remain applicable.	1. Employment problems will be compounded in the next 15 to 20 years and there will be a concentrated effort to keep people at school and off the employment market. 2. Citizens must acquire at least a basic of ten years of education if they are to be able to cope with life in general. It is fallacious to assume that parents, if left to their own devices, will ensure that their children acquire basic education. 3. Retention of this policy is the only way that the state can have a say in the education of the people. This influence is necessary because of the relationship of education to economics--in fact, to the over-all development of the country. 4. Prestige of education will increase as years go by; therefore this much compulsory education will be retained, at least. 5. Vested interests will resist change. 6. Education industry provides much employment.	1. The compulsion aspect is one of the main factors in preventing schooling from becoming meaningful. The exercize of choice would compel the development of meaningful experiences. 2. A more flexible alternative is needed to rejuvenate the system. Safeguards can be built in to overcome the problems raised in reason (2). Reason (1) may be more difficult to deal with. The alternative might allow for <u>some</u> attendance at school in certain years. 3. It would be most surprising if the status quo were to be maintained during the next 20 years. See the supporting reasons on page 7. 4. See the supporting reasons on page 3.	Agreement-Disagreement with Policy

SA	A	AS	DS	D	SD
	40	20	20	10	10

Response for Part III

Agreement-Disagreement with Policy

SA	A	AS	DS	D	SD

POLICY STATEMENT NO. 1 CONTINUED

Policy	Reasons for Agreeing with Policy	Reasons for Disagreeing with Policy	Percentage Frequencies of Responses on Part II
Compulsory education to be lowered to include four year olds--compulsory kindergarten.	1. Public demand for the educative system to continually carry more of the responsibility for the education of children. 2. Government "promises." 3. Societal trends--working mothers. 4. Failure of alternative voluntary scheme. 5. The policy recognizes: (1) provision of equality of education; (2) economic value of overcoming disadvantaged children's problems.	1. The compulsion aspect is one of the main factors in preventing schooling from becoming meaningful. The exercize of choice would compel the development of meaningful experiences. 2. A nursery would be acceptable, but not a kindergarten--there is a difference. 3. Increasing costs of education will be a factor in decreasing the years of compulsory attendance, not in increasing them. 4. Compulsory education for four year olds is psychologically unsound and denies them "childhood" freedom. 5. Age four is too young for education to be compulsory--especially in the Canadian climate.	Agreement-Disagreement with Policy

SA	A	AS	DS	D	SD
9	27		46	9	9

Response for Part III

Agreement-Disagreement with Policy

SA	A	AS	DS	D	SD

APPENDIX C-4

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

EDUCATIONAL POLICY DEVELOPMENT STUDY

INTRODUCTION

Last day you were given the booklet, "The Future: Its Challenge to Twentieth Century Man," which contains a review of futures literature.

Our aim in to-day's session is to focus on that futures material in order to try to identify the implications for education which appear to be suggested by the forecasts and analyses presented.

This is not easy. It asks you to consider what the various writers have said about the social future, then to try to see what the implications might be for education. The important point to remember is that the future of education is related to the future of society and vice versa. Therefore, planning education for the future can be done only by taking an over-all societal view into account.

The material presented to you has presented some views on the social future. In some cases the implications for education have been stated, but in other cases they have only been hinted at. What we are trying to do in this session is to make those implications clearer. Later on we shall consider questions of specific educational policy; for the present we are just considering broad educational implications.

You are asked to do this task individually so that each of you can concentrate on aspects which seem important to you. After this session your various responses will be collated and you will each be supplied with a compilation of the total output from the group.

THE TASK

Essentially, then, the task is to state the educational implications of the futures material distributed to you.

Many contrasting and sometimes conflicting points of view have to be considered. Some writers, for example, hold the view that salvation for mankind lies through embracing as rapidly as possible new, higher-level forms of technology. Other writers argue that unquestioning faith in the omnisience of technology is the single most disturbing feature of our current social philosophy. Some writers point out that to embrace technology we must increase emphasis on specialization, while others point out that narrow specialization de-humanizes education (and life) and inhibits our ability to think holistically.

On the following page, nine concerns about the future drawn from the material are listed. You are asked to consider each one and, using the scale provided, to indicate the extent to which you think the particular concern holds significance for education. In addition, you are given the opportunity to state further concerns about the future.

Following that, you are asked to state what you consider to be the major implications for education in the material.

Your co-operation is sincerely appreciated.

D. E. BERGHOFER

CONCERNS ABOUT THE FUTURE

Read each of the following concerns about the future and indicate its significance for education by checking the appropriate space.

Concern	Significance for Education		
	Considerable	Some	Little
1. Continued emphasis on producing more and consuming more is triggering exponential growth in many directions, which must ultimately produce a crisis situation in which further growth is prevented by some limiting factor. (Forrester and Mumford).			

OTHER CONCERNS ABOUT THE FUTURE

Do you think that there are other major concerns about the future which are not included in the above list? If so, please state one or two of them below and indicate the significance of each for education.

Concern	Significance for Education		
	Considerable	Some	Little

EDUCATIONAL IMPLICATIONS

Now that you have had an opportunity to consider various future concerns and their likely significance for education, you are asked to go one step further and to state, in the light of the various concerns, what you consider to be the major implications for education arising out of the material distributed to you.

The task is essentially open-ended, but to give it a little more structure, you are asked to consider it under three headings:

1. The organization of education
2. The curriculum
3. The preparation of teachers.

Please make your response for each section in the space provided.

THE ORGANIZATION OF EDUCATION

What are the implications for the way the educational enterprise is conducted? Who goes to school? Where? When? For how long?, etc.

Please state one or two implications below and in each case briefly outline the rationale that has led you to draw this implication. If applicable, refer to specific sources in the futures material.

THE CURRICULUM

What are the implications for the curriculum?--with regard to content?--the way it is organized?--the things that are emphasized?, etc.

Please state one or two implications below and in each case briefly outline the rationale that has led you to draw this implication. If applicable, refer to specific sources in the futures material.

THE PREPARATION OF TEACHERS

What are the implications for the task of preparing teachers? Who teaches? What training is to be given? How are teachers to be selected?, etc.

Please state one or two implications below and in each case briefly outline the rationale that has led you to draw this implication. If applicable, refer to specific sources in the futures material.

APPENDIX C-5

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

UNIVERSITY OF ALBERTA

EDUCATIONAL POLICY DEVELOPMENT STUDY

INTRODUCTION

The following pages are a compilation of the ideas presented in response to the previous questionnaire on the educational implications of the futures material distributed to you.

The results are displayed in three sections:

(1) The percentage of group responses on concerns about the future which fell in each of the educational significance categories

(2) A list of additional concerns about the future mentioned by various respondents

(3) The general implications for education arranged under three headings:

(a) The organization of education
(b) The curriculum
(c) The preparation of teachers

THE TASK

The main purpose in supplying you with the above information is to give you an opportunity to become aware of the thinking of other group members regarding the issues raised.

As you read through the material, you are asked to indicate your opinion about the various items in Sections 2 and 3 by checking the appropriate spaces on the scales provided.

You are then asked to bring the completed questionnaire to the next group session which is scheduled for 2 p.m. on Friday February 25 in Room 802. At this session questions of specific educational policy will be considered in the light of the implications raised in the previous round.

Your continuing co-operation in this project is sincerely appreciated.

D. E. BERGHOFER

SECTION I

CONCERNS ABOUT THE FUTURE

Displayed below are the percentage of group responses which fell in each of the educational significance categories.

Concern	Group Responses Concerning Significance for Education		
	Considerable	Some	Little
1. Continued emphasis on producing more and consuming more is triggering exponential growth in many directions, which must ultimately produce a crisis situation in which further growth is prevented by some limiting factor. (Forrester and Mumford).	91%	9%	0%

SECTION II

ADDITIONAL CONCERNS ABOUT THE FUTURE

Displayed below are the additional concerns about the future mentioned by various respondents. Please read each and indicate your opinion of its significance for education by checking the appropriate space.

Concern	Significance for Education		
	Considerable	Some	Little
1. The necessity for the introduction of an Environmental Ethic--man living in balance with his ecology.			

SECTION III

A. IMPLICATIONS FOR THE ORGANIZATION OF EDUCATION

Displayed below are the implications for the organization of education as seen by various respondents. Please read each statement and indicate the extent of your agreement or disagreement with the general intent of what is said by checking the appropriate space:

A: Agree DS: Disagree Somewhat

AS: Agree Somewhat D: Disagree

Implication	A	AS	DS	D
1. Education should be carried on where there is a need--not necessarily in great edifices.				

APPENDIX C-6

EDUCATIONAL POLICY DEVELOPMENT STUDY

RESPONDENT ASSESSMENT SHEET

On the basis of your experience in participating in the Educational Policy Development Study your responses to the following questions are requested. Answers will prove helpful in assessing the effectiveness of the method employed and in further refining it for subsequent use.

1. How do you feel about participation in developing educational policy? Who should be involved? What methods could be used to involve them?

2. Do you think the Delphi technique as used in the present approach is a useful means for developing educational policy?

3. Did you gain any particular insights into the educational policy development process from participating in this study?

4. What, if any, difficulties did you experience in responding to the instruments used in this study?

5. Any other comments?

APPENDIX C-7

EDUCATIONAL POLICY DEVELOPMENT STUDY

RESPONDENT ASSESSMENT SHEET

On the basis of your experience in participating in the Educational Policy Development Study your responses to the following questions are requested. Answers will prove helpful in assessing the effectiveness of the method employed and in further refining it for subsequent use.

1. How do you feel about participation in developing educational policy? Who should be involved? What methods could be used to involve them?

2. Do you think the Delphi technique as used in the present approach is a useful means for developing educational policy?

3. Did you gain any particular insights into the educational policy development process from participating in this study?

4. What, if any, difficulties did you experience in responding to the instruments used in this study?

5. Do you think that the futures material distributed to you in this study is useful in developing educational policy?

6. Do you think that a course on futures research giving the opportunity for more in depth study of works such as those included in the handout distributed to you would be a worthwhile addition to the program offered by the Department of Educational Administration?

7. If asked to prepare a position paper on educational policy for the future, do you think that you would be better prepared to do so after having been through this Delphi exercise (including the reading of the futures material and the searching for educational implications in it)? Please respond by checking one box below.

☐ Much better prepared ☐ A little better prepared ☐ No better prepared

Reason for response:

8. Any other comments?

APPENDIX D

Appendix D-1: Percentage Frequency of Group III Responses (N = 11) for the Educational Significance of Statements about the Future Provided by the Researcher

Appendix D-2: Percentage Frequency of Group III Responses (N = 11) for the Educational Significance of Statements about the Future Initiated by Subjects

Appendix D-3: Percentage Frequency of Group III Responses (N = 11) Concerning Agreement with Statements of the Implications for Education of the Futures Material Examined

APPENDIX D-1

Table 42

Percentage Frequency of Group III Responses (N = 11) for the Educational Significance of Statements about the Future Provided by the Researcher

Statement of Concern	Significance for Education		
	Considerable	Some	Little
1. Continued emphasis on producing more and consuming more is triggering exponential growth in many directions, which must ultimately produce a crisis situation in which further growth is prevented by some limiting factor. (Forrester and Mumford).	91%	9%	0%
2. Education itself has become a ritualized, mechanistic process which tools man for a planned world and feeds the technological megamachine. (Illich and Mumford).	64	36	0
3. Faith in technology to save us from disaster may well be unwarranted. (Forrester and Eyre).	91	9	0
4. A society with a high level of industrialization may be non-sustainable because of resource depletion and pollution generation. (Forrester, Brinkhurst and Chant, and Eyre).	91	9	0
5. Thoughts about the long-range future are blotted from men's minds by the demands of the present and immediate future. (Polak).	55	45	0

Table 42 (Continued)

Statement of Concern	Significance for Education		
	Consid-erable	Some	Little
6. We are facing a world-wide crisis at a time when international controls are almost non-existent and national sovereignity reigns supreme. (Ehrlich and Harriman).	18%	73%	9%
7. There is a desperate shortage of people skilled in being human and in the ability to think systemically. (Michael).	100	0	0
8. The cumulative pressures of transience, novelty, and diversity may lead to a universal state of "future shock." (Toffler).	55	45	0
9. We have little time in which to take corrective action. (A general conclusion of all writers).	73	27	0

APPENDIX D-2

Table 43

Percentage Frequency of Group III Responses (N=11) for the Educational Significance of Statements about the Future Initiated by Subjects

Statement of Concern	Significance for Education		
	Considerable	Some	Little
1. The necessity for the introduction of an Environmental Ethic--man living in balance with his ecology.	73%	27%	0%
2. The necessity for reduced consumption of primary resources and reduction in the rate of population increase to reverse the trend towards ecological imbalance.	64	27	9
3. The over-emphasis on material things and temporal satisfactions, together with a general decline in moral standards may well lead to the collapse of Western civilization--its inability to face up to the challenges to its existence.	64	36	0
4. The tendency for man to be isolated from and in constant competition with his peers--breakdown in family living--loss of a "life" goal in the religious-spiritual sense--constant examining of self rather than helping others--the "gimme! it's my right" trend.	64	36	0
5. Society has lost the capacity to think positively about the future	73	18	9
6. Society lacks the ability to consider its problems holistically	46	46	9

Table 43 (Continued)

Statement of Concern	Significance for Education		
	Considerable	Some	Little
7. "Councils of the Future" (Toffler) could have a real influence on the shape of the future.	64%	27%	9%
8. The growth of industrial cartels is going to amass undue amounts of power in the hands of a few.	46	36	18
9. Many criticize present society but few can produce a practical step by step plan for curing the ills they recognize.	64	36	0
10. We must confront and challenge the validity of diplomas and degrees offered by core institutions as adequate indicators of talent and ability.	73	27	0
11. There is a hidden curriculum in our schools which is ceremonial and serves only as a ritual of initiation into a growth-oriented consumer society.	73	27	0
12. Need for values and philosophy which suit the needs of the future to be stressed in educational curricula.	82	9	9
13. Need for "indoctrinating" middle-aged and old if changes in philosophy and action are to occur in time.	46	46	9

APPENDIX D-3

Table 44

Percentage Frequency of Group III Responses (N = 11) Concerning Agreement with Statements of the Implications for Education of the Futures Material Examined

Implication	A[a]	AS	DS	D
THE ORGANIZATION OF EDUCATION				
1. The public educational system should be one of the means--perhaps the most important of the means--through which the process of examining the future takes place. This would presumably mean changes in present policies.	64%	27%	9%	0%
2. The present hierarchical, centralized education system is inclined to be inflexible and closed to an extent that it will be unable to meet the challenges of the future. It will have to give way to a system that is geared more to the needs of developing "new men" than of providing a series of hurdles which qualify contestants for the "rat race."	55	27	0	18
3. Schools have for too long operated on a pass-fail basis, thus causing disenchantment and resentment on the part of many people who, desirably, should be reattracted to continue their education. There is not sufficient opportunity for developing creative people and systematic thinkers (as Michael suggests we shall need in the future) or for meeting the needs of Tussing's "post-makers."	73	18	9	0
4. If man is to successfully reach the post-civilized era, the educational system must move away from the "hidden curriculum" approach which promotes a growth-oriented, consumer society that may lead to the destruction of the world.	55	36	0	0
5. Green's proposal for fifteen years of free education (non-compulsory and taken any time during life) is worth considering.	55	9	36	0

Table 44 (Continued)

Implication	A	AS	DS	D
6. The time-tabled, period-structured school schedule is a take-off from our work-time structure which is regimenting and dehumanizing. An alternative approach would be to have no compulsory school attendance and to provide access to educational facilities to anyone at any time in his life. There must be greater flexibility for people to learn what they want when they want. Freedom of choice is important. The length of time spent in school should be determined by the individual.	46	46		9
7. The present structure encourages lack of co-ordination and artificial distinctions between levels of schools and a degree of remoteness from the real problems of society. Teachers develop a mystique of their own, and the educational system becomes a vested interest.	64	18	9	9
8. Parents and children as well as educators should become more intimately involved in educational philosophy and policy-making so that our organizations can become more open and their objectives more relevant to the challenges of the future.	36	46	9	9
9. Emphasis within educational organizations should be placed on the development of open, constructive, and productive human relationships so that all parties share a feeling of growth and accomplishment	73	27	0	0
10. The need to teach the skills of learning, relating, choosing is so important for future functioning that it is even more essential that school be compulsory for varying amounts of time per day depending on the student. For adults the school should always be available--evening, summer, noon-hour. If we are to become the new people of the post-civilized era (Boulding), then while the organization may remain, the learning will be different.	55	36	0	9
11. Education should be carried out where there is a need--not necessarily in great edifices.	55	36	9	

Table 44 (Continued)

Implication	A	AS	DS	D
THE CURRICULUM				
12. There must be a new stress on individual needs such as independence, autonomy, self-actualization, self-fulfilment. Comitted humans are a result of a certain freedom of choice. Man must grasp the potential that he has to change things for the better. Schools can offer students experiences that will allow them to examine alternatives, make decisions, etc.	64	36	0	0
13. The curriculum will need to include content associated with considering problems facing society, rather than content for its own sake; development of skills and attitudes using factual knowledge (not forgetting about it as some seem to do to-day) rather than simply learning facts for testing; a reasonable synthesis between an approach based on subject disciplines and that based on broad topics; flexibility of course content so that it can adapt readily to changing times.	73	27	0	0
14. A study of the future should be a definite and important part of the curriculum--in its own right. Other subjects of the curriculum should contribute to the central study of the future.	46	46	0	9
15. A holistic approach to the curriculum is of great importance. We cannot afford to produce students who are specialists only.	64	27	9	0
16. There will have to be greater emphasis, as Mead suggests, on what man might be.	46	36	9	0
17. There must be a new emphasis on ecological study. The student must experience the pristine wilderness and also learn about his role or place in nature.	64	27	9	0
18. There should be a new stress on group work and the associated skills. Power to solve problems lies in pooled intelligence and in the development of interpersonal skills. Man must not only know himself but also be able to live with others.	64	36	0	0

Table 44 (Continued)

Implication	A	AS	DS	D
19. The curriculum should contain definite material to alert society to the impending disaster mentioned by so many writers and towards conditioning people to a way of life based on looking after the world ecological "commons" (Ehrlich and Harriman) rather than an over-dependence on technology and continual progress. It would need to assist in the formation of a new vision of the future. Such a conditioning towards a new outlook is urgent and will need to be aimed at adults as well as children in school. Governments, too, will need to be educated.	64	27	9	0
THE PREPARATION OF TEACHERS				
20. A new definition of teacher may be necessary. A teacher might be defined as a person who helps a learner to learn--someone who has knowledge or skills to offer to those who have special needs. In this case a much broader segment of society would be considered as teachers, and the amount and kind of training they receive may depend upon the extent of their commitment to the task.	73	27	0	0
21. Teachers will need to study "futurology." The implications are that future and present teachers must be concerned with the long and short range needs of their pupils in terms of the crises facing mankind. Teaching which leads to the continuance of the status quo or moves the society further down the road to disaster is unacceptable. Those who teach should be, as Michael says, those who have an idea of what is at stake. They have to be capable of preparing people to meet the future.	55	36	9	0
22. Teachers will have to be prepared to learn themselves throughout their lives, and they will have to become adjusted to making use of a wide range of media and working in places other than schools.	91	9	0	0
23. Teachers must have a varied background against which to teach their own specialty--all subjects are interrelated.	91	9	0	0

Table 44 (Continued)

Implication	A	AS	DS	D
24. Teachers should be given training in human relations. Emphasis on philosophy and psychology. Use of sensitivity training, group work, and internships.	64	27	9	0
25. Teachers should be required to have done some travelling--to have some intercultural experiences--to have field experiences away from University which (if present certifying structures remain) count for credit.	36	36	27	0
26. Teachers should be selected on the basis of their humanistic outlook, their versatility, and their scholarship--in that order.	27	64	9	0
27. Teachers should be selected on the basis of personal choice, plus interview, plus psychological tests.	9	64	18	9
28. People who have a desire to teach should be able to do so--often on a part-time basis.	55	27	18	0

[a]A: Agree

AS: Agree Somewhat

DS: Disagree Somewhat

D: Disagree