MENTAL RETARDATION AND THE FUTURE

K. B. McGovern
P. L. Browning

Rehabilitation Research and Training Center
in MENTAL RETARDATION

University of Oregon, Eugene

Oregon Studies in the Habilitation of the Retarded

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Edited By
Kevin B. McGovern
and
Philip L. Browning

Rehabilitation Research and Training Center in Mental Retardation

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College of Education
Department of Special Education
University of Oregon
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Goals of PCMR's New Thrust

Using present knowledge and techniques from the biomedical and behavioral sciences, it is possible:

— To reduce the occurrence of mental retardation by 50 percent before the end of this century.*

— To largely eliminate Down's syndrome (Mongolism) within the next two generations.

— To avoid the disastrous effects of rubella and other viral infections, by inoculation, vaccination, and other preventive measures.

— To undo the harm done thousands of children wrongly identified as retarded by faulty tests.

— To prevent the retardation that would occur because of social neglect and public disinterest in great segments of minority groups.

— To permit conception and birth of normal, healthy infants through genetic counseling of parents-to-be and prenatal care of the mother.

— To return one-third of the retarded now living in institutions to community living, and make them into useful citizens through training for productive employment.*

* Since this report was written, President Nixon has declared these to be "major national goals."

MR 71: Entering the Era of Human Ecology, The President's Committee on Mental Retardation, p. 31.

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Foreword

This is the fifth of a series of monographs to be published by the Rehabilitation Research and Training Center in Mental Retardation at the University of Oregon. One of several such Centers which are supported, in part, by grants from the Social and Rehabilitation Service of the Department of Health, Education and Welfare, the Oregon Center conducts research related to the rehabilitation of the retarded and provides training for professional personnel engaged in the rehabilitation process.

This monograph grew out of a training seminar held in February, 1970, at the University of Oregon entitled, "Rehabilitation of the Retarded: The Future." The program was designed for professional personnel who work in the area of mental retardation. The major objectives of the conference were to: ***(a)*** provide a framework from which professionals would simply begin to think about ***tomorrow, (b)*** analyze significant trends in mental retardation in the areas of education, rehabilitation, and social work, and ***(c)*** identify what might be reasonable predictions regarding significant changes during the next several decades in the are of mental retardation.

The editors wish to express their appreciation to the conference speakers for their assistance in making the program a successful one, as well as to the other persons who contributed papers to this monograph. It would be impossible to express appreciation through individual acknowledgement of all those involved in one way or another in the preparation of this monograph. However, a special thanks goes to Janet Clark who provided excellent editorial assistance.

K.B. McG.
P.L.B.

Introduction

The study of the future is coming into its own. Systematic methods for constructing a picture of the future are being investigated, synthesized, and refined. The underlying purpose of this publication is to explicate and reflect this development. It intends to communicate not only the need for rehabilitationists to assess the future in making long-range plans, but the assurance that it is indeed within the realm of possibility to do so. It further intends to bring out the implications of this possibility in terms of rehabilitation as an active future agent in accelerating the life styles of the mentally retarded. The early position of this monograph attests to the commitment of the staff of the Oregon Rehabilitation Research and Training Center to a futuristic approach toward the problems and potentials of rehabilitation. The conference, "Rehabilitation of the Retarded: The Future," held at the Center in February, 1970, and of which this publication is an outgrowth, was generated by their concern that this approach be introduced, seriously considered, and ultimately adopted among rehabilitation personnel.

Rehabilitationists have been caught up in an accelerating wave of change engulfing our society and its resultant froth of uncertainties. A sense of having fulfilled a project, of a contest finished, a pattern completed, pervades our society and has given rise to acute feelings of vulnerability in the face of an unpreparedness to strike off with purpose and direction down a new road to the future. John Steinbeck (1968) has articulated the social context of the void created by the completion of former tasks and purposes. His thesis is that the old goal of survival has been attained and rendered meaningless by a surfeit of food, clothing, shelter, transportation, and leisure. Although he presents a poignant picture of the resulting confusion in our society, he is confident that Americans will refuse to succumb to "the destroyers of nations: comfort, plenty and security . . . (p. 177)." He suggests that new goals involving humanistic rather than materialistic values will guide Americans to a purposeful course toward the future—a course that will replace today's apprehension with anticipation for the journey ahead. The idea that evolution is intent on bringing about a different kind of existence for man, that our society is passing through a period of cultural change revealing new dimensions of human possibility and purpose has also been expressed by others. It has generated the hope that it may be feasible in our century to take care of the needs of everyone, has stimulated a critical examination of the extent to

which our environmental and institutional structures foster the realization of human potential, and has set persons in many fields to the task of learning how to begin to plan for change.

The interaction of rapid change in all aspects of society is causing the study of the future to become a systematic and respectable field of endeavor. It has stimulated a need to make sense out of what is happening and a desire to have some control over what might happen, causing an almost simultaneous attempt throughout various disciplines to make long-range plans for the future. Fields such as communications, transportation, economics, education, and medicine are finding that to conduct a sophisticated study of their specific futures, they must study the future in general. Private industry and government planning agencies are also recognizing the need to base policy decisions on a consideration of expectations and options for the future. Hence frameworks and techniques for thinking about the future are being constructed and searched out.

That the future is coming into its own as an area of professional study is not yet generally known, even among those who have begun an exploration into their specific futures. In their initial consideration of the future, many are unaware, for example, that there are professional futurists who have already examined it at length; that there is available an expanding futuristic literature; that research centers have been organized to integrate policy planning with future planning; that a group has been formed known as the Institute for the Future; that there is in existence The World Future Society; or that an international journal called ***Futures*** has been in publication for three years.

An example of one of these developments is the Educational Policy Research Center at Syracuse (EPRC). Exploring methods and approaches for dealing with both the general future and the future of education, the EPRC staff are engaged in a futuristic approach toward educational planning and policy making. As set forth in an essay (An Unusual Venture, 1969), their purpose is not to make policy, but "to make more explicit and usable a consideration of the long-term effects of policy and to raise questions and describe alternatives that, in the normal course of events, might otherwise be ignored (p. 6)." Indeed, this long-range view makes it "possible and necessary not only to assess educational policy as a means toward certain ends, but also to entertain the desirability and consider the consequences of altogether different ends for education (p. 7)." As further stated, "The notion of alternative futures rests on a distinction between predicting, forecasting, and intervention (p. 7)." These three concepts are central to the Center's systematic effort to think about alternative futures in relation to educational policy. For further enlightenment regarding the development of the Center's view of and its methods for viewing the future, the reader is referred to its bimonthly publication (Notes on the Future).

An example of a technique that has been used in systematic efforts to think about alternative futures is the forecasting procedure known as the Delphi technique. Delphi is a means of obtaining judgments from a group of experts about the likelihood of future events that can be brought to bear on pertinent problems. Developed by Olaf Helmer and Norman Dalkey, it was originally applied to technological forecasting. The first paper in this monograph is an exposition by Helmer on the principles of the Delphi technique and its potentialities as a tool to produce social forecasts. The paper is included herein, not only as a description of a specific forecasting technique, but to illustrate the kind of thinking that is occurring among futurists and to present some implications concerning the significance of a futures approach to problems in rehabilitation. It is followed by a bibliography prepared by the editors for those

who wish to investigate further developments in futures studies and whose curiosity has been stirred as to the nature and scope of the writings that are available.

The accomplishment of a conference on such a vague and confusing topic as "the future" demonstrates that rehabilitationists are becoming aware that they can no longer afford to base all their planning on what has worked in the past, that long-range planning has become necessary in providing for the future welfare of the handicapped, and that forecasting is an essential skill in this process. What the profession needs at this point is an orientation to methods for examining the future in making their long-range plans. In the second paper, Timothy Weaver sets forth a methodological framework for examining the future. Focusing on the future impact of education on the mentally retarded, he illustrates how forecasts or projections can be made, explains how they can be useful in long-range planning, and clarifies the notion of alternative futures in such planning.

In view of the above current need of rehabilitation, the authors of the next three papers responded to a challenge when they agreed to attempt some predictions. Robert Schwarz, George Ayers, and Meyer Schreiber were asked to identify and present at the conference current trends and issues, and make predictions in their respective areas—special education; rehabilitation and the retarded; and social work and the retarded—which could be utilized in interdisciplinary, long-range planning. These papers, along with Timothy Weaver's, served as major vehicles in achieving the program objectives, and thus represent the highlights of the conference.

As has been indicated, when rehabilitationists orient their plans toward the future rather than base them solely on what has been done in the past, they will more readily conceive of alternatives "that might otherwise be ignored." The sixth paper, by Steve Morelan, points toward what has generally been an unexplored course in rehabilitationists' provision of services to their mentally retarded clients and which represents an alternative to amelioration as a direction for future planning: the path of prevention. Focusing on cultural-familial mental retardation, Morelan explores the question: On the basis of current research, can we begin now to plan for the prevention of mental retardation in the future? His review and integration of two pertinent bodies of data—behavioral and physiological evidence that cultural-familial retardation can be prevented, and evidence that early stimulation programs are effective in preventing such retardation—leads to the conclusion that current planning and programming for the future prevention of mental retardation can be justified on the basis of current research.

The seventh paper, by Lewis Klebanoff, is entitled "I Went Back to Visit October: Technology and the Human Side of the Future." One may ask: How does a "return to October" relate to modern man and his technology? Further, how does it relate to the future of rehabilitation? When thinking about future developments in technology and the effects they may have on the future welfare of the handicapped, the authors throughout this monograph express a general concern about the quality of modern life. They imply that the application of technology to the development of human potential will require insight into what it means to be human. In his "return" Klebanoff pays tribute to the human heart by which we live, disclosing some of the human threads which bind men together. He is saying that what is real in our lives is reflected by the moments we retain, the perceptions and impressions that remain when we pause to go back to the roots of our feelings and emotions. The price paid by humanity for the denial and distortion of human

emotion and feeling is high on an international and a personal plane, blocking genuine feelings and creative interaction among individuals as well as the transformation of the chaos and confusion of war into creative clarity. Man's motivations thus become disassociated from the interests of his real self, and he more easily submits to a life dominated by the material conveniences offered by technology. The powers of the human spirit diminish as man becomes more and more dependent on the power of machines. To return to October is to replenish our human capacity for tenderness, joy, and sorrow, and renew our determination to humanize our social and professional organizations.

Of the papers contained in this monograph, Weaver's, Schwarz's, Avers', and Schreiber's were presented at the conference. The issues, trends, and projections they offered were used as focal points in a discussion session that concluded the conference. This session provided rehabilitationists the opportunity to discuss the status and potential of rehabilitation as an active future agent in maximizing the human capacities of the mentally retarded. The session, recorded on tape, was transcribed and edited by the senior editor, who organized the suggestions, concerns, criticisms, and questions expressed therein. This resulting paper concludes this collection of initial thoughts about the future of mental retardation on a note of challenge and anticipation.

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Analysis of the Future: The Delphi Method[1]

Olaf Helmer
Institute for the Future, Middletown, Connecticut

The decade of the Sixties has brought with it an important change in the intellectual climate throughout many parts of the world, evidenced by a new attitude toward the future that has become apparent in public and private planning agencies as well as in the research community. The effect has been to extend customary planning horizons into a more distant future and to replace haphazard intuitive gambles, as a basis for planning, by sober and craftsmanlike analysis of the opportunities the future has to offer.

The change in attitude toward the future is manifesting itself in several ways: Philosophically, in that there is a new understanding of what it means to talk about the future; pragmatically, in that there is a growing recognition that it is important to do something about the future; and methodologically, in that there are new and more effective ways of in fact doing something about the future.

Let me expand a little regarding these three aspects of our thinking about the future.

By the change in philosophical attitude to which I referred I mean that the exploration of the future is no longer equated with fortune-telling or with crystal-ball gazing. Instead there is a growing awareness that a great deal can be said about future trends in terms of probability, and moreover that through proper planning we can exert considerable influence over these probabilities. Fatalism, in other words, has become a fatality. The future is no longer viewed as unique, unforeseeable, and inevitable; there are, instead, a multitude of possible futures, with associated probabilities that can be estimated and, to some extent, manipulated.

As for the new pragmatic attitude to which I had also referred, and which is beginning to be noticeable in government as well as in industry, it is due—I think—to the fact that not only are technology and our environment under-

[1] Reprinted from the RAND Corporation publication P-3558, March, 1967, with the permission of RAND's Publication Department and the author. Any views expressed in this paper are those of the author and should not be interpreted as reflecting the views of the RAND Corporation or the official opinion or policy of any of its governmental or private research sponsors.

going change but the pace of change in our time is accelerating. No longer does it take generations for a new pattern of living conditions to evolve, but we are going through several major adjustments in our lives, and our children will have to adopt continual adaptation as a way of life. For such adaptation to occur without major psychological or economic disruption, it is becoming mandatory for us to strive to anticipate changes in our environment rather than to attempt to deal with them belatedly and inadequately after it has become obvious that they are upon us. The recognition of this need for anticipation has had visible effects. Until not so long ago, systematic efforts at long-range governmental or industrial planning were in bad odor in the capitalist countries, because they were associated in the public mind with what many considered the worst aspects of state-controlled socialism. This view, fortunately, is now a matter of the past, and there is a general awareness that in the competition between Western capitalism and the Communist bloc the former cannot hope to prevail unless the quality of its long-range planning is unsurpassed. As evidence I can point to several developments, in labor, in industry, and in government. Labor unions show growing explicit concern not just over the near future but over the long-term social implications of automation and other causes of increased productivity. In industry there is likewise a noticeable change in attitude, inasmuch as a hard look is beginning to be taken in many places at the possible long-term futures of our society, in order to derive from such forecasts appropriate guidance for the operation of industrial corporations. As for government, finally, the various Departments of the federal government in the United States are undergoing a thorough reorganization of their planning methods; this is in consequence of a directive from President Johnson to introduce throughout so-called program-budgeting procedures first used successfully only in the Defense Department.

The third point I mentioned, our growing ability to do something about the future, I would like to discuss in a little more detail.

In my opinion the so-called soft sciences are on the verge of a revolution. The traditional methods of the social sciences are proving inadequate to the task of dealing effectively with the ever-growing complexity of forecasting the consequences of alternative policies and thus furnishing useful planning aid to high-level decision-makers in the public and private sectors. This situation is now rapidly being remedied, by introducing new methods developed elsewhere in the form of operations research techniques, such as the construction of mathematical models, simulation procedures, and a systematic approach to the utilization of expert opinions—the latter, a subject on which more will be said below. In addition to these techniques, new uses of computers, with automated access to central data banks, will provide the soft sciences with the same kind of massive data-processing capability that, in the physical sciences, created the breakthrough which led to the development of the atomic bomb.

Among the new methods mentioned above that are under development is one that has become known as the Delphi Technique, which attempts to make effective use of informed intuitive judgment. It derives its importance from the realization that projections into the future, on which public policy decisions must rely, are largely based on the personal expectations of individuals rather than on predictions derived from a well-established theory. Even when we have a formal mathematical model available—as is the case, for example, for various aspects of the national economy—the input assumptions, the range of applicability of the model, and the interpretation of the output all are subject

to intuitive intervention by an individual who can bring the appropriate expertise to bear on the application of the model. In view of the absence of a proper theoretical foundation and the consequent inevitability of having, to some extent, to rely on intuitive expertise—a situation which is still further compounded by its multidisciplinary characteristics—we are faced with two options: we can either throw up our hands in despair and wait until we have an adequate theory enabling us to deal with socioeconomic and political problems as confidently as we do with problems in physics and chemistry, or we can make the most of an admittedly unsatisfactory situation and try to obtain the relevant intuitive insights of experts and then use their judgments as systematically as possible.

The best we can do, under the circumstances, when we do have to rely on expert judgment, is to make the most constructive and systematic use of such opinions. In dealing with experts, there are basically three rules which I think ought to be followed: (1) Select your experts wisely. (2) Create the proper conditions under which they can perform most ably. (3) If you have several experts on a particular issue available, use considerable caution in deriving from their various opinions a single combined position. The so-called Delphi technique, explained later, deals with this last point. But first, I will comment on the other two.

It is obvious that much depends on how expert the experts are—their proper selection presents many problems. I will not go into these now, but merely point out that there are difficulties in defining qualifications and measuring relative performance of experts. That is, it is far from obvious what we mean —or should mean—when we say that somebody is an expert; and even given reasonable criteria of expertness it may not be easy to obtain adequate data for determining a person's degree of expertise.

The second rule, that an expert should be placed in the right conditions in order to perform well, means that communication should be facilitated as much as possible. Here, first of all, the prior formulation of an appropriate model (even a very tentative one of the operations-analytical kind) would serve to communicate the problem to him with clarity and receive his answer without risk of misinterpretation. Secondly, the expert would be greatly aided in his performance if he had ready access to relevant information that may exist elsewhere (in this regard, rapid progress in data processing may open up new possibilities by which the present swamping with irrelevancies will eventually be replaced with push-button availability of pertinent data in the form of automated libraries). Thirdly, in order to provide access to intuitive knowledge that may not yet have been recorded, an expert's performance would be enhanced most significantly by placing him in a situation where he could interact with other experts in the same field or in related fields covering other aspects of the same problem.

A particularly effective way of encouraging interaction among experts is to place them in a laboratory situation where they are required to participate in a simulation exercise. In a simulation model a kind of conceptual transference takes place. Instead of describing a situation directly, each of its elements is simulated by substituting a mathematical or physical object for the real one and simulative relations for those that really exist. For example, a policy planning operation can be simulated by a set of make-believe decision makers who, playing roles in a laboratory "game," might go through the decision-making motions that their real-life counterparts would be expected to carry out in actuality.

In a simulation model, instead of formulating hypotheses and predictions

directly about the real world, it is possible instead to formulate them with reference to the model. Any results obtained from an analysis of the model, to the extent that it accurately simulates reality, can later be translated back into corresponding statements about the real world. This interjection of a model has the advantage that it admits of what may be called "pseudo-experimentation" ("pseudo" because the experiments are carried out in the model, not in reality).

Past experience with simulation models suggests that they can be highly instrumental in motivating participants to communicate effectively with one another, to learning more about the subject matter by viewing it through the eyes of persons with backgrounds and skills different from their own, and above all to acquire an integrated overview of the problem area. This stimulating effect of collaborating on the employment of a simulation model is particularly powerful when the simulation takes the form of an operational game where the participants act out the roles of decision- and policy-making entities. By being exposed within a simulated environment to a conflict situation involving an intelligent opposition, the "player," no matter how narrow his specialty, is compelled to consider many aspects of the scene that might not normally influence his opinions to the same extent as they do when he works in isolation.

After this excursion into the question of how best to provide an expert with a suitable environment in which to function, let me return to the third rule for dealing with experts: this has to do with the problem of combining the opinions of the members of a panel of experts into a single position.

Perhaps the traditional and in many ways the simplest method of achieving a consensus has been to conduct a round-table discussion among the experts and have them arrive at an agreed-upon group position. This procedure is open to a number of objections. In particular, the outcome is apt to be a compromise between divergent views, arrived at all too often under the undue influence of certain psychological factors, such as specious persuasion by the member with the greatest supposed authority or even merely the loudest voice, the unwillingness to abandon publicly expressed opinions, and the bandwagon effect of majority opinion.

In recent years we have been experimenting with a new approach to overcome these difficulties, which has become known as the Delphi technique. The Delphi technique, in its simplest form, eliminates committee activity among the experts altogether and replaces it with a carefully designed program of sequential individual interrogations (usually best conducted by questionnaires) interspersed with information and opinion feedback.

It may perhaps be easier to describe the principles involved in this procedure by reference to a particular example. When inquiring into the future of automation,[2] each member of a panel of experts in this field was asked to estimate the year when a machine would become available that would comprehend standard IQ tests and score above 150 (where "comprehend" was interpreted behavioristically as the ability to respond to printed questions possibly accompanied by diagrams). The initial responses consisted in a set of estimates spread over a sizeable time-interval, from 1975 to 2100. A follow-up questionnaire fed back to the respondents a summary of the distribution of these responses by stating the median and—as an indication of the spread of opinions—the interquartile range (that is, the interval containing the middle

[2] As part of a long-range forecasting study conducted with the participation of Theodore Gordon under the auspices of the RAND Corporation; a report on this study appeared as an appendix to "Social Technology" by O. Helmer (Basic Books, 1966).

50% of. the responses). The respondent was then asked to reconsider his previous answer and revise it if he desired. If his new response lay outside the interquartile range, he was asked to state his reason for thinking that the answer should be that much lower, or that much higher, than the majority judgment of the group.

Placing the onus of justifying relatively extreme responses on the respondents had the effect of causing those without strong convictions to move their estimates closer to the median, while those who felt they had a good argument for a "deviationist" opinion tended to retain their original estimate and defend it.

In the next round, responses (now spread over a small interval) were again summarized, and the respondents were given a concise summary of reasons presented in support of extreme positions. They were then asked to revise their second-round responses, taking the proffered reasons into consideration and giving them whatever weight they thought was justified. A respondent whose answer still remained outside the interquartile range was required to state why he was unpersuaded by the opposing argument. In a fourth, and final round these criticisms of the reasons previously offered were resubmitted to the respondents, and they were given a last chance to revise their estimates. The median of these final responses could then be taken as representing the nearest thing to a group consensus. In the case of the high-IQ machine, this median turned out to be the year 1990, with a final interquartile range from 1985 to 2000. The procedure thus caused the median to move to a much earlier date and the interquartile range to shrink considerably, presumably influenced by convincing arguments.

This convergence of opinions has been observed in the majority of cases where the Delphi approach has been used. In a few of the cases where no convergence toward a relatively narrow interval of values took place, opinions began to polarize around two distinct values, so that two schools of thought regarding a particular issue seemed to emerge; this may have been an indication that opinions were based on different sets of data or on different interpretations of the same data. In such cases, it is conceivable that a continuation of the Delphi process through several more rounds of anonymous debate-by-questionnaire might eventually have tracked down and eliminated the basic cause of disagreement and thus led to a true consensus. But even if this did not happen, or if the process were terminated before it had a chance to happen, it should be realized that the Delphi technique would have served the purpose of crystallizing the reasoning process that might lead to one or several positions on an issue and thus help to clarify the issue even in the absence of a group consensus.

The illustration given above is intended to describe the basic essentials of the Delphi technique. Refinements are made to fit each particular case; two of them are discussed below.

One is that of introducing weighted opinions. If it were easy to measure the relative trustworthiness of different experts objectively, we would obviously give greatest, if not exclusive, weight to the opinions of those who are most trustworthy. In view of the absence of such measurements, experiments have been carried out to test the degree of reliance that may be placed on the experts' self-appraisal of their relative competence. We found the results to be quite promising. This device was used in November, 1965, when twenty members of the faculty of the Graduate School of Business Administration at the University of California (Los Angeles) made forecasts of ten economic and business indices for the last quarter of 1965 and for the entire

year 1966 (twenty answers altogether). The procedure was as follows: In addition to going through four rounds of Delphi arguments, the respondents were asked to rank their relative competence with regard to the estimation to each of the ten indices. Then, instead of using for each index the median of all twenty final responses as the group consensus, and thus as the group's prediction for 1966, we took only the responses of those individuals who had ranked themselves relatively most highly competent for that particular index, and then used the median of just these forecasts as the group consensus. It subsequently turned out that this select median, compared to the median of all responses, was closer to the true value in 13½ out of the 20 cases.

Secondly, and finally, let me point out a slightly more sophisticated use of the Delphi approach, where it is used in conjunction with a simulated decision-making process of the kind mentioned earlier. A typical situation to which this mode of using expertise is applicable is one in which budgetary decisions have to be made on the basis of cost-benefit estimates.

When costs and benefits are clearly measurable objective terms there is no need to resort to the use of mere opinions. But in practice, benefits resulting from the choice of given policy alternatives are almost never capable of unambiguous measurement; even in the case of cost estimates it is usually only the dollar expenditures which are closely predictable, while social costs may be as elusive as the benefits. In such cases, a consensus of judgments made by experts may be helpful in obtaining an appraisal.

In a recent experiment conducted in the course of a project concerned with educational innovations, expert opinions were used in a context of this sort. Applying a Delphi process, a list of potential educational innovations, together with rough cost estimates for each, was first obtained. We grouped our experts into several panels and asked each panel to go through a simulated planning process by deciding how a given budget should be allocated to the educational innovations contained in the given list. In order to make these allocations rationally, the participants had to engage in an intuitive cost-benefit appraisal of each item on the list. The manner in which a group consensus of each such appraisal could best be obtained was by way of a Delphi synthesis of their individual opinions.

These examples are intended merely to illustrate the potentialities of the Delphi technique. Numerous further experiments need to be carried out to test the extent of its validity and to refine it to the point where it may be fully accepted as one of the standard tools for the analysis of the future and, in particular, for policy applications in the general area of social technology.

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The Nature of Forecasting: Speculating on the Future in Educating the Retarded[1]

Timothy Weaver, University of Syracuse

The nature of conjecture is determined on several premises. First, it is fundamental that forecasts cannot be tested on the basis of their "truthfulness." Forecasts can only be evaluated in terms of plausibility or soundness of argument or grounds. Therefore, in order for a forecast to be tested and useful, it must include some sort of explanatory quality.

It is also assumed that the purpose of forecasting is not to "predict." That is, forecasting cannot tell us what will happen but can only examine some of the factors that constrain what we might reasonably expect to make happen or avoid happening. Therefore, it seems important that several alternative possibilities be weighed, because we cannot know all of the variables that might lead to one or another consequence. That is as simple as the bettor "hedging" his bet.

Further, it is assumed that plausibility is distinguishable from desirability. What we would "like" to happen is not always "likely" to happen.

The purpose of this paper is to bring these assumptions out and demonstrate their value in considering the educational future of the handicapped.

Educational Policy and Change

An examination of the future is, in effect, an examination of assumptions held by each of us regarding how that future might come about. The nature of the future, in this sense, is such that forecasts are not fact. They are the products of judgment. The usefulness of a forecast can only be tested by an understanding of the assumptions which produced it. The value of this paper, it is hoped, lies in conveying to the reader the significance of that statement.

[1] Paper presented at the seminar entitled, "Rehabilitation of the Retarded: The Future," February, 1970, Rehabilitation Research and Training Center in Mental Retardation, University of Oregon.

Educators everywhere seem to face a tangle of blurred and uncertain problems that are compounded by a number of factors. One of these is the homeostatic nature of schools. Given the inflexible school structure and the nature of change in other segments of society, educators constantly feel the tension of "educational incongruency." Solon Kimball (1967) bluntly states that:

> It seems probable that any comparative study of organizational systems would easily establish that the structure and practices of urban school administrations are more archaic than those of any other major institution. This inflexibility has been demonstrated by their reluctance or failure to meet new conditions or to incorporate new programs (p. 9).

In traditional or less specialized societies, the educational process is in harmony with and reflects the values and practices current in other segments of the society. This is what is meant by educational congruency. As change accelerates, the effect on educational congruency is felt. Unless planning and change, which are accepted as normal in other segments of society (communication, economy, business, military), are also accepted as normal in education, dysfunction is likely to occur. Planning under such conditions is typically for the purpose of "catching up." This state of affairs has produced throughout education a critical policy dilemma. The educational dilemma is to constantly catch up in the face of more rapidly accelerating change.

One way to conceptualize the educational dilemma is to consider that, as change accelerates, less and less lead time is available to the decision-maker and planner. 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. The logical extension of this set of conflicting conditions can be visualized by two intersecting lines—one line decreasing (lead time to plan) and a second line increasing (time needed to plan solutions to problems, or to invent entirely new socio-technological systems to meet future complex problems).

Although the above description of a policy "crisis" requires extensive elaboration, the basic concept is sound and can be found in one form or other in most educational situations. In a stable and relatively unchanging environment, one can be reasonably certain that his views of reality will continue to be valid into the future even if such views remain unchanged. In other words, one can extrapolate a present state of affairs on into the future with reasonable assurance of accuracy. However, the impact of a rapidly changing world seriously limits the art of straightforward projections, and in this sense, the certainty of one's knowledge of the future is somewhat reduced.

In effect, the educator is caught between a future that is crowding him and the need to act. He is crowded by the uncertainty of knowing what effect an action taken today will have on an uncertain state of affairs tomorrow. Increasing change and complexity of problems demand some action, while the time required to take appropriate action is limited. This then is the general context in which the special educator must make decisions.

No discussion need be very detailed to suggest why educational policy makers in general, and special educators in particular, face a formidable task. Nonetheless, a few specifics may be helpful.

Two questions raised by the Harvard Program on Technology and Society are similar to numerous other hard questions facing policy makers. These questions are:

1. As a result of technological and social change the occupational dis-

tribution has changed from a pyramid to a diamond. If this trend continues, is a two-class society based on education likely to follow?

2. What might be some of the implications of this trend for educational policy, for the control and social integration of the knowledge elites, and for the relationship between the classes?

Two extremely hard realities emerge from the two questions above. One, should a continuation of the above trend (assuming it is valid) be permitted to continue, be facilitated, be blunted or altered in any direction? Two, if a change in the trend is desirable and feasible, what size resource commitment would be necessary to undertake any change, and what set of alternative future consequences of a change (or set of changes) could be anticipated? The point is that action taken or not taken in the present on such issues will have ***some*** future consequence during the last third of this century, or in other words, during the lives of those reading this paper.

Can the education system in its present form respond to questions such as those raised by the Harvard group? The system has been described in its present form by several people, such as Kimball and McClellan, as an anachronism. Dale Tussing's (1969 a) description is not unlike other critiques of the system, but perhaps states the case in blunter and more metaphoric terms:

> Education has a powerful and unique role in American society, with many of the social and teleological functions of the medieval church. Like the church, the schools are the main legitimating and certifying agent for ***persons.*** Education, meaning primarily formal education (under ***school*** auspices), is the only way to get into Heaven in modern U.S. society; attainment levels provide the only and universally accepted ticket. To be certified and legitimated, the person has to go through a long and highly ritualized process, some aspects of which are quite functional, and some which have only ceremonial value. Each level of school (kindergarten, primary, etc.) sees as one of its major tasks, if not its single task, preparing the persons (in all respects) for the next level, and is so judged; so that tests of the performance of the school and pupil are largely internal (p. 7).

The educational dilemma is perceived as real and the facts are hard. The problems of urban education present a present-day volatile example. Problems of urban education are this moment generating a hard, concrete complex of issues for policy makers. Theodore Sizer's (1967) study showed that 31 percent of the children who completed ninth grade in urban schools did not complete high school. Moreover, during a six week period in Cook County, Chicago, 88.4 percent of the applicants for welfare relief did not have high school diplomas.

A final note to the enormity of the policy problem in education is the complexity and diversity of the system. The rapidly evolving and ever more complex education system presents a kind of overlay to some of the above issues. Only a limited amount of organized data is available (Marien, 1968) at present to provide a glimpse at the size and complexity of the education system. The data which are available suggest a vast complex. In addition to a core enrollment of 53.6 million sudents in 1965 (legitimated, formal schools), there were 44.2 million students involved in various levels of training and education outside of the core. The last figure does not include such activities as scouts, dancing classes, summer camps, little leagues, etc., which serve as informal supplements to the formal system, nor do the figures include an estimate of the numbers of children who have spent some 3000 to 4000 hours

watching TV prior to entering first grade. All such outside activities comprise the "periphery" of the education complex. The periphery seems to be growing at a faster rate than the core, despite the fact that core enrollment has nearly doubled in the last 19 years. Marien (1968, p. 34) observed that the size of the periphery in comparison to the core has shifted from ".77 in 1950 to .82 in 1965 and will be at 1.02 in 1970." That is, the number of learners in formal educational programs outside the schools now exceeds the number in the schools.

The policy problem is further compounded by the jungle of structures which comprise American educational policy organs. Regarding this, the Committee on Policy Making for American Education for the National Academy of Education, chaired by Dr. Roald F. Campbell (1968) stated:

> The apparent complexity of policy making for education has several times all but turned us away from preparing this document. To many, this process (policy making) is thought to reside in the thousands of boards of education across the land. To others, the fifty state legislatures are seen as the bodies which make definite educational policy. To others, the federal government—the Congress, the courts, and the executive agencies—are thought to control the essential decisions with respect to American education. To still others, there seems to be no central locus of educational decision making; the process seems to be chaotic.

Two implications are clear and support the need for a particular kind of basic research: *(a) Educational planning must take into consideration more of the future.* Alternative policies must be assessed against *systematically conjectured* future states of society and the education complex; and *(b) Factors viewed as important in the present state of affairs may have less impact at some point in the future.* For example, student and teacher militancy was not generally anticipated in policy planning ten years ago. Indeed, it is perhaps true that militancy has partly been produced by policy planning as a latent function. It follows that policy decisions made now must be aimed at anticipating the future environment in which schools may be expected to exist and in which the policies can be expected to impact.

Much longer range planning seems to be almost demanded. Educators have become increasingly aware that the future is crowding and constricting freedom to take action and that change and complexity of problems demand much more elaborate planning. A new interest has emereged in forecasting alternative futures and consequences. Such interest includes the concept of systematically forecasting alternative states of affairs, embedding organizational goals in such alternative futures, and designing plausible extensions from those goals back to the present. It is assumed that inventing and using new methods and models for constructing "future histories" may acquaint the policy maker with possible emerging situations before they become compelling.

The problem for the special educator in examining the future is extraordinarily acute. The special educator must grapple with the emergence of a vastly more complex way of living and with a population characterized as "deficient" and "dependent." The policy question is one of a large segment of people without useful or marketable skills in a society that equates market value with human value. The dilemma goes beyond the bounds of the "mentally retarded," the "emotionally handicapped," and the "brain damaged." It is not one of trying to find out what the mentally retarded person is "really" like but of what impact the schools can have on significant numbers of chil-

dren and adults with basic social, emotional and cognitive deficiencies. Given the inflexible nature of schools and the rapidity of change in other segments of society, special educators must constantly feel the tension of educational incongruency. Often deficiencies and inadequate preparation for adult roles must be dealt with at a time when long-term needs of the learner are difficult to foresee. Moreover, the size, the complexity, and the nature of the "handicapped" population are very difficult to quantify. ***It is taken as a given that what were once clear-cut boundaries are now blurred.*** William I. Gardner (1968) raises several questions that are pertinent:

> Again I wonder of what value it is to know that "the" retarded is different from the nonretarded in 5 or 8 or 12 ways. Does this not serve merely to solidify, or render more rigid, the construct of mental retardation, a construct that is quite relative and a construct that is difficult to apply reliably due to problems of definition and measurement? Would it not be better to study dimensions of behavior and to seek relationships among variables which hold promise of being more reliable and less cluttered than such broad behavior categories as, for example, mental retardation or emotional disturbance? The focus of attention would not be on attempting to discover the essence of mental retardation but rather on discovering relationships among such behavioral constructs as locus of control, expectancy of success, frustration tolerance, self-concept, or negative reaction tendency ***and*** such other variables as mental age, an index of adaptive behavior, an index of interpersonal relations, as well as historical, other subject, or environmental variables. ***With this orientation perhaps we would avoid the temptation to discover what the retarded is "really" like*** (p. 66).

Gardner speaks of a vastly larger problem than defined by "traditional" special education terms. However, this is not to say that the special education system in its wider context cannot be examined in terms of a long-term future. In fact, it is the consideration of the over-all dimensions of the problem which make it an important policy question. Furthermore, not to project this problem forward may force upon educators a serious and chronic need for crisis management. Looking at more of the future can be a way of anticipating consequences of policy action, intended or unintended, before such consequences become overwhelming.

The Purpose of Conjecture: Examining Underlying Assumptions

There are many good reasons for trying to foresee what the world will be like 30 years hence (and for that matter at any point between now and the year 2000). The main reason is to determine how certain outcomes depend on choices made today. Unless we believe that human affairs are governed by fate, the purpose of a prediction can only be ***(a)*** to render it false by choosing to do so or ***(b)*** to increase the probability that it will in fact occur. That is, our intent in wanting to know the future is to take such actions and make such choices now so that the future will be different. In short, the fundamental purpose in thinking about the future is not to know what ***will*** happen, but to be able to think about what we might reasonably expect to ***make*** happen. It forces us to formulate more precisely what we might do in order to bring about that which is desirable or avoid that which is undesirable. In this sense,

then, a forecast is a proposition made in the future tense which carries with it, not some means for testing its ***truthfulness,*** but some means for testing its plausibility.

If we accept the premise that man can influence the future by conscious choice, it becomes imperative to ***(a)*** clarify that choice and ***(b)*** reasonably anticipate the consequences. This is not an easy task. Studying the future has been likened to the blind man describing a rampaging herd of elephants. That is, studying the future is extremely difficult because it doesn't yet exist. Its truthfulness cannot be asserted. It cannot be "known" and it cannot be described as we describe and know the present.

At best, the process of studying the future will remain imperfect because of ***(a)*** our lack of knowledge of causal connections in social processes, ***(b)*** the unpredictability of decisive or controlling events which may occur, and ***(c)*** our inability to actually test and compare conjectures in the real world. Beyond this, uncertainty and imperfection in our efforts to foresee are embedded in two major social processes[2] whose existence is clear but whose consequences are little understood. One of these processes is the proliferation of unanticipated consequences of specialized and ***differentiated*** decisions made in many scattered but limited spheres, for example, the relation between an individual decision to buy an automobile or to have a child and the general problems of pollution and overpopulation. Compounding this particular process is the fact that many people do not perceive a relation between individual decisions and general problems. "Someone else is causing it."

The other process is the inverse of the above. That is, the increasing ***integration*** of society to the extent that a few decisions by a limited number of persons in strategic places have ramifications for an even larger sphere of local and specific circumstances, for example, a nation-wide strike or a supreme court ruling on desegregation. These processes seem to be an inherent part of "living" systems. Living systems, instead of decomposing over time, tend to become ever more complex through a process of ***integration*** and ***differentiation?*** This phenomenon has been called "negative entropy" to distinguish it from the withering away that takes place in non-living or inorganic systems.

The important point is that the process of negative entropy produces discontinuities—unpredicted and unexpected outcomes. Thus, forecasts can most aptly be described as having been "reasonable" propositions—even if what was foreseen turned out to be wrong. That is, it is only the plausibility of that which is forecast that we can test. We cannot test its truthfulness. We can only talk about what we "expect" or "anticipate" or think is "probable," not what will happen. Therefore, an assertion about the future that contains no basis for judging its plausibility is rather useless. The importance of a forecast is in its "explanatory" quality. The underlying assumptions about such forecasts and the methods for producing these assumptions need to be continually assessed. Although we do not ordinarily engage in systematic examination of assumptions about alternative futures, it is hoped that by examining and exchanging such views, assumptions about factors which are amenable to change and control will become the focal point of discussion. It is through a better understanding and control of such factors that we hope to control the future.

[2] This idea was expressed recently by Professors Robert J. Wolfson and Manfred Stanley, Syracuse University.

[3] For further treatment of this phenomenon, see E. Schrodinger, "Order, Disorder, and Entropy," in Buckley, W. (Ed.), Modern Systems Research for the Behavioral Scientist (Chicago: Aldine Publishing Company, 1968), and Rapoport, A., "The Promise and Pitfalls of Information Theory," especially page 138.

Forecasts must therefore include a minimum set of assumptions upon which they are made so that those factors are emphasized which are amenable to control and so that the basis for the forecast can be rigorously examined. It is worth noting that early detection does not in itself make a future issue worth pursuing unless early detection increases the range of responses and hence, the degree of control that can be exercised. Both of these statements point to the need for institutional procedures that strip bare assumptions, desires, fears, and beliefs about the future held by the key members and constitutents of our institutions.

Finally, we often fail to distinguish what is desirable or undesirable from what seems plausible. When we talk about something being desirable in the future, we use such words as "hope" or "goal." When we speak of plausibility, we use such words as "expect," "probability," or "likelihood." There is a fundamental distinction to be made, although often it is not. The purpose for making such a distinction is to separate forecasts of what seems "likely"—given certain factors—from what we would "like" to see happen or "like" to avoid happening. When we speak of forecasts, there is also a second fundamental distinction to be made—the distinction between a proposition stated in the future tense and an argument supporting that proposition. In the remarks that follow I want to make both distinctions clear. I want to deal with certain factors that I believe will be significant in formulating forecasts about the handicapped, but only in a very particular way. These factors are to be distinguished from "forecasts" or "predictions." They are only to be taken as statements which make known ***my*** assumptions. They are not statements of what I think would be desirable, but what I think are the grounds for beginning to formulate certain plausible propositions. They are not, then, propositions made in the future tense, but factors which might be useful in making such propositions.

In the following notes I also want to underscore the importance of considering alternative possibilities. The factors that are considered here quite plausibly could lead to several possible outcomes. The outcomes which I expect are not the only outcomes one could conjecture. The outcome that I describe is not the only outcome I think is plausible. It is simply one proposition formulated within the time and space limitations of this paper.

It is worth noting the frequency with which one finds forecasts reflecting an increasing rate of extension of educational services to specialized minorities. Such forecasts obviously are desirable, particularly to specialists who work with such populations. However, one could argue that instead of an increasing rate of expanding services to minorities, the rate will slow down. The factors which support a "stabilizing" condition are discussed below; in brief they have to do with ***(a)*** the way we use rhetorical argument to support empirically refutable ideologies, ***(b)*** the "maturing" nature of the public school system, and ***(c)*** the rising cost of expanding services.

Speculation on an Alternative Possible Future

The importance of mental retardation as a policy consideration is uncertain to me except as a part of a larger social condition. That condition is the potential growth of a sizeable "surplus" or essentially "useless" population. That is, the retarded are among those people who, in a society dominated by technicist values, possess no particular "marketable" skill. It is in this larger context that I want to examine some implications for the future of the mentally retarded.

I sense that what were once seen as discrete and largely medical definitions of handicap are now seen as blurred and educationally not very useful labels. This is quite clear in a major policy statement of a large suburban school district (Montgomery County Public Schools, 1967):

> Too much of the direction of meeting the needs of children with problems has been organizational or structural. The result has been more special classes for more types of pupils with more diagnostic labels which have evolved from a medical, not an educational model. For example, educators have behaved as if the label mentally retarded is enough for the teacher to design and implement a total sequential program for a group of children for whom the label was applied because they were below 75 on an intelligence test at a point in life. This label does not describe the visual, auditory, kinesthetic, motor, self-concept, or social problems of the child in any specific way that the teacher or anyone else can plan a habilitation or rehabilitation program for the individual.
>
> A categoric approach to special education has educators in the "box game." The only course of action is more and bigger boxes. Viewed in a day when the cry is for individual programming to meet individual differences, the paradox of the categoric approach leaps out in bold large print (p. 64).[4]

The question is—what impact can the schools have on the general problem of severe deficiencies among children and adults? Perhaps none in their present form. But educational policy should not and cannot be limited to the school, although "education" and "school" have become fused in our minds. For valid reasons, school policy does not always confront larger issues and questions of society. The important point is that to identify and clarify social options for the future, we need to consider those on which education can have some impact, in other words, policy should not be made in a social vacuum. The question, according to T. F. Green (1969), is no longer "Dare the schools build a new social order?" They have not and probably will not. The central question is, "Dare the social order erect a new system of schools, or, a system of education without schools?" Such a question suggests a massive reform of the polity of education and a movement away from managerial or technicist values, that is, from school as the preparation of manpower for the economy to an institution imparting more humanist values.

Simply put, in the context of this paper, what is there about the present system of education that will impinge upon the future of a "surplus" population. I am assuming that that population will live in a society as a "dependency" subgroup. It seems to me, therefore, that we would want to examine our beliefs about "dependency." We would also want to examine the likelihood of the education system having an impact on the problem and having the resources required to do so. Specifically, the factors that I want to deal with are: individualism as an ideology; the maturing public school system; and the costs of the public school as a labor-intensive enterprise. I believe that when taken together, these three factors are significant in considering the future impact education might have on the handicapped.

Individualism as an Ideology

We still seem to value "individualism" as a social doctrine, although there is some evidence of its demise. The present form is largely rhetorical. Histori-

[4] Montgomery County Public Schools. "Focus on Children with Undeveloped Skills," Title III, ESEA Proposal, 1967.

cally, this view of society is thought to have been current in America in the last century and early in the present. Individualism holds that each individual should be understood to exist independently. "To each his own." It is still a part of the American rhetoric that each person is to be self-reliant, suspicious of central governments and social mastery. As individualists we view dependency as a weakness associated with idleness and sloth—at least this is the ideology or system of beliefs that characterizes our rhetoric. Individualism is an ideology reflecting in part ***(a)*** the absence of rigid class structure and ***(b)*** a system of attitudes concerning, in Dale Tussing's (1969 b) words,[5] "social ordering and the distribution of income, wealth and power."

The importance of this ideology or its present rhetoric for essentially dependent or surplus people is very clear. All people are expected to provide for themselves; they should be self-reliant. Accompanying this belief are certain "disbeliefs" about those who cannot provide for themselves. These comprise a kind of "immorality of dependency." Dependency is believed to be a moral weakness. It is perfectly okay to be poor, but not okay to be poor and dependent. Social or public aid runs counter to independence. It dulls initiative and encourages idleness. Although Americans have pieced together very strong programs of categoric aid, comprehensive social aid programs on a broad scale are unacceptable in principle. As a result, existing programs are often designed to appear to be something else, for example, "National Defense Education Act," "soil bank," "parity," etc. People in some programs accept them as in keeping with rather than in violation of the ideology of individualism.

However, people in other programs, primarily the "surplus" population, are forced in several ways to accept their basic social illegitimacy. In keeping with the punitive nature of American dealings with the immoral and the weak, application for aid is often degrading—names are made public information and labels such as "public housing" are used to make visible one's condition of dependency. Food chits for welfare recipients is one of the more dramatic examples. And even though we distinguish between the "deserving" and "undeserving" indigent, people unable to be self-reliant, regardless of circumstances, are still regarded as "essentially illegitimate." Although "deserving," the elderly should have had more foresight, children should be cared for by their parents—if not, then by their relatives—the sick should have had medical insurance, etc. Both the deserving and undeserving make up the "useless" in our society. And the tendency is to provide them, insofar as we can, only goods—food, shelter, clothing, medicine—but no real means of exercising economic choice.

The essential point to be made is that once a significant proportion of the population obtains social aid applicable to itself, the motive for continuance of the spread of social aid to remaining groups may be slowed.[6] Those so benefited seem willing to use the rhetoric of individualism to argue against extension of aid to others. Such an extension, they argue, is a violation of sound philosophic principle. Our belief-disbelief systems allow us to accept social aid for ourselves, while at the same time reject it for others. Our beliefs are such that camouflaged programs, it can be argued, are not really social aid programs at all. Farmers, receiving direct aid in amounts up to a quarter

[5] See A. D. Tussing, "A Social Model of Poverty and the Progress of the Welfare State," (Educational Policy Research Center, October, 1969) for further elaboration of the definition of individualism as an American ideology.

[6] My thanks to Professor A. Dale Tussing, Maxwell School, Syracuse University, for this and other significant ideas in this paper. In this sense we are talking of a kind of "tyranny of the majority."

of a million dollars and members of unions protected by an array of public supported programs can argue against other aid programs as undermining initiative and wasting taxes. In principle, I am arguing that the satisfaction of the needs of a comfortable majority is sufficient to slow social aid to the unprotected minority. And that outcome is even more likely if the cost of providing such aid is increasingly "expensive."

The Maturing Public School System

The concept of a "maturing" elementary and secondary school system in America is related to the above notion that majority satisfaction runs counter to continuing spread of aid to specialized groups. By a maturing school system I mean one which has moved from satisfactorily providing credentials for only a tiny minority of the population to providing credentials to a large majority.

The percentage of eighteen-year-olds possessing high school diplomas has increased from about six percent in 1900 to about 78 percent in 1968.[7] This is a remarkable growth—in actual numbers from some 90,000 graduates per year to almost three million per year. It may mean a virtually certain slowing down in the growth rate of the system, in effect, a maturing of the system. We may also see another effect of "maturation." A sizeable majority of the population now are able to acquire, at public expense, the credentials to enter the economy or opt to continue for still more education. It has been pointed out that this process resembles the teleological function of the medieval church, providing the credentials needed to enter heaven, which today is entry into the mainstream of economic wealth and status.

However, the spread of secondary education to the majority may also have the effect of blunting the pressure for continued spread. In fact, the major trend which now seems to be emerging is for those in the majority, those who have made it to high school graduation, to press for still more. The percentage of high school graduates who choose to enter college has risen from less than 16 percent in 1940 to almost 50 percent in 1968. The demand for resources to extend secondary education programs to the minority currently unable to reach the 12th year must compete with resources to expand community colleges and four-year colleges to handle this ***three-fold*** increase in college enrollments. This factor taken alone is powerful, but is probably not sufficient to slow or stop the spread of a secondary level education to the minority. However, laid against the reality of increasing costs in education generally, and particularly against the even higher cost of special or compensatory programs, it seems reasonable to expect a slowing effect in extension of programs to the remainder of the population.

It seems to me that the above factors alone do not sufficiently constitute a crisis, nor are they alone sufficient to blunt the spread of services. One could argue that schools are not providing services to special groups, however, as rapidly as the need is perceived to increase.[8] This, in and of itself, will not necessarily bring on a crisis. "Educational incongruency"[9] will be unlikely to

[7] Data collected by James C. Byrnes, Senior Research Fellow, Educational Policy Research Center, Syracuse, 1969.

[8] It has been pointed out to me by Thomas Corcoran, Research Associate at the Educational Policy Research Center, that this may not be the central point. It could well be that programs and funds are increasing for "special" and "compensatory" education, and this, combined with changes in educational dogma, has brought about a rapid increase in children defined as needing the service. This, it seems to me, does not dispute the proposition that perceived needs are growing at a more rapid rate than services.

[9] Solon Kimball's term.

produce a crisis until *(a)* schools can be valued by this group as providing the only source of credentials for successfully entering the mainstream of the economy; *(b)* the credential actually serves the function of a credential—for instance, it is questionable whether diplomas or "certificates" now awarded special education graduates really serve as credentials and whether Negroes with the best of credentials can always successfully enter the mainstream of wealth and status; and *(c)* the schools do a lousy job of providing credentials at a time when they are both valued and are equally legitimate for all who possess them. When these three conditions converge, the schools may be forced to deal with the minority under crisis conditions.

The Costs of the Public School as a Labor-intensive Enterprise

A third factor is important in considering the spread of educational services to a minority. Some enterprises, under increasing demand, cannot rapidly increase efficiency. The school is such an enterprise. In their present form as "labor-intensive" organizations, when schools provide more services those services become more and more expensive. There has been a rapidly rising per unit cost in education. That trend will very likely continue until we find a way to transform schools from labor-intensive to capital-intensive enterprises. Simply put, costs will increase because of the absence of cost-saving technological changes. Nonetheless, skill needs, consumption desires, status needs, and leisure education point to continued increases in quantity demand for education. The increase in quantity demand and per unit cost will require rapid increases in public funding for education. The per pupil expenditure for elementary and secondary schools has risen from roughly **$185.00** in **1930** to approximately **$695.00** in **1968.** The cost has increased nearly **100** percent since **1955.** However, it is and will continue to be much more expensive to educate the "surplus" population.[10] Much smaller classes, highly specialized personnel, special materials and tools, slower rate of learning, complex social-emotional and cognitive problems, special diagnosis and prescriptions tailored to individuals rather than groups—all of these contribute to present high costs and suggest that costs of special and compensatory education will rise even more rapidly than general education costs.

In conclusion, these three factors—ideology, maturity, and cost—taken

[10] The New York State Department of Education, the Bureau of Educational Finance Research, reported for the year 1965-66 that the N.Y. State per capita expenditures for handicapped children exceeded general education expenditures as follows: 1.6 to 1 for educable mentally retarded; 1.9 to 1 for trainable mentally retarded; and 2.0 to 1 for physically handicapped. In the Montgomery County Public School System, Rockville, Maryland, the expenditure ratio for all children in special education as compared to general per student expenditures was 3.0 to 1. The State Department of Education in Pennsylvania reported an expenditure of 8.3 to 1 for "socially and emotionally" handicapped children (personal communication from Dr. Daniel Sage, Coordinator of Special Education Administration Training Program, Syracuse University, January, 1970). There are several possible alternative consequences. For one, the provision of services for the "surplus" population may increase in the "periphery." Sheltered workshops, special training programs in industry, military and business may grow rapidly enough in the near future to ease the pinch. There is some evidence that as the "core" (public elementary-secondary-college) system has matured, the periphery has grown at an increasing rate. Just what percentage of the periphery includes programs for functionally handicapped (Educable), unemployables, and poverty groups or what percentage might be labeled compensatory is not clear. One policy option might be to subsidize such programs in the private sector under legislation like that which created OEO, Job Corps, etc. Titles I and II of ESEA were, of course, direct subsidy programs for this population within the core.

together suggest a future of stabilization in the spread of education to a minority with highly specialized needs, unless a choice is made ***now*** to change that future. This is not to say that population will be ignored. It is already receiving considerable attention. What I am saying is that the need to take action, to implement programs, will increase more rapidly than the actual implementation of such programs.

Conclusion

In summary, I have attempted to bring out some points about the nature of forecasting. These are dealt with rather abstractly, but I hope that I have been able to illustrate the importance of considering both forecasts and supporting factors. The significance of a forecast is in the demonstration of its plausibility such that people are willing to take some sort of action. Therefore, the argument which supports one's judgment as to how a particular future might come about is an essential part of the forecast. Such an argument forces us to consider more precisely what factors may be important in bringing about change.

My argument, which supports a "stabilizing" future, is subject to rigorous debate. However, the major purpose in constructing such an argument was not to predict what will happen, but to illustrate how forecasts might be made. It should be clear that such a paper is the beginning point in policy analysis. Several other factors could obviously be incorporated into this argument or into a counter argument. Nonetheless, the paper affords an opportunity to begin to examine alternative future possibilities. The need to formulate alternative policy options seems to follow. That is, the paper is an example of one approach to opening up the hidden assumptions and beliefs we hold about what might happen and what might be made to happen in the future.

As educators, it seems clear enough that the longer term future must be taken into your decisions. The growth and spread of issues and problems demands some foresight. The spread and impact is slow, perhaps unnoticed, at first. Then suddenly an issue is upon you with overwhelming force. The examples are numerous. At present, race, student dissent, and drug use and abuse are rhetoric—but nonetheless indicators of issues and problems. It is in perceiving the emergence of these issues prior to their impact that would help institutions prepare for change. In many respects, issues spread like epidemics and often have adverse effects on those without foresight and subsequently without options.

Forecasting can help get out on the table those factors and conflicting assumptions that often block change. In this sense forecasting is a pedagogy. It is a method for helping educators study their future.

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Special Education: Trends and the Future[1]

Robert Schwarz, University of Oregon

A limited number of people in our society are able to earn their living by predicting the future. Their background and training varies widely as does the financial reward they receive from their work. Some serve as fortune tellers in carnivals, others cast horoscopes and advise Hollywood stars. Still others participate in the long-range planning efforts of such governmental agencies as the Department of Defense. While the skills and techniques represented by these persons differ, anyone attempting to prognosticate must either have a touch of magic, a touch of genius such as da Vinci demonstrated, or the ability to develop a logical hypothesis from available data.

I make no claims for magical talents or that touch of genius. Moreover, my hypotheses regarding the future may be in conflict with the best estimates of any one of you; in fact, we may all be wrong. With a problem as all-encompassing as mental retardation—a problem ranging in scope from the least able child in an institution to the multitude of disadvantaged children in our cities' slums—it would indeed be presumptuous for any one person to tell the type of group represented here today what the future holds for special education. I can only ask your kind indulgence, therefore, while I do my guessing. I make no claim for original insights in this area; what I have to say represents an amalgam, distilled from a number of sources. Before I begin, however, it is necessary to establish a few guidelines regarding the approach to the problem.

In considering the future, some maintain that the decade between 1990 and the year 2000 will be spectacularly different from anything we have yet experienced. There is a certain charm to this visionary approach, which opts for flying school buses and complex computerized instruction for each child, and my inability to go along with it may result from a lack of imagination coupled with an ingrained conservatism. However, in 1939, advanced thinkers created a model of New York City entitled ***New York—Thirty Years from Now,*** which depicted an ideal setting for work and play. Free of poverty and

[1] Paper presented at the seminar entitled, "Rehabilitation of the Retarded: The Future," February 1970, Rehabilitation Research and Training Center in Mental Retardation, University of Oregon.

slums, it contained green spaces, mile-high buildings, and high-speed expressways. Unfortunately, the New York of today is a vastly different place.

On the other hand, there are those who declare that nothing constructive is occurring and that man is essentially a selfish, non-rational animal. They point out that in over 3000 years of recorded history there have been less than 300 free of war; they say man is not going to change his ways and if he survives to remember the 1960's he will recall them as the "good old days." This extreme is also difficult for me to accept. Despite the self-criticism often heard when educators review the recent past, individuals working with the mentally retarded tend to be reasonably kind and at least semi-rational.

In view of what has been done for the retarded by our society, the negative outlook is probably an even greater mistake than looking for magic cures over the next several decades. Although we are still far from a solution to our difficulties in education, our society has come a long way from the days of the madhouse and gross human neglect. For better or worse, the future will probably not be as different as some may think. Planning for change will continue, but actual changes will be modest in terms of the true capabilities of a nation that in one decade of serious effort put men on the moon. In the ensuing discussion, therefore, I will approach the future of special education on the middle road that lies between fanciful speculation and the castigation of the past.

In truth, the future will be what we make it, for societal changes evolve slowly. Change in education is slow because present patterns have a profound effect on future programs. As the streets laid out in our towns many years ago still dictate city traffic patterns, so present educational practices will modify and dilute radical and unconventional ideas for change. We must accept the fact that our ideas will be tested in the light of social, technological, and ideological factors. If we want changes to occur in education—not by accident but through planning that is in keeping with our goals and aspirations—the time to begin our efforts is now. Comprehensive planning is necessary if we are to avoid undue delay and long-range errors.

It is necessary, then, to approach the "new look" in special education in the context of our society a few decades hence. Accordingly, the ***first*** section of this paper sets up a frame of reference for our world of tomorrow. Some of the trends in our society that are significant to education are discussed, particularly those trends and problems indigenous to the cities. The ***second*** section outlines an overall plan of special education based on this picture of the future. Specifically, the second section describes future special education programs for ***(a)*** the school-aged child, ***(b)*** the pre-school child, ***(c)*** the adult, and ***(d)*** the institutionalized. The probable effects of these programs on teachers and teacher-training programs are also discussed. In view of the possible future role of medical advances on special education, the ***third*** section of the paper points out some recent medical advances which contain implications for the future.

Education for Tomorrow: Special Factors

In all probability, our society will continue to insist on compulsory education. Such education must be not necessarily the same education but the best education available for each child. To demand the attendance of children who fail to learn and in time learn to fail is grossly unfair, and I believe that our society will persist in the struggle to provide equal educational opportunities for all.

As demographers present the picture, the major problems of our society will be urbanization and population. Between World War II and the present, 90 million children have been born and absorbed by our society. This represents a net increase of 60 million people, which accounts for our population growth from 140 to 200 million. Forty percent of the current population is under 20 years of age, and this alone has had a tremendous impact on education. The cities have been the areas taking the brunt of the population increase, and urban population is expected to double within the remainder of this century. Demographers estimate that by 1980, 75 percent of the people in this country will live in three huge urban centers: "Boswash," the area between Boston and Washington; "Chipitts," the area between Chicago and Pittsburg; and "Sanson," the area between San Francisco and San Diego. In addition to these urban centers, a number of cities such as St. Louis and New Orleans may each contain over five million people. Special education in the future must deal, therefore, with the problems of the cities. Even a casual look at these problems reveals, for example, the stake the retarded have in the war on poverty, a war which was to stage a massive attack but seems to have become a series of small brush fires.

Although the Constitution indicates that education is a function of the states, the fiscal burden of educating our people has achieved national attention and must undoubtedly be handled at that level. Education has ceased to be a local problem and in time will require a national education policy. Extensive programs are essential, involving large monetary expenditures. It may be that future education will require equal priority with supersonic transport or A B M systems. When thinking about the cost of education we should be aware of the data from a recent budget message: of each 1000 dollars spent, 350 goes for the Department of Defense, 35 for education. It appears that a reorganization of priorities is in order. Urbanization and the complex human relationships resulting from population shifts will accentuate the issue, for they are presenting problems in certain areas today that may well be problems in all areas tomorrow.

Up until now, much that has been done in the field of education and training for the retarded has been the result of the combined efforts of schools, parent groups, and volunteers. While the assistance of private groups will always be welcomed, the job of serving the exceptional is becoming more and more a concern of the public. In the future, we can expect the government's assumption of responsibilities to increase rather than diminish. During this process, there will be those who decry the loss of local control. Nevertheless, educational problems have achieved national scale, and administrative devices such as compacts between states may become part of the solution. Those who are apprehensive about the federal role in education must realize that the government is already shaping educational policy by means of grant support for particular programs. Unless the federal government takes appropriate action and encourages areas to resize local and state units in terms of efficiency, the slow rate of progress existing under local control will continue and the gains occurring during the next 10 years will be slight. It will take a total government effort to assure equal educational opportunity for all Americans.

In brief, then, the population will continue to grow, the cities will become increasingly crowded, and larger educational units will be organized. If accepted, these assertions regarding our society in the future can be referred to in the attempt to structure special education for the closing decades of this century.

Beyond Special Education: Patterns Toward "Special" Education for All

The School-Aged Child

When contemplating the need for special education services in the future, even the more conservative educators agree that change is in order. This is not the time to review the mediocre results of past decades of singular allegiance to the special class concept. Research studies have been conducted to find some form of statistical support for this widely accepted method of dealing with a difficult problem. Despite negative findings concerning special class placement, few schools have modified their procedures in this area. Even without the impact of research and urbanization, it could be expected that some changes would occur merely through time. Time is running out, however, and the congested cities of the future will force the issue; the need for services will accelerate the movement toward a more realistic method of helping children unable to cope with the academic work assigned to their peers.

Integrated programs in the public schools would bring the children now considered upper level retardates (educable mentally retarded) back into the mainstream of education. The estimate that special classes are serving only 50 percent of the children in need of some form of special education has led to the erroneous idea that special class programs must be doubled. The fact is, although many of the children yet devoid of services will need some form of remediation, relatively few will require structured special education programming. As school systems expand, research continues to proliferate, and parent groups become better informed, we can expect to see the end of self-contained classrooms for the educable mentally retarded. They might follow the "fresh air classes" of a few decades ago into educational oblivion. There is no denying, however, that E M R classes will not go quietly; empires have been built around them and there are few within who will abdicate willingly.

The possible closure of these classes raises questions concerning placement of the children involved. I believe they will participate in regular class programs which will be unlike those in effect today. The setting for the city school of tomorrow may be two or three hundred acres carved out of the core of the old city as part of a slum clearance project. Children would be transported to this area from all points in the city and grouped for educational purposes to a degree impossible under the neighborhood school concept. In this park, with its many schools, children would be grouped according to chronological age. Each group would include 100 to 150 children and 5 or more teachers. The need for a formal grade structure would be obviated by individualization of instruction through educational technology. Scheduling would be based on a modular system and it would be possible for two or three teachers to direct the majority of the group in certain activities while other teachers worked in a one-to-one relationship with specific children or utilized remediation techniques with small groups. In addition to a broad background in learning theory, each teacher would have some form of specialized training. In each group there would be a special educator, with all the skills and knowledge the term implies, who would be responsible for the children requiring special attention.

Those of you familiar with the classroom performance of children at the lower end of the educable category will realize that a completely integrated program would be difficult to sustain. Some of the children we call educable would find it impossible to adjust to the free flow of modular scheduling. These are the children for whom special education was originally designed. I

believe that in the future a genuine understanding of the arbitrary and misleading nature of the terms "educable" and "trainable" will lead to a renewed attempt to educate each child in terms of his potentialities. We will move away from the rigid labeling system whereby children are sorted out as retarded, disturbed, non-achieving, etc. Children with any potential for independent living will stay in a regular school program, and those who require some form of life-long care or supervision will receive an appropriate education.

In the future, education for the less able will have a vocational orientation and focus on realistic preparation for adult living. Although it has been said that vocational education is a process whereby we try to prepare people for tomorrow's jobs with today's insights and yesterday's equipment, I believe the schools of tomorrow will develop mutually advantageous relationships with community industries. This will be particularly necessary in our heavily urbanized areas where school systems are in critical trouble today.

We can anticipate, then, greater flexibility and an increasing amount of student participation and activity in the programs of tomorrow's schools. Hopefully, the number of dropouts from the educational system will decrease, and it will be deemed a school failure if a child leaves school without some level of accomplishment. To accomplish these goals, persons filling roles similar to today's vocational counselors, teachers, recreational therapists, and others will work together to develop each child as an individual. Job skills focusing on the service industries will be taught to children who today would be considered unemployable. Considering the prognostications of the Bureau of Labor Statistics regarding a 40 percent increase in this type of work, there should be no shortage of employment. In view of the trend toward a shorter work week, appropriate use of leisure time will be developed in addition to work skills as part of the total educational program.

The Pre-School Child

The first organized efforts to study the effects of child development and early childhood educational programs were part of compensatory education programs such as the Banneker Project in St. Louis and Higher Horizons in New York. Thus far, the results have not been too encouraging, although a longitudinal study using very young children from a culturally deprived area of Milwaukee appears to be producing evidence of significant growth in intelligence under stimulating conditions. We can expect to see much more of this type of research in the immediate future. Such research is essential if, as Bloom (1964) maintains, a child has achieved 50 percent of his general intellectual development by age four.

The sheer number of children to be provided for in the cities of the future will necessitate an environmental approach in the attempt to obviate or diminish the need for special services during the traditional public school years. The expenditure of even a limited amount of money on pre-school programs, especially in the culturally deprived poverty areas, could serve to reduce the need for services in later school years. When society is finally committed to halting the destructive effects of malnutrition, inadequate pre-natal care, sensory deprivation, and other detrimental factors in the lives of pre-school children, the large block of children labeled "mentally retarded, etiology unknown," may cease to exist. The fact that the slums are a primary source of the so-called "educable retarded" is not new. A genuine effort to act on it may be the ultimate contribution of the future. We will see parent groups from the slum areas become actively involved in decisions affecting the lives

of their children. Specialized programs will offer comprehensive health and educational services to the family, such as pre-natal care and structured infant stimulation programs. Carefully designed day care and nursery school programs oriented toward preparation for the public school will be a part of the total educational program.

The Adult

Adult education must be considered when planning for special education in the future. We can look forward to changes in general education that will extend the school years through the expansion of the curriculum to include training in many additional areas. Continuing programs in a variety of fields will assist all citizens, including the retarded, to attain their full educational potential.

In the future, schools may be tied in closely with the labor market. This could possibly cushion the effects of seasonal or cyclical unemployment in two ways. First, less able individuals could be held in school to keep them off the job market for an additional period of time. This would permit further maturation and facilitate additional training toward occupational competency. Secondly, the school could serve as a training resource during the time a person was out of work. He could be paid for attending vocationally oriented classes as a form of unemployment compensation. In addition, through night school or leisure time attendance, the less able adolescent would have an opportunity to continue his schooling during the time he was in a work situation.

Special education is currently geared to the young. Those who need help are identified and provided with supportive services for a number of years and then wished well and sent off on their own. Research is available indicating that many of those considered retarded while in school become self-sufficient as adults, but little is said about those who leave school and simply wander about until picked up by some form of welfare service. Such organizations as the Job Corps could be viewed as frameworks for developing advanced training programs for those who leave school with inadequate skills. Population trends indicate that the number of old people is increasing rapidly. The retarded among them need special services, and I feel certain that future programs will provide supportive services for this group.

The Institutionalized

A comprehensive plan of special education must include services for the institutionalized mentally retarded. In the future, programs within institutions will emphasize education and extend it beyond its present boundaries. Work skills will be taught, and some of the backward patients will be brought into workshops where they can participate in group activities. I believe we will follow the Scandinavian trend in moving toward small institutions with a maximum of community integration. We will see schools and institutions collaborate in offering total life coverage to the children who require it. Day and night hospital services will be commonplace. Foster homes and small group homes will reduce institutional populations and community recreation centers will enable parents to keep a retarded child in the home while having a daily resource available. We may see payments being made to parents of retarded children. Even nominal payments would permit some parents to keep their retarded child at home. Anyone familiar with institutional costs (three or four hundred dollars per month per child) will recognize the savings that would occur if parents received 50 or 60 dollars per month.

The Teacher

The special education programs I have described will, of course, need appropriately trained teachers. This will require changes in state teacher certification, and it will be the responsibility of teacher-training institutions to assure that the new requirements accurately reflect the standards of the institutions. I believe that within the training institutions there is an increasing trend toward the development of appropriate programs and training sequences necessary to produce a special educator capable of working with a broad range of children manifesting various learning disabilities. This progress in curriculum structure is not occurring overnight, however. I earlier commented on the difficulties to be expected in changing the structure of the special class programs of today; I assure you, those accompanying the task of changing the curriculum structure in many education colleges will be no less.

Basic to the improvement of the teacher education process will be an emphasis on the idea that each child is an individual. In this sense, all education will be special education. Far too many teachers today teach "fifth grade" or the "mentally retarded" rather than children with unique educational assets and problems. Educators know that children assimilate new material at different rates; they vary in ability to recognize, "read out," and store information, and these abilities mature at different times. In the future, teachers will be able to recognize these differences and adjust individual programs accordingly. It may be that prescriptive teaching, of which educators have long talked, and which utilizes highly specific diagnostic and measuring procedures, will play an important role here. To help this come about, teacher-training institutions would need to equip teachers with the diagnostic and measuring skills this type of teaching requires. At any rate, the well trained teacher of the future will, through a combination of educational technology and teaching skills, control the informational input to each of his students in relation to their understanding of the material. The day of pragmatic, atheoretical grab-bag testing will end and evaluation will be based on learning theory and educational psychology. The teacher will function much as the physician of today who is prepared to diagnose as well as carry out a treatment program. Although the special educator will possess the specialized skills in remediation, all members of the teaching team will participate in individualizing the education of each child.

It is time that the positive findings of educational research are lifted from the professional journals and used for teacher-training purposes. Although in many universities the difficult area of classroom research is ignored in favor of laboratory learning studies, the contribution of the latter should not be devalued. Solid, meaningful research is necessary because teacher trainers of the future will want to tie their instruction to educational theory and demonstrate the utility of educational methodology.

Whereas previously, curriculum materials have been developed on the basis of the subjective judgments of those deemed competent by reason of education, in the future they will be developed on the basis of research findings and other empirical data. The classroom teacher will work toward behaviorally specified objectives, using materials and procedures designed to attain goals involving the preparation of the student for the realities of post-school life. There will be a move from the evaluation of educational efforts in terms of "number right" or local norms to a hard facts appraisal in terms of how many graduates are on welfare; how many are hospitalized for non-medical causes; how many are in trouble with the law; and how many are holding a

job commensurate with their potential. Since future technological advances will provide ready accessibility to any data necessary, the schools will focus on the training and development of personal skills necessary to fit into society, and curriculum materials will minimize rote learning skills and stress human interaction.

Tomorrow's educators will understand educational technology to the degree necessary to individualize instruction. As a result, we can expect to see far more attention devoted to the evaluation of student progress. At present, it is difficult to appraise the progress of the retarded and new measuring devices must be developed. Educational "hardware" is proliferating, and the use of micro-teaching programs, video-tape, and other training devices will become commonplace.

I anticipate two changes in education that I feel will be particularly important. The first is an increased involvement of the parents and the community in the education of the child. The demarcation existing between school and non-school learning experiences will diminish, if not end. As one means of relating to the community, the school could become a form of activity center where programs could be planned and essential records maintained. Education could be reinforced by diverse community resources such as art museums and factories. The flexibility of this program in terms of providing for varied interests and abilities would contribute toward the total education of all children. The second change concerns the recruitment of students to train as special educators. As precision replaces conjecture in education, not only will training programs become more difficult, but a way will be found to appraise the potentialities of teaching candidates as highly trained specialists. At the same time, the universities and the communities will need to work together to develop an operational framework that will permit the efficient utilization of the professional educator. The days when the teacher spends one third of his time checking attendance, collecting milk money, and passing out juice and crackers may soon be gone.

This change in the role of the teacher will accelerate developments in two other educational programs: the retraining of teachers currently in practice and the training of teacher aides. The former will require careful study and full support from the local schools. Change will be difficult for teachers who have been in the field for a number of years; techniques and styles developed over a long period of time may not be efficient, but can be resistant. Nevertheless, the effects of specific short-term seminars and institutes should not be underestimated. Concerning the latter program, our educational system is on the threshold of a major reorganization. The era of one room, one teacher education is coming to a close, and shortages of trained professionals dictate new approaches. A few schools are using classroom aides and this practice will become widespread. The training of para-professionals will open a new era in education. Public schools are restive, and some have declared that they will become training institutions if necessary. Although the universities have stepped aside after making a cursory survey of this type of training, some of the junior colleges and two-year technical schools have responded. I will not venture a guess as to who will take over in this area, but the number of aides could easily exceed the number of teachers in the future—the need is enormous in quantity alone. If quality is a goal, if the aide is to become an educational technician rather than a glorified baby sitter, someone could carve out a major educational program. Since the federal government appears to be solidly behind the concept of para-professionals, fiscal assistance should be no problem. It is possible that we could profit in this area from the experience

of those who designed the training sequences for the Peace Corps, whereby relatively inexperienced people were mobilized and prepared for person-to-person interaction in a relatively short period of time.

If individualization becomes a fact, tomorrow's school children may have no contact with anyone in the role of today's teacher. Educational technicians may become their first-line contact: curriculum specialists would develop the programs; educational planners would select appropriate sequences for each child in terms of his input into the computer; technicians with probably a two year, post-high school level of education would provide the actual day-to-day contact; in addition, behavior therapists would work closely with the educational technicians.

Influence of Medical Advances

Any discussion of the role of special education in the future would be incomplete without recognizing the "way out" possibility that medical advances could reduce the need for special education services, making drastic changes in our thinking necessary. Some of you may be aware of the work of Professor Ungar at Baylor in the area of the chemical transfer of learning. Anyone concerned with programming the 1980's and 90's will find the testimony of Dr. David Krech as given to a subcommittee of the U.S. Senate in April 1968 of interest. He made four points, each with profound sociological implications.

1. There has already been identified a class of drugs which can improve the memory and the problem-solving ability of laboratory animals. Furthermore, it appears that different kinds of drugs have differential effects on different kinds of intellectual tasks. That is, some drugs can improve performance in one type of task, other drugs, in other types.
2. These beneficial effects of drugs on the intellectual functioning of animals are found among the hereditarily duller as well as the hereditarily brighter animals. Indeed, some drugs can compensate completely for large hereditary differences in the learning abilities that may exist initially among different strains of animals. That is, there are drugs which can bring a hereditarily stupid animal up to the performance level of its hereditarily brighter cousin.
3. There has also been identified a class of drugs which can effectively prevent the permanent storing of memories in animals without interfering with their short-term memories or their ability to take care of their immediate needs. In other words, these drugs, when injected in the animal, permit it to put in an efficient day's work, but the animal is prevented from building up a permanent body of experiences, memories, and abilities.
4. It has been discovered how to manipulate the psychological environment of the very young animal so as to induce certain specified chemical and anatomical changes in its brain which influence the animal's learning ability. These changes in the brain's enzymatic activity levels, in its blood supply, in its cells, and therefore in its learning ability, can be controlled simply by manipulating the psychological environment of the animal without in any way altering diet, sanitary care, or medical care.

In summary, Dr. Krech pointed out that "the time may come when we shall be able, through a combination of psychology, education, and chemistry,

to raise verbal abilities or arithmetical reasoning abilities at will." The questions, of course, arise: Who gets what raised? Who decides for whom? And on what basis are the decisions made?

Conclusion

We must accept the fact that change is inevitable. The pace is quickening, and those dedicated to special education will either be in the forefront of a move to a new educational technology or they will be bypassed. We have talked of "educating the whole child" for years. "Individualization of instruction" has become a meaningless catch phrase, and we are all familiar with "we take the learner where he is and move him as rapidly as possible." These noble sentiments have been discussed as nauseum with little in the way of positive results. The tragedy of the situation is that by moving forcibly and making significant changes in our procedures we will merely be demonstrating present knowledge. We can declare that in the schools of tomorrow all education will be special; that each child will be taught to function at his potential; that the teacher will be technically qualified to appraise the need and deliver the services. However, unless those in charge of special education programs choose to act, nothing will happen. Throughout, we must recognize that unless educational programs are designed in accordance with the unique differences of students, the system is failing, and we are failing. Children have always varied in the values, learning potential and aspirations they bring to school. When the diversity among them is accepted and students are developed in accordance with their capabilities, the schools will be fulfilling their intended role in society. There is a significant place for the special educator in the educational "mix" of the future. Some will have direct contact with children, some will train, and others will contribute through research. While progress is often too slbw for those who feel a keen responsibility for the well-being of all children, we are changing and will continue to do so. The schools of tomorrow will be better in direct relation to the efforts expended today. Where the public schools are going is far more important than where they have been.

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Rehabilitating the Mentally Retarded: Predicting the Future[1]

George E. Ayers, Minnesota Metropolitan State College

The future, particularly the latter part of the present decade, has been portrayed as a time of rapidly accelerating technological and sociological change. A large number of people representing many fields of thought are currently in the process of prognosticating the direction and impact of change in the years ahead. The quest is for meaningful ways to respond to change. It seems imperative that each of us concerned with the dynamic process of rehabilitating the mentally retarded also involve ourselves in planning for change.

At the 136th meeting of the American Association for the Advancement of Science recently held in Boston, the speakers reflected on the impending sense of emergency and uncertainty overwhelming mid-twentieth-century man. They spoke of the misdirections of man's efforts in a variety of areas, such as balancing food and population and controlling the proliferation of pollution and waste. Perhaps most intriguing to those in our field of concern was a presentation by Dr. H.B. Glass, Academic Vice-President of the State University of New York at Stony Brook. Dr. Glass spoke of a process he termed "reversed Darwinism," which might tend man toward the survival of the least fit and weakest; of a reversal in evolution which has been brought about through the scientific advances which save the lives of persons who formerly would have died because of genetic defects; of diabetic children who, prior to insulin would not have lived long enough to be married, have survived and passed defective genes to their offspring. He projected an increase of genetic defects causing a large percentage of the population in the year 2000 to be supported on drugs and other special aids to maintain life. And he suggested that this inverted evolution might be reversed by limiting couples to two children until it could be shown that their children were mentally and physically sound (Webster, 1970).

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[1] Paper presented at the seminar entitled, "Rehabilitation of the Retarded: The Future," February 1970, Rehabilitation Research and Training Center in Mental Retardation, University of Oregon.

One might question whether Dr. Glass's concept of "reversed Darwinism" is related to the antiquated and obsolete "anatomical whole" approach to life. Is he reiterating the old Greek attitude that only the nonhandicapped should be provided an opportunity to fully participate in the mainstream of human life? Is he overlooking the contributions of rehabilitation in helping the physically and mentally handicapped in our society to be productive and to lead meaningful lives? Since the early 1900's rehabilitation has experienced many significant changes. They represent only the threshold of what the future may have in store. Traditional concepts and practices are eroding so rapidly that it is inevitable that rehabilitation for the mentally retarded in the future will be vastly different from what it is today.

Although the years ahead hold many unknowns and uncertainties, there appears to be no reason why man cannot effectively control his environment and provide for all of the needs of people. It is important that all of us concerned with rehabilitating the mentally retarded involve ourselves in some brainstorming and project the course on which we would like to travel during the 1970's and beyond. If we are alert to the dynamics of change, we may be able to direct the future of rehabilitation into a creative process that will aid in maximizing human potential.

It is the purpose of this paper to submit some trends regarding the future in rehabilitating the mentally retarded. Some of the trends are already beginning to emerge and it will only be a question of when, not if, they will come into full fruition. Other trends are predictions that may be seen as probable developments. Although tremendous technological and social changes make it difficult to predict the future with any accuracy, there are trends which can be noted, expected, or hoped for. I realize that the view of these trends is largely influenced by our individual experiences and affected by our individual biases. But, as Wolfensberger (1969) suggests, we should not let our personal feelings, one way or another, stand in the way of attempts to assess reality. Anticipation of and preparation for likely future events is much more adaptive than an attitude of denial or impotent passivity.

Predictions and Trends

Societal Attitudes

The myths, superstitions, and societal prejudices plaguing the retarded for centuries and resulting in their exploitation, extermination, and rejection are gradually dissipating and being replaced with positive and optimistic attitudes. I believe that in the future the principle of valuing the retarded person as **a** human being will become a reality. As he is provided with the opportunity to unfold his personality and develop his potentialities for his own sake and for the benefit of society, he will become respected and valued. At the same time, society will more fully realize and fulfill its obligation in establishing the kinds of community resources that will more completely meet his needs.

In thinking about the principle of valuing the retarded person as a human being, I am reminded of an article by Mal Johnson (1969) in which she discussed the Danish philosophy relative to the handicapped. She reported that the Danes not only feel for, but take action to help their fellow citizens, including the handicapped, to attain and lead lives as normal and full as possible. She praised Denmark's programs and techniques in rehabilitating the mentally retarded and noted that human rights as well as human dignity are highly respected. Further, she indicated that she is ashamed of America—an

affluent society that moves so slowly in its research and spends so little time and money in caring for the retarded.

Can we replicate Denmark's philosophy? Can we advance similar progressive concepts of humanism in America? According to Otto (1969), the most important task facing us today is the regeneration of our environmental and institutional structures such as school, government, and church. With increasing sophistication has come the recognition that institutions are not sacrosanct and that they have but one purpose and function—to serve as a framework for the actualization of human potential. It is possible to evaluate both the institution and the contribution of the institution by asking: "To what extent does the function of the institution foster the realization of human potential?" I think we will attain the level of humanism of which Johnson speaks, thus eliminating the roots of prejudice and developing more accepting attitudes toward the mentally retarded.

Integration of Services

There will be increasing coordination and synthesis of traditional and new programs and techniques in rehabilitating the mentally retarded. We will see many rehabilitation service organizations and agencies merge in an effort to eradicate the duplication and fragmentation of rehabilitation services. As a result, the comprehensiveness and effectiveness of services for the retarded will improve considerably.

An illustration of this merger trend at the federal level is the recent incorporation of the Vocational Rehabilitation Administration with four other agencies—the Administration on Aging, Assistance Payments Administration, Children's Bureau, and the Medical Services Administration—to become the Social and Rehabilitation Service. This new organization, in which all of the component agencies except the Assistance Payments Administration have major responsibilities in the area of mental retardation, was designed to join the income support programs and the social and rehabilitation programs for needy Americans under the single leadership of the Department of Health, Education, and Welfare. It represents a constellation of programs whose objectives are solely and absolutely directed toward individuals—toward extending their capacity for a full life (Mental Retardation Activities, 1969).

At the national level, we will see increased cooperation among the many large associations dealing with the problems of retardation, such as the National Association for Retarded Children, American Association on Mental Deficiency, United Cerebral Palsy Association, and the National Rehabilitation Association. I predict that in the near future some of these professional organizations will merge. Since many of them are involved in similar goals, consolidation may be desirable. An unrelated but important factor here is that the survival of a few of the professional organizations is being threatened today because of lack of adequate financial support.

We will also experience increased coordination and synthesis of traditional and new programs in the area of cooperative school programs. Up until now, with few exceptions, cooperative school programs have been limited to special education and vocational rehabilitation. The Vocational Education Legislation of 1968 seems to ensure that vocational education will play an important role in all the future vocational programming for the handicapped.

Since coordination cannot be achieved simply at the federal level, the community will become more committed and involved in the coordination of community services and rehabilitation programs for the retarded. The efforts that "pay the dividends" begin where the service is, where the need for it

exists, and where a willingness to organize to improve services is essential—in the community. This concept has already been experimented with in five different cities where projects have demonstrated ways of effectively bringing together the services of agencies involved in programs for the retarded. Such coordination will incontestably result in the development and provision of comprehensive rehabilitation services in the future.

The synthesis of traditional and innovative techniques in the future will significantly influence the vocational adjustment of the mentally retarded. As already demonstrated by The Devereux Foundation, automated teaching methods combined with regular classroom work is more effective than machine methods or classroom instruction alone in enabling retarded students to utilize learned material in a practical work situation (Mental Retardation Activities, 1969). I agree with Dickerson and Lewin (1969) that this approach is needed and has unlimited possibilities in cooperative school programs in teaching specific behaviors needed by the retarded while freeing the teacher to develop simulated socializing experiences and other programs.

In short, the increased coordination and synthesis of traditional and new programs and techniques in rehabilitating the mentally retarded will contribute to the actualization of the principle of a continuum of support for the retarded. In particular, the integration of available community resources and working relations among the various kinds of rehabilitation agencies will facilitate their personal, social, and vocational adjustment.

Interprofessional Cooperation

The jurisdictional disputes among professionals in the field of rehabilitation will gradually disappear and be replaced with positive elements of interprofessional cooperation. Professionals in the future will adopt the concept that the basic concern of rehabilitation is neither professions nor disciplines, facilities nor techniques, agencies nor programs, but people. I envision in the near future, for example, that special educators, rehabilitation counselors, and vocational educators concerned with cooperative school programs will enter into a partnership of mutual agreement to integrate and coordinate their expertise in rehabilitating the mentally retarded. The quality of this partnership will depend on improved channels of communication among the three professional groups. Joint exposure to a number of similar educational experiences during their professional training will help eradicate the barriers to communication and interprofessional cooperation. The seminar, "Education-Vocation Continuum," held by Younie (1966) at Teachers College, Columbia University, for special educators and rehabilitation counselors, and the seminar here this week represent the initial forward thrust for multidisciplinary educational experiences. We will see more of such seminars plus the modification of education curriculums in colleges and universities to become more interdisciplinary in the future.

Utilization of Support Personnel

There will be increased utilization of support personnel in rehabilitation programs for the mentally retarded. There is a critical manpower shortage among rehabilitation professionals coupled with increasing demands of the retarded for new programs and more quality in existing ones. This makes it imperative that we examine the functions of professionals and clearly identify those that could be performed by persons with less professional qualifications. A number of rehabilitation programs have experimented with the use of

support personnel and discovered that they represent a wealth of potential for increasing the effectiveness and expansion of rehabilitation services to the retarded. Many of these individuals have demonstrated good judgment and have functioned effectively in such areas as interviewing, casefinding, referrals, collection of essential data on potential clients, maintaining liaison with community agencies, assisting in job development and placement, and maintaining agency records.

The Division of Vocational Rehabilitation in the State of Minnesota has established a number of comprehensive vocational rehabilitation programs (CVRP) in residential institutions for the retarded where support personnel are widely used. They perform many of the activities described above and have been extremely effective in helping the rehabilitation professionals provide more qualitative and quantitative services to the retarded. I feel that such cooperative programs will increase significantly, not only in Minnesota, but in many other states as well.

Social Concepts of Disability

We have seen dramatic changes in the classification of the mentally retarded, and the concepts of disability as they relate to the retarded will go through yet another metamorphosis. In the future, increasing attention will be directed toward the social aspects of mental retardation. Social isolation, for example, is an underrated aspect of the disability even today. As Switzer (1967) noted, it seems extremely unfair that superimposed over their real burden, the retarded should have this burden. Their isolation often begins with nonacceptance at school, continues with exclusion from athletic and social clubs, and ends with social handicaps on the job.

Peckham (1968) has suggested two new disability constructs of retardation —sociogenic retardation and sociogenic neurosis. "Sociogenic retardation" indicates a functional retardation in which the genesis is social. It is particularly endemic to the ghetto. The individual with such socially acquired retardation functions in all essential attributes as does the more conventionally categorized low IQ individual from the non-ghetto areas. He is naive about the world just beyond his limited orbit; in fact, the paucity of his resources for ever reaching or communicating with the outside world is often incredible. Typically, marked educational retardation, if not outright illiteracy, is common. Family relationships, if any, may vary across a broad spectrum of indifference, brutishness, or perversity, but in any event, there is ordinarily a singular lack of enhancing mental health principles in practice.

Peckham also speaks of "sociogenic neurosis," wherein the genesis of a neurotic condition is attributed to exceptionally weighted social stimulus. It implies that the dynamics of psychic erosion are massively arranged for impingement upon a cluster of individuals, such as a ghetto population. He feels that sociogenic neurosis may be distinguished, semantically at least, from the conventional psycho-neurosis entity in that the types of stimuli or stress situations that the latter cannot handle seem not to be inherently threatening to the overall group with which that individual is otherwise identified. If this is correct, it may be presumed that the classical psycho-neurotic is predisposed to an emotional illness because of a basic weakness in his own ego structure and that his tolerance for abrasion is individually weak. In sociogenic neurosis, however, even though "true" psycho-neurotics would also abound, it might be presumed that only the very strong would be able to be relatively free of neurotic "taint" arising from a lifetime spent in the ghetto environment.

As concluded by Peckham, if psychiatrists and psychologists who are re-

sponsible for certifying disabilities accept the rationale that the diseases of sociogenic retardation and sociogenic neurosis are indeed identifiable disabilities, 75 percent of the unemployed manpower in all of the ghettos in America could be served by state vocational rehabilitation agencies.

In the future we will see the development of many constructs such as Peckham's to describe the mentally retarded who come from socially and culturally deprived environments. In fact, the Vocational Rehabilitation Amendments of 1968 have focused attention on the necessity for research on retardation as a function of cultural deprivation. Current programs of research and demonstration will continue to be increasingly concerned with new approaches to retardation in ghetto areas and model city neighborhoods.

There is indication that the key Mental Retardation Centers at the Universities of Wisconsin, Texas, and Oregon will continue to focus on the Department of Health, Education, and Welfare's priorities of model cities, neighborhood service centers, rural poverty, and other priority areas as they relate to mental retardation. As an example, a "high-risk" population laboratory has been established by the University of Wisconsin Research and Training Center in Milwaukee's economically and culturally deprived inner city, which is characterized by an extremely high incidence of mental retardation.

Service Delivery System

The service delivery system will be modified to increase the effectiveness of rehabilitation services provided to the mentally retarded. In particular, public rehabilitation agencies, such as the Divisions of Vocational Rehabilitation, will make innovations in the delivery system in an effort to meet the ever growing demands for vocational rehabilitation services for the mentally retarded. It is common knowledge that there are identifiable gaps in the current rehabilitation system which necessitate rectification. The Statewide Planning projects undertaken by states to plan a comprehensive rehabilitation system that will serve all handicapped persons by 1975 are a step forward in an effort to close the gap.

In modifying the rehabilitation service system for the retarded, two major factors will be considered. First, opportunities for a variety of learning experiences will be built into the system. Since many of the mentally retarded lack adequate experience in a variety of work related areas and have not had the opportunity to engage in meaningful activities, they often fail at the beginning of their work experience. Second, behavioral adjustment criteria will be developed. In the current rehabilitation system, evaluation criterion for client success is primarily focused on employment, and inadequate attention is directed to the behavioral changes that may take place while the client proceeds through the rehabilitation process.

In developing an effective rehabilitation service system, rehabilitation workers and agencies would benefit from critical review of various work preparation and employment programs under the auspices of other public and private agencies. Programs such as the National Alliance of Businessmen, M D T A , O E O , and the Department of Labor have been successful in serving mentally retarded people. We can draw upon the experiences of these programs and abstract the components which will contribute to an effective service delivery system.

Employment Opportunities

In the future, employment opportunities for the mentally retarded will increase. DiMichael (1967) stated:

> In my experience with rehabilitation programs, I am told by leaders in vigorous programs that there are more jobs which the retarded can do than there are retarded persons prepared and trained to fill them. My reflections on these facts lead me to believe that competent counselors, educators, and placement specialists are able to offer substantial help such as the retarded have not had before. Their assistance, not available as broadly or as well in the past, has had a marked influence. This "professional intervention" was not taken into account in the usual, all-too-apparent treatments on job trends for the retarded.

The greatest impetus in increasing employment opportunities will probably be the use of job specifications which emphasize abilities. Jobs can be broken down into parts and new job descriptions written to fit the particular abilities of the retarded. Also, increased awareness of the under-utilization of abilities among the retarded will overcome the tendency to place them in positions which do not fully realize their potential. Dr. Abraham L. Gitlow (1968) has suggested four steps which might expand job opportnuities for the mentally retarded in the future: *(a)* realistic job hiring requirements, reducing the artificially high levels of education being demanded for lesser-skilled jobs; *(b)* better on-the-job training programs for unskilled workers; *(c)* job redesign, removing routine and repetition from high-skilled jobs and placing it in newly created positions that could be filled by the unskilled; and *(d)* active recruitment of unskilled workers to fill existing jobs.

During the next decade we will see the community assuming more of the responsibility for employment practices. Industry will provide imaginative leadership in redefining jobs which the retarded can perform, and will identify, if not actually provide, training appropriate to these jobs. Through coordination, facilitation, and education, the community will lower numerous barriers to the employment of retarded persons.

Speaking of community responsibility quickly reveals one of our most glaring weaknesses: the lack of adequate dissemination of information on the employability of the mentally retarded. We have already accumulated a vast amount of knowledge concerning the vocational preparation and placement of the retarded and we are adding to this sum daily. This accumulation of knowledge gives positive views of the rehabilitation of the mentally retarded and discloses insights leading to their participation in the world of work. This knowledge, however, is of limited value if it remains in the hands of professional rehabilitation workers only. It must be disseminated to the community, particularly to the employers and potential employers of the retarded. As pointed out in studies by Cohen (1963), Phelps (1965), and others, employer attitudes and the concept of mentally retarded employees present a challenge in public information for public schools, residential institutions, and rehabilitation agencies. If we hope to increase employment opportunities, therefore, we will have to strengthen our public information programs on the preparation and placement of the mentally retarded.

Conclusion

The specific predictions and trends that I have suggested in the rehabilitation of the mentally retarded are not to be considered comprehensive or inclusive. My time here today does not permit a more thorough discussion of them nor the inclusion of other areas, such as supervised residential living, eligibility requirements for rehabilitation service by state vocational rehabilita-

tion agencies, work evaluation techniques, and counseling strategies. The predictions may or may not come true, but the trends appear to be in the air and are consistent with the direction in which we seem to be going. The trend of thought around us in almost every human endeavor is to develop new models for responding meaningfully to change. In so doing, we will participate in a creative rehabilitation process which will assist the mentally retarded in maximizing their human potential.

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Social Work and the Mentally Retarded: A Glimpse Into the Future[1]

Meyer Schreiber, Fordham University

The forties, fifties, sixties... now the seventies. Man likes to count his days, his years, his tens of years; he enjoys recalling the past and attempting to foretell the future. In the 1940's and the 1950's, theories grew way ahead of the available data. In the 1960's, a "data movement" began to close the gap, and by about 1975, this gap may be overcome.

The likely pace and direction of social work and social welfare activity in the 1970's is still uncertain. My own judgment is that social welfare is moving through a period of precarious balance. Economic, political, and social conditions and forces as they influence and effect social policy and social services with their intended and unintended consequences could adversely tip that balance, setting in motion a series of undesirable social welfare events. The questions we ask of the future are large, general, and total. The answers in the most powerful industrial country the world has known are provided piece by piece by the decisions of the federal and state governments and some of the major voluntary organizations that create the social policies, the services to carry out the policies, the manpower to staff these services, and the funds to carry out the programs that will spell progress or stagnation, advance or retreat.

Why are we so concerned with the future? The reasons are clear. Within recent years we have witnessed an incredible explosion of human knowledge. With that knowledge has come a tremendous increase in the power and influence that human beings can exert over their environment and their fellow men. And with that power has come a significant search for meaning amid the rapid social change we are witnessing.

The pace and direction social work and social welfare activity does take in the '70's will influence the rate of progress in the area of mental retardation. This is so because the aims of social work and social welfare, being concerned

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with the fulfillment of each person as an individual and as a member of society, encompass the problems of the mentally retarded. The aims of workers in mental retardation both within and without the field of social work and social welfare converge as they confront the adverse social factors that complicate the problems of the retarded. Many of the outcomes in mental retardation will be determined by the issues, trends, successes, and failures experienced within social work and social welfare. The intricate relationship between the two fields requires a review of the nature of social work and its implications for mental retardation as a basis for formulating predictions regarding social work and mental retardation in the future. Accordingly, this paper is organized as follows: ***(a)*** "Social Work and Social Welfare," focusing on function, scope, problems, trends, and issues; ***(b)*** "Major Areas of Social Work Involvement in Mental Retardation," focusing on developments in four areas that will influence social work activities for the mentally retarded; and ***(c)*** "Predictions Regarding Social Work and Mental Retardation," focusing on four areas of concern regarding social welfare, social work, and the mentally retarded.

Social Work and Social Welfare

Function and Scope

Social welfare is the organized system of welfare services designed to aid individuals and groups to attain satisfying standards of life and health. It aims at personal and social relationships which permit individuals the development of their full capacities and the promotion of their well-being in harmony with the needs of the community. Social welfare has also been defined as encompassing the development and administration of social insurance, social assistance, and other social services designed to strengthen family life and to provide care and protection for special groups, such as children, the aged, and the mentally and physically handicapped. In these and other definitions two characteristics stand out: ***(a)*** the utilization of welfare measures to support family life as a basic social institution through which needs are met and ***(b)*** the intent to strengthen the individual's capacity to cope with his life situation.

Two concepts of social welfare seem to predominate in the United States today: the residual and the institutional. The first holds that social welfare institutions should act only when the normal structure of supply, the family and the market, break down. The second, in contrast, views social welfare services as first line functions of modern industrial society.

Social welfare becomes accepted as a proper, legitimate function of modern industrial society in helping individuals achieve self-fulfillment. The complexity of modern life is recognized. The inability of the individual to provide fully for himself or to meet all his needs in family and work settings is considered a "normal" condition, and the helping agencies receive "regular" institutional status.

Social welfare, then, is the broad system of agencies, programs, and policies which meet the welfare needs of society. Within it social work operates as a profession. Social work seeks to enhance the social functioning of individuals, singly or in groups, through activities focused on the social relationships which constitute the interaction between man and his social environment. These activities can be grouped according to three functions: restoration of impaired capacities, provision of resources that will enhance the individual's performance as a social being, and prevention of social dysfunction in the individual and his family.

Social Change and Social Problems

Social change in the United States over the next ten years may be interpreted as the interaction of several significant trends involving old and new social problems against a background of affluence and rising expectations. There are two triple revolutions that we bear witness to and are involved in. One involves cybernation and automation, international policy and weaponry, and civil rights. The other involves the revolutions of poor against rich, black against white, and young against old. The direction and nature of this change includes increased residential and social mobility, large scale organization, increased emphasis on the nuclear family, labor protests, civil rights protests, beginning participation of the poor in planning, and firming up of the welfare state. The old social problems seem to include economic and social deprivation, physical and mental disability on a widespread scale, social offense, family dysfunctioning, racism, and the increasing role and responsibility of the government in social welfare. Recently emerging social problems include increasing affluence, economic instability, occupational literacy, old age, changing attitudes toward leisure time, social planning, coexistence of employment opportunities and unemployment, the urban crisis, population increase, and quality of life. Some of these trends may not seem particularly novel. However, it is worth noting that when an old trend persists and continues to have force as an agent of social change, its future implications may still have an element of novelty, even almost of revolution, since at a critical point a difference in degree may lead to difference in kind.

In keeping with the high aspirations of society in general, social welfare has been reminded that the public will expect more in regard to the quality of life in social welfare organizations (housing, education, rehabilitation, etc.) and the delivery of services to the disadvantaged. This pressure will manifest itself in many ways: in quality expectations of the delivery of services (accessibility, availability, dignity, integrated services); in insistence that the federal government pay more of the cost of social welfare services as acceptance of a philosophy that these are not local or state problems being mediated; in a concern for the continuing education and development of staff at many levels to deliver the services; in an expectation that the government will make and abide by long-range goals that are in harmony with national goals concerning the quality of life; in increasing the involvement of the consumer, particularly the disadvantaged, in having a voice in their own affairs; and in accountability for the kinds of services offered (suitability, variety, etc.).

Social Welfare Trends and Issues

Social welfare trends and issues are beginning to emerge that will affect considerations regarding the future. Some of the trends are:

- Rehabilitation emphasis in public welfare (e.g. separation of income maintenance from services, Work Incentive Programs, developmental rather than custodial approaches in work with the handicapped).
- New approaches by traditional agencies (e.g. outreach into areas where poor live and can be served, utilization of para-professionals, one-stop neighborhood centers).
- New multi-purpose centers serving people where they are and when they need services (e.g. storefront centers, neighborhood centers).
- Restructuring of social services (e.g. separation of income maintenance

and service programs, integration of family and child welfare programs, movement of agency services into areas of greatest need).
- Emphasis on rights of people in social welfare programs (e.g. entitlement as a reality, diminished stigma in accepting social welfare services).

Some of the social welfare issues include:

- Professionalization of reform as suggested by Moynihan, which is opposed to the involvement of clients and consumers as reflected in the O E O maximum feasibility participation.
- Revival of interest in social and political reform to change the structures of society, which is opposed to one kind of service orientation that deals with the causalities of the system.
- Modification of the intra-psychic orientation, with greater emphasis on environmental and social factors and less on the individual.
- Impact of the social sciences in extending the knowledge base of social work.
- Search for a preventative approach as opposed to a corrective one.
- Mediation of workers' middle class bias and orientation through a more meaningful approach, and increased utilization of professionals from lower class backgrounds.
- The challenge of social policy and social action.

I would like to discuss this last area further. The historical development of social work has resulted in a number of specialized services and skills usually identified as casework, group work, community organization, administration, and research. The original emphases of these developments have undergone change. From early concepts which emphasized individual deficiencies, social work developed concern for man's environment, for basic social and economic problems, and for social justice to bring about change. Early social work leaders were deeply involved in battles regarding child labor, wages, workmen's compensation, and the eight hour day. Although there were differences among these early leaders concerning involvement in political affairs, there was agreement in regard to the basic objectives of influencing public policy and securing societal change. Following World War I, social work began to move toward an approach that emphasized individual adjustment rather than changing society. Emphases in social casework that included absorption with techniques, extension of casework to the non-economically dependent, and the incorporation of psychoanalytic theory into social work knowledge and skill tended to put social casework into a treatment framework and to push into the background the earlier attention to social problems. At that time the caseworker dominated social work, and the emphasis on treatment and casework skills and techniques became a dominant theme in social work training and practice, literature, and professional deliberations. Social work today is beginning to return to some of the earlier attention given to basic social problems. The major battles of social work are being fought in the political arena. The enactments of Congress and state legislatures in matters of social security, public assistance, child welfare, medical care, aid to the handicapped, vocational rehabilitation, anti-poverty programs, and the administrative interpretations and policies to effectuate these acts, will directly and immediately affect almost all of the people of the United States.

Social policy is more than governmental action: the social worker in a

clinic for the mentally retarded child has clients because it is the social policy of the community to provide skilled social services. There are numerous differences of opinion within the field of social work as to what the emphasis should be on social policy. There are some who feel that the heavy emphasis on psychological services may be detrimental to the development and execution of public social policies by social workers; they feel that social work must be preoccupied with social problems and social action and dedicated to practical programs of social change. Others hold the long-range view that social work must direct its efforts toward the basic problem of relating the individual to the ever changing world in which we live and that social work's contribution to social policy and social problems can be most significant in the areas of the individual's role, status, and stress in a context of abundance. Still others take a middle view, maintaining that concern with immediate matters need not exclude interest in long-range problems. Some of them look upon the long-range view as an easy way to escape the practical responsibilities for social action and to retire to a high plateau of intellectual exercise concerning man's place in society, which, while important, may not be very helpful in solving the great and immediate issues facing our society in areas where social work has the competence to make a contribution. The growth of public programs forces social policy questions into the foreground of our thinking and action. And social policy considerations assume an importance of much greater significance in these large public programs than they do in a smaller local operation.

Major Areas of Social Work Involvement In Mental Retardation

There are four major developments that will affect the pattern of changing programs and services for the mentally retarded. Parent groups, state developments, research, and manpower will each contribute in a significant way to the success or failure of current social work activities and plans for the future.

Parent Groups

In the vanguard of the citizen groups are the "parent associations" for the mentally retarded. These associations of friends, parents, and professionals interested in the retarded provide yeoman service and leadership in educating the public, stimulating government activities via social policy routes, supporting research and demonstration programs, and facilitating government activities regarding the delivery of services (in schools, institutions, etc.). They have been largely responsible for the development of special classes for the moderately retarded, for diagnostic clinics and sheltered workshops, and have played a key role in the construction and improvement of institutional facilities. In most states, parent self-help groups are represented on legislative committees and state and local planning bodies. Because of their strategic position, potential influence, and great energy and conviction, citizen groups such as these can be a tremendous influence in achieving community planning objectives. Social workers have gained a better understanding of the dynamics within these groups and their deep emotional involvement and sometimes justified impatience with the apathy of the professional community; they have come to understand the motivations of members of these groups and how the dynamics differ from those of other voluntary associations.

State Developments

The direction the programs for the mentally retarded take in a specific

state varies according to rural-urban distribution of the population, level of public understanding and active citizen support, relative importance with which the problem is viewed, and availability of basic health, education, and welfare services. Because of the differences, no single formula can be applied to assure economical and efficient accomplishment of these goals. States vary in the unity of their overall purposes, in their understanding of the components involved in mental retardation, and in the methods employed for coordination of services. In general, there has been broad participation of agencies, parent groups, legislators, and lay citizens, but developments have been sporadic and varied. Of particular importance here is the lack of basic planning and coordination among the key state agencies in most states, despite the development of offices of mental retardation.

Social Work Research

Measuring the effectiveness of services to the mentally retarded and their families is necessary if we are to provide improved and innovative areas of coordinated, diagnostic treatment and preventative services. The results of social work research in mental retardation are not encouraging as there is little material that is significant. There is much material available for social work research, such as that dealing with social functioning concepts, cultural deprivation and its "blunting" impact upon individuals, and the reciprocal impact of minority group status upon retardation. It is noteworthy that graduate students have been making increasingly imaginative use of mental retardation material. Of particular interest, for example, are the following recent titles of student masters' theses:

- "The Adjustment of Children Before and After the Institutionalization of a Retarded Sibling";
- "Sibling Attitudes: An Attitude Study of Siblings of Retardates with Focus and Implications these May Have upon the Developing Personality of the Retardate"; and
- "Disposition of Children of Unmarried Mothers with Limited Intelligence."

Social Work Manpower

Social work manpower is confronted with four unfavorable conditions, each fully relating to the mental retardation scene: a severe shortage of trained social workers; a disproportionate concentration of this scarcely trained manpower in voluntary agencies; a lack of adequate systems for distribution of worker responsibilities at training levels; and a lack of distinct career lines for untrained workers and insufficient plans for training them.

Predictions Regarding Social Work and Mental Retardation for the 1970's

Fundamentally, the goal of America in the 1970's with respect to social work is no different than it has been in any other decade: to guarantee each individual throughout his lifetime a full and equal opportunity to secure the knowledge, skills, and understandings necessary to fulfill himself as an individual and as a member of society through the realization of his potential. For a significant number of our population, particularly the retarded, this goal continues to have little meaning. Current social welfare institutions, pro-

grams, and services are little suited to the needs of these individuals in a changing society; hence our approach to the provision of social justice, including equal opportunity, is in urgent need of fundamental reform. Therefore, in the 1970's, I believe that we should pursue the following areas and concerns regarding social welfare, social work, and the mentally retarded.

Social Policy and Social Action

By "public social policy" I refer to those laws, policies, and practices of government that affect the social relationships of individuals and their relationship to society, of which they are a part. Such policy operates directly through public social programs and indirectly through its influence on voluntary activities and relationships. Social workers will increasingly need to take the responsibility for changing societal institutions to create conditions of social justice.

First in importance is the elimination of poverty as a social problem and condition in our country. We will see effective measures developed and maintained to protect the economic security of individuals and families through development of a meaningful income maintenance or security program. This will be particularly meaningful for the retarded, whose minimum productivity represents maximum productivity. Such an income program will be seen as an expression of social justice and investment in human resources. Social insurance programs will be expanded to afford adequate protection against all hazards and risks for the individual and the family. Because the mentally retarded do not learn or perform well under existing conditions, a training or special program will incorporate its own subsistence grants. Government will take greater responsibility in public financing of human resource programs in the form of "social utilities," a term for public services that emphasizes the sense of common need and universal availability through entitlement. Such social utilities will include housing, education, employment, and income security programs for the mentally retarded and other groups in need.

Our social policy will move at target and key problems, such as hunger and malnutrition, mothers and children at high risk family planning, and racial injustice. Legislative authority, both federal and state, will strengthen, improve, and extend program efforts to facilitate delivery of services. Comprehensive services will be made available as social utilities from birth through death. Program and policy development will include broad community participation and coordination on a state and regional basis. Serious shortages of personnel will be met by major expenditures of public funds for training.

Services

To facilitate the development of a continuous process of improvement in services to the mentally retarded, we will need a sustained, interdisciplinary commitment. The current pattern of social services—and this applies to all other services that are marked by inflexibility, inadequacy, and discriminatory practices—will be made more adequate and responsive to individual and community needs.

Delivery of service will be a basic approach, with emphasis on the following: adequacy of benefits; availability of benefits; non-discrimination in administration; accessibility, continuity and dependability of program; efficiency in administration; services enhancing the well-being of the consumer; respect for consumer's wishes; services not limited to the poor; clearly delineated accountability for quality of service; and provision for hearing consumer complaints.

We will see more use made of generic services and a decreasing number of specialized agency programs; there will be more coordination of services, less fragmentation, and increasing involvement of the consumer. Funding will be more and more questioned as public and private agencies account for the impact they allege upon people's lives. Social services will be extended to the retarded that will strengthen community programs and reduce the institutional complex. Day care, foster care, homemaking, family counseling, etc., will be typical rather than occasional services and fully incorporated into the network of services available. This will allow the consumer to receive the right service at the right time rather than the service that happened to be available whether or not he needed or could benefit from it. Increased caution will be exercised in the process of effecting these services. This will result in the avoidance of negative outcomes due to shortsightedness and fragmentation, such as the lead poisoning recently involved in a food and nutrition program for ghetto children.

Manpower

Because we know what it has accomplished in other social work programs with other groups at risk, we will see the ***New Careers*** program made more meaningful in mental retardation. More social workers will become involved in work with the retarded—current estimates are about 1500 BA and 500 M S W level workers. This would need to be quadrupled by 1980. Quality of social service input will be improved through a clearer picture of role and task, recruitment due to salaries, improved educational efforts, and the commitment of individuals to the profession.

Preventions

Prevention on a large scale requires broad social action, such as a strengthened income maintenance program, sustained high employment, more medical services, more adequate public housing, and more accessible and effective public educational efforts. Improvements of cultural and social environments, broadening of child and maternal health programs, and development of more efficient early case finding programs are essential ingredients in the prevention of mental retardation. Social work will play an important role in all of these areas.

Conclusion

We have just entered a period that will bring new problems and new promises for the 1970's. New programs and new coalitions will be focused upon a better level of living, not only for the retarded but for all Americans in need. All of us—social workers, parents, workers in related fields—must be committed to serving the whole range of people's needs; must be prepared for great coalitions of people of good will with common purpose, exercising powerful thrusts in old and new fields of social policy and social action. It is our responsibility to be ready to play our role in building the social structure of the seventies.

The Prevention of Mental Retardation: Implications of Research for Future Programs[1]

Steve Morelan, University of Oregon

Future programs for the mentally retarded that are built upon an empirical base will ultimately lead to the prevention and/or remediation of a larger percentage of individuals who would otherwise be categorized as mentally retarded. Program planning for the retarded can be started today based upon current behavioral and physiological research findings. Clearly, educators and rehabilitation specialists must base their plans on research evidence if they are to efficiently achieve success in reducing the numbers of individuals who are classified as mentally retarded.

Whereas in the past major emphasis was placed on remediation programs for the "cultural-familial" mentally retarded, current research suggests that, in the future, emphasis will be placed on ***prevention*** through programs of early enrichment. Early enrichment programs are designed to provide the experiences necessary for cognitive growth and the prevention of retardation. Although some emphasis on secondary prevention will be necessary in the future, prevention is, by far, more advantageous than attempted amelioration.

The purpose of this paper is to explore the question: Does current research justify initial planning and programming for the future prevention of cultural-familial mental retardation? By integrating what is known about the learning characteristics of the retarded and early educational intervention programs with current knowledge about physiological changes that result from early stimulation, the paper attempts to determine whether preventative programs for the cultural-familial retarded can begin today.

After presenting an overview of the problem of cultural-familial mental retardation, two major bodies of data pertinent to prevention will be examined. The first concerns the behavioral and physiological evidence supporting the contention that such retardation can be prevented. Specific attention will be given to the learning deficits exhibited by the cultural-familial retarded and the process(es) implicated **in** their cause. The second body of data concerns

1 Special paper prepared for this monograph.

early education as an effective procedure to prevent cultural-familial retardation, and attention will be addressed to the physiological changes that result from early education programs.

Cultural-Familial Mental Retardation: An Overview

The diagnosis of cultural-familial retardation is made only after a medical examination has ruled out the presence of such conditions as extensive brain damage, galactosemia, and mongolism (Girardeau, 1971). There is general agreement that approximately 80 percent of those individuals who are identified as mentally retarded meet the cultural-familial criteria (Robinson & Robinson, 1965; Girardeau, 1971). Cultural-familial retardation refers to those individuals who in the absence of presently demonstrable biological pathology are retarded and have a sibling that is also retarded (Heber, Dever, & Conry, 1968).

Cultural-familial retardation is concomitant with the slum areas of most major cities. An observation which has frequently been made is that children who have a retarded parent and sibling and grow up in a socioeconomically limited environment are more likely to exhibit retarded behavior than are children who have non-retarded parents and siblings and grow up in an average socioeconomic environment (Heber, 1970). When discussing cultural-familial retardation, both genetic and environmental factors are mentioned, but the specific actions or the relationship of these variables in the development of retarded behavior are unspecified because of a lack of scientific data (Girardeau, 1971). Despite an apparent lack of scientific data concerning cultural-familial retardation, there have been a number of theories with a physiological explanation to account for retardation. For example, Spitz (1966) states that retardates are "noisy" organisms due to CNS disturbances. He indicates that this noise may cause a loss of information in transit, or may occur as subjective disorganization, which is harmful to the organism. According to this theory, normal subjects frequently act on incoming information in ways which aid their learning and memory, while retardates frequently do not act on the incoming material, or act on it in ways that hinder learning and memory. More specifically, Spitz (1963) reports that in defectives it takes longer to induce neural change and there is greater resistance to spread of activity to adjacent neural regions. The retardates are characterized by a deficiency in their neural functioning. This account of retardation is similar to that of Luria (1963), who indicates that the most characteristic feature of the defectives basic neural functioning is disturbed mobility. Nerve processes in the cortex are said to be characterized by pathological inertia.

Ellis (1963) has postulated the retarded have a short term memory deficit because of a deficiency in reverberatory circuits which leads to diminished electrical activity that prevents efficient learning and memory. Girardeau (1971) tends to agree with Ellis and states that the cultural-familial retarded may have somewhat inadequate physiological functioning. There may be some physiological basis for the learning deficits.

Learning Deficits

This section of the paper will deal with the learning deficits exhibited by the cultural-familial retarded in an attempt to ascribe the process of consolidation as a possible explanation for these deficits. In addition, discussion will focus on psychopharmacological intervention as a possible treatment for the learning and memory deficits.

A Possible Explanation

The last decade has witnessed an increased scientific interest in the learning, or more properly, the learning deficiencies of mental retardates (Baumeister, 1967). As a result of this interest, there is evidence from many sources which indicates that the mentally retarded are capable learners. After reviewing current rote verbal learning studies, Prehm (1970) reported that the learning performance of the retarded is most similar to that of normal children when (a) the materials are concrete, (b) the response required is unitary, and (c) the materials are meaningful. After reviewing research on the learning abilities of the retarded, Baumeister (1967) reported that compared with normal individuals, mental retardates, as a group, are inferior in acquisition and comparable in retention. This deficit in acquisition may reflect an inability to efficiently transfer information from primary memory into secondary memory. Simply stated, the retarded take more time to learn than do normals. It seems possible that cultural-familial retardation may be nothing more than physiological inefficiency in the process(es) involved in consolidation. There is converging evidence from studies investigating the mentally retarded which seems to indicate that the retarded do not exhibit a short-term or a long-term memory deficit, but a consolidation deficit. Ellis (1970) provides evidence that the learning deficit exhibited by the mentally retarded is due to a failure of the rehearsal mechanisms which enable one to transfer information from short to long-term storage. Belmont and Butterfield (1969) report that there is increasing evidence to suggest that the mentally retarded fail to actively process information from S T M into L T M . Neither Ellis nor Belmont and Butterfield explain this deficit in terms of physiological inefficiency in consolidation. One of the basic assumptions underlying this part of the paper, however, is that some process of consolidation (e.g., acquisition, fixation) is required to transfer information from primary memory into secondary memory and that this process is deficient in the retarded.

A consolidation deficit can most dramatically be observed in patients having a bilateral hippocampectomy. The patient H . M . is a classic example of such a deficit (Milner, 1965). Cultural-familial retardation may represent a point on a continuum between normalcy and such patients. H . M . shows an almost complete inability to learn new things. It has been demonstrated that immediate memory spans of patients like H . M . are normal when compared to control groups, but there is an impairment of storage ability (Drachman & Arbit, 1966). However, these patients appear to show a relatively normal learning curve on mirror tracing and certain forms of manual tracking tasks, despite the fact that they cannot remember having performed these tasks previously (Posner, 1969). Posner presents the possibility that the effect of the hippocampal lesion is on the central mechanism that underlies verbal encodes but not motor programs. This lack of ability to encode verbal material, coupled with an ability to learn motor tasks, is similar to what has been found with the retarded. Baumeister (1967) has indicated that retardates are less retarded in motor learning than in other areas.

Researchers investigating deficits in learning and memory as well as consolidation, have implicated anatomical locations and physiological processes to account for such deficits. For example, Milner (1965) has investigated patients with various parts of the brain damaged and has reported that with bilateral hippocampal lesions, patients show a severe and generalized memory disorder. Those with the most extensive lesions are unable to recall or recognize test material after a lapse of five minutes or less if their attention has been diverted elsewhere. Using a Peterson and Peterson technique, Milner (1965)

found that the degree of impairment after left temporal lobectomy becomes progressively greater as one passes from the group with hippocampus minimally invaded to the group with this structure radically excised. Hyden (1970) indicates that it is a well-known fact that an intact hippocampus is **a** prerequisite for the formation of long-term memory. After reviewing studies on consolidation, Glickman (1961) stated that although the crucial structures have not been definitely localized, the hippocampus and amygdala appear to be directly involved.

Douglas and Pribram (1966) tend to agree with Glickman and report that the amygdala and hippocampus have two distinct attention-directing processes. The process to which the amygdala contributes is postulated to heighten awareness of experiences as a function of previous reinforcement, while the process to which the hippocampus contributes acts to diminish awareness of experience as a function of the probability of non-reinforcement. They report, after experiments with monkeys, that hippocampals and amygdalas differed from each other, and that it is thus an oversimplification to consider the limbic system in terms of a unitary behavioral process. Possibly, the retarded have an overly efficient hippocampus which diminishes awareness, or a depressed amygdala which fails to heighten awareness, or a combination of the two.

The plethora of information and studies attempting to localize anatomical structures for consolidation and storage are overwhelming, and no definitive anatomical locations have been discovered. However, it is now well established that bilateral lesions of the hippocampus and parahippocampal gyrus, on the medial aspect of man's temporal lobes, causes a severe and generalized memory disorder unaccompanied by other intellectual change (Miller, 1970).

Without anatomical ablation, deficits in consolidation can be demonstrated in humans and infrahumans by the administration of electroconvulsive shock (ECS). Cronholm (1969) conducted an extensive review of the effects of ECS therapy on memory and carried out his own experiments. In Sweden, he examined the time at which a subject was able to remember a digit span given to him, 5, 15, and 60 seconds before ECS. The recovery curve was steepest in the 60 second group. These results are in accord with the assumption that after registration (encoding) there is a period of fixation or consolidation and that this period is especially sensitive to disturbing influences. Cronholm concluded that there is a retrograde amnesia for material perceived shortly before the onset of treatment (ECS). This result may be due to greater sensitivity of memory traces during a period of fixation or consolidation. It is generally agreed that newly acquired memory traces can be destroyed by ECS within a short interval after learning but not at later times. On the basis of this data, Bures and Buresova (1963) postulated two stages in the formation of memory traces. The first stage is a transitory functional stage during which the memory trace is maintained by neuronal and metabolic activity. The second stage is a permanent structural stage during which the memory trace is fixed by morphological changes.

Some behavioral research has been done with the retarded that suggests they have a deficit in the first stage (transitory functional) as conceptualized by Bures and Buresova. After reviewing paired-associate studies both Baumeister (1967) and Prehm (1970) reported that the retarded have a deficit during the initial (response learning stage) acquisition of the paired associate, but not at the later associative stage. This empirical finding suggests that the transitory functional stage during which the memory trace is maintained by neuronal and metabolic activity is deficient in the retarded.

At a molecular level, the most widespread hypothesis concerning the sub-

strate of consolidation predicates its dependence on reverberatory circuits (Glickman, 1961). The basic supposition is that reverberatory activity maintains the memory until permanent changes underlying fixation of the trace have been completed. Gerard (1966) makes the point that on a molecular level, the nerve impulse and synapse may be critical when discussing reverberatory impulses that result in the fixation of memory.

Psychopharmacological Intervention

If the biochemical processes are important for the consolidation of memory traces—and this appears to be the case—then it would seem likely that drugs with known effects on synaptic transmission as well as protein synthesis might provide the key for understanding the chemical components of consolidation and memory storage. There have been numerous human and infrahuman studies which have investigated the chemical composition of the brain before and after learning. For example, Krech (1956) found a relationship between brain cholinesterase (ChE) and discriminative learning. He suggests that possibly the ChE-activity provides an index of the transmission efficiency of the central nervous system and that transmission efficiency is correlated with the capacity for adaptive behavior. If this type of thinking is correct, one should be able to interrupt as well as facilitate consolidation by the administration of drugs. If facilitation can be enhanced, then psychopharmacological intervention to remediate learning deficits in the cultural-familial retarded would be the treatment of choice.

Breen and McGaugh (1961) found that post trial injections of picrotoxin, a central neural stimulant, enhanced the rate at which rats learned a maze. This finding supports the notion by Krech (1956) that learning efficiency may be related to the acetylcholine-cholinesterase ratio in the brain.

Using 50 maze bright and 36 maze dull rats injected with physostigmine, a powerful Anti-ChE drug, Stratton and Petrinovich (1963) investigated drug dosage in relationship to learning. They found that at the lowest dosage the drug had no significant effect on learning, but that as the amount of the injection increased learning improved and was significantly better than that of the control animals. In addition, the optimal dosage for the maze dull was higher than for maze bright rats. On the other hand, it was found that the highest dosage resulted in a disruption of performance. This latter finding suggests that a critical ratio between acetylcholine and cholinesterase does exist.

In a similar experiment with rats, McGaugh and Thomson (1962) found that learning of a discrimination problem can be facilitated by strychnine sulphate. They concluded that this drug did facilitate the neurophysiological processes underlying the post trial consolidation of the memory trace. After reviewing research reports of drug-induced impairment and facilitation of learning and memory, John (1967) made the following general statements:

> Anticholinergic substances, barbiturates, or compounds with depressive action tend to impair learning or retention. Conversely, anticholinesterase drugs, stimulants, or convulsant drugs in subconvulsive doses tend to facilitate learning or memory storage. Strychnine blocks postsynaptic inhibition, while picrotoxin blocks presynaptic inhibition. The common effects of these two substances in spite of their different locus and mode of action, indicate that the release of inhibition per se may be the crucial factor in facilitating consolidation. These drugs either intensify the reverberatory activity or accelerate the rate of the chemical processes mediating the permanent storage of information (p. 44).

In trying to summarize the research findings concerned with the physiological process(es) of consolidation, it appears safe to conclude that neural activity does affect the structure and chemical composition of the brain (Milner, 1970). The storage of human memory seems to be severely disturbed by damage to the hippocampus, as can be evidenced by the classic case of H.M. Other structures, such as the hippocampus gyrus, amygdaloid, and limbic system, appear to play a critical role in the conversion of information from a short-term system to a longer-term system. In the absence of brain pathology, consolidation can be prevented or disrupted by ECS as well as pharmacological intervention. Likewise, drugs can facilitate consolidation. It appears possible that when no pathology is demonstrable, deficits in consolidation can be explained on a physiological basis. For example, it seems entirely possible that the neuronal impulses which ultimately lead to structural changes must be dependent upon the electro-chemicals required for the propagation of the nerve impulses as well as maintenance of the impulses in reverberatory circuits long enough to permit consolidation and some structural change.

If improved learning can be accomplished by the administration of anticholinesterase and/or stimulants (Breen & McGaugh, 1961; Stratton & Petrinovich, 1963; and John, 1967), then pharmacological intervention may prove beneficial to the mentally retarded. After reviewing psychopharmacological studies with the retarded, Sprague and Werry (1971) indicated there is evidence to suggest that some of the major tranquilizers are beneficial. They also reported that much of psychopharmacological methodology is quite sophisticated and useful, but such methodologies have seldom been utilized in areas where there are obvious needs, such as the psychopharmacology of children. They reported one study in which the effects of drugs on learning were dramatic. Subjects were presented a matrix containing one, two, or three pictures for a two second exposure; after four seconds, a test stimulus appeared and the subject pressed a response key to indicate same or different. It was found that methylphenidate significantly increased both speed and accuracy and was superior to thioridazine. It is difficult to say whether or not the drugs used in this study were influencing the consolidation phase in the processing of information. However, the implications from this study and those cited previously are that further studies with the mentally retarded as well as with infrahumans may provide the necessary information regarding the bio-chemicals involved in, or required for, efficient consolidation. The results from such studies may lead to psychopharmacological intervention as an accepted practice in the near future.

Early Education Programs

This section of the paper will focus on the prevention of retardation by early stimulation as exemplified by early childhood education programs for humans. Furthermore, physiological results of early enrichment programs will be reviewed by examining the effects of enrichment on the cortical development of infrahumans.

Behavioral Results

Rather than focusing on amelioration of intellectual deficits by either pharmacological intervention or special education programs, or both, the emphasis should be on prevention through manipulation of the environment early in life. Throughout history there has been an emphasis on early educa-

tion for children three and four years of age. However, in this country infant stimulation has received very little attention. This is particularly true with respect to early infant stimulation as an approach to prevent cultural-familial retardation. To gain support for early stimulation or education as an approach to prevent retardation, one needs to demonstrate that early infant stimulation does result in normal intellectual functioning in persons who would otherwise be retarded. Also, if measurable anatomical and chemical changes could be demonstrated as a result of early stimulation, this would add further support to early education as a viable approach to prevent retardation. When physiological changes as well as behavioral changes are presented as empirical evidence to support the contention that cultural-familial retardation can be prevented, then implementation of early enrichment programs should soon follow.

The importance of early education or stimulation can be inferred from animal studies, children reared in different environments, and early educational programs. After reviewing research related to mental retardation in animals, Meier (1970) concluded that early postnatal experience has an appreciable effect on subsequent behavioral development. Using Scottish terriers, Thompson and Heron (1954) examined the effects of being reared under varying conditions of social deprivation. Using both experimental and control groups, they found that on all measures the deprived animals made more errors than the dogs reared as pets. Using chimpanzees, Beach (1966) found that those reared in laboratories tended to be brighter than the ones growing up in nature and the home reared chimps appeared as geniuses by comparison (Caldwell, 1970). According to the animal literature, the environment appears to have importance for intellectual growth. Even though differences are reported in the animal literature, the application to human rearing practices is often absolute and categorical (Meier, 1970).

Coleman (1966) reports that as early as first grade most groups of children from lower SES backgrounds tend to score significantly lower than the national average in school achievement. When Hess and Shipman (1965) analyzed the behavior patterns of lower and middle-class mothers, they found significant differences in maternal language, teaching styles, and strategies for controlling children. In general, studies of various socioeconomic groups have shown that children from lower SES groups score lower on intelligence tests than do children from higher SES groups (Hunt, 1968; Haywood, 1970; Miller, 1970).

Early enrichment programs have had a long history but have not been viewed as a procedure to prevent retardation. This is mainly because intelligence scores have been increased, but not to the normal level. In a classic study, Skeels and Dye (1939) arranged an experiment in which adolescent girls were used as enrichers for a group of 13 babies (19 months old with an I.Q. of 64) in an orphanage compared to a control group. After an enrichment period of 20 months, the experimental children showed an average I.Q. gain of 28 points, while the contrast group lost 26 points. A second study of major significance was conducted by Kirk (1958). He studied special preschool programs for 81 retarded children between the ages of 3 and 6, with I.Q.'s ranging from 45 to 80. He found that 70 percent of the children for whom special school programs were available showed I.Q. increases ranging between 10 and 30 points in comparison to those receiving no preschool program. Kirk concluded that children from inadequate homes or institutions derive significant benefit from preschool experience.

A total push program, "The Pine School Project," was attempted by

utilizing medical services, social work assistance, psychological tests, and a conventional preschool program (Miller, 1970). Children in the younger age group, 2-4 years, made the largest I.Q. gains—an average of 19 points—while the older group, 5-7 years, made an average gain of 11 points. The initial gains were viewed as dramatic but lasting change did not occur. No comparison group was used, however. Upon completion of this project, Kugel and Parsons (1967) concluded that perhaps before age three, ongoing intensive work with the total family is necessary to bring about lasting change.

Using a control group, Klaus and Gray (1968) reported similar findings from their Early Training Project in Tennessee. Culturally disadvantaged children were randomly assigned to one of three groups: a three-year treatment intervention, a two-year treatment intervention, or a local control group. A fourth control group was established in a similar town. The program consisted of two parts: a ten-week preschool classroom experience for two or three summers in succession and a home based instructional program. As in some of the previous intervention studies, the gain in cognitive skills was maintained until entry into school, and the differences between the experimental and control groups decreased. Klaus and Gray concluded that the question is not whether intervention can be more effective, but how.

Hodges, McCandless, and Spicker (1967) recently completed a series of studies using culturally-deprived children and found that initial gains were impressive but did not materialize. They concluded that an intervention program limited to school is insufficient to guarantee later school success.

After reviewing early intervention programs for children, Caldwell (1970) concluded:

> One could continue at length to cite data demonstrating that early childhood enrichment produces impressive gains in the intellectual functioning of young children. The consistency of results with different groups, different pedagogy, and different samples is one of the most persuasive features of early education data (p. 723).

Despite favorable empirical results from human and infrahuman studies regarding gains in intelligence, educational programs are continuing to focus on amelioration rather than prevention. The reason for this is that early education programs for children often don't begin until ages four or five, and this may be too late to start a prevention program. According to Hunt (1968), if experimental deprivation does not persist too long, it is reversible to a substantial degree. It is likely that because of late intervention or enrichment, cultural-familial retarded individuals show only gains in intellectual achievement, but do not develop to the point of normal cognitive growth. By providing stimulation from birth rather than at a later developmental stage, intellectual deficits may be preventable.

Currently, in a high-risk slum area in Milwaukee characterized by a very high prevalence of mental retardation, infant stimulation from birth is being used to determine whether retardation can be prevented (Heber, 1970; Heber & Garber, 1972). To date, the study is five years old and the preliminary results suggest that retardation is being prevented. In this study, mothers with I.Q.'s less than 75 were identified and assigned randomly to either an experimental or a control group. Infants born to mothers in the experimental group were stimulated at the University of Wisconsin's Family Habilitation Center intensely from birth, while the control infants remained in the slum environment. The mothers of the experimental infants were contacted by specially trained infant stimulators shortly after coming home from the hospital. This

in-home phase of the program was planned to create a feeling of mutual respect and trust between the infant stimulator and the mothers. At six months, the infants were introduced to the Family Habiliation Center where they remained for approximately eight hours a day, five days a week, and returned home every evening. Intelligence tests, standardized measures of language, and other learning tests have been administered during infancy and early childhood. According to Heber (1970) the experimental children are proficient in language, motor skills, and cognitive skills while the control group remains deficient in these skills. At four years of age the experimental group scored an average of 33 I.Q. points higher than the control group. On almost all the measures there is a discrepancy between the two groups favoring the experimental group. These results support the contention that cultural-familial retardation can be prevented through the manipulation of the environment.

Physiological Results

A question that must be asked is whether or not there are any physiological changes that may have occurred in the retarded as a result of early stimulation. There is accumulating evidence from human and infrahuman studies which appears to indicate that the answer is positive. Rosenzweig (1970) indicates that neuronal growth cannot occur in a vacuum: there must be normal opportunities for interaction between the organism and the environment. The results from numerous studies suggest that measurable anatomical and chemical changes occur in the brain in response to an enriched environment. Recently, Krech, Rosenzweig, and Bennett (1962 a&b) analyzed the effects of an enriched or an impoverished environment upon the chemistry and anatomy of the brain. Using rats, they found that with increased environmental complexity for 75 days there was an increase in the weight of the cortex and greater total cortical ChE activity. More importantly, the animals that have shown chemical and structural changes have also shown improved rates of learning where the tasks involved visual discrimination reversals and maze learning (Rosenzweig, 1970).

Using a purified anterior pituitary hormone, Clendinnen and Eayrs (1961) found improved learning performance in addition to striking cerebral cortical growth in rats born to females given somatotrophin during pregnancy. They observed a significant increase in the mean number and mean length of dendrites associated with each cortical neuron in the experimental animals.

Using a similar procedure and obtaining similar results, Zamenhof, Mosley and Schuller (1966) demonstrated that injection of a pituitary growth hormone into pregnant rats causes a significant increase in the final number of cortical neurons in their offspring. The offspring had no increases in body weight but showed significant increases in brain weight, brain D N A content, cortical cell density, and in the ratio of neurons to glia. According to Altman and Das (1964), the ratio of glia to neurons increases during learning and stimulation.

Rosenzweig (1970) reports the results of several studies investigating the effects of early enrichment on cortical development and neuronal growth. At weaning (25 days of age) rats were assigned and kept for 80 days in either an enriched environment or an impoverished one. Each enriched-experience animal had a littermate assigned to the impoverished condition and brain analyses were carried out under code numbers between littermates. When analyzing the biochemical effects of the enriched-experience group, Rosenzweig reports that the enriched group exhibited more total activity of acetyl-

cholinesterase and cholinesterase. With respect to anatomical effects, the enriched-environment rats consistently developed greater weight and thickness of the cerebral cortex. Riesen (1970), however, indicates that the crucial gains for behavioral advantage are likely not to involve changes in cortical depth, but rather changes in organelles such as dendritic spines and synapses. He reports that the addition of complex stimulation in early growth produces an immediate response in the incorporation of R N A into cells and with this altered metabolism there is a growth of fine structures: dendrites and their spines. Cragg (1967) agrees with Riesen and reports a change in synaptic density and a shift in the distribution of sizes of synapses (diameters) as a function of light-rearing or dark-rearing for several days starting at the time of weaning. Clearly, measurable anatomical changes occur in the brain as a result of an enriched environment.

Rosenzweig (1970) also reported that preliminary measures indicated that the hippocampus was thicker as a consequence of the enriched experience given the rats. This finding is similar to that reported by Hyden (1970), who found that in the hippocampal nerve cell the synthesis of two acidic proteins increased by 100 percent during a learning task in rats. Hyden states that recent data seem to indicate that there exists current pathways outside the neurons in the extra cellular spaces which may modulate the neurons for memory storage. Adey (1963) reports there is some evidence that glial tissue may participate in the cytochemical modifications induced by physiological activity. Altman (1967) indicates that hippocampal neurogenesis continues for a long time after birth in all mammals. The increased hippocampus reported by Rosenzweig and substantiated by Hyden may be significant because of the relationship of the hippocampus to the process of consolidation. One can speculate that Heber's (1970) study in Milwaukee may have provided the necessary enrichment required for hippocampal neurogenesis, thereby removing a consolidation deficit and preventing cultural-familial retardation.

It is doubtful that this single finding (increased hippocampus) has much significance in view of other anatomical changes found as a result of early enrichment. Also, the functional significance of hippocampus neurogenesis is unknown (Altman, 1967).

In the rats receiving enrichment, the number of glia increased while the packing density of the neurons showed a non-significant decrease. Rosenzweig (1970) indicates that the reason for this decrease in neurons is that the number of neurons is fixed and that they are forced further apart as the cortex expands. This proliferation of glia in response to heightened environmental demands was also found by Altman and Das (1964), Zamenhof, Mosley, and Schuller (1966), and reported by Hyden (1970). In summarizing the effects of early enrichment upon anatomical and chemical changes in the brain, Rosenzweig (1970) states that the cerebral cortices of enriched-experience animals exceeded the impoverished-experience littermates in weight and thickness, total activity of acetylcholinesterase and of cholinesterase, and the number of glia. Riesen (1970) indicates that discriminative capacity will one day be shown to depend upon neural structures that are established only following optimum programs of environmental support. These findings, coupled with the results of Altman (1967), that the most radical increases in outgrowth of neuronal processes in the human brain occurs from birth to four years of age, provides physiological support for early infant enrichment as a way to prevent cultural-familial retardation. More specifically, programs started after three or four years will not have as much influence on cognitive development as programs started earlier. This physiological finding supports the contention that programs started after age four are, at best, failure-bound.

Conclusion

The importance of early intervention as a future program to prevent cultural-familial retardation must be stressed. Evidence from early enrichment studies using human and infrahuman subjects indicate three important factors. First, infant stimulation as demonstrated by Heber and Garber (1972) supports the contention that cultural-familial retardation is preventable. Second, physiological research has demonstrated that early enrichment results in measurable anatomical and chemical changes in the cortex. Since cortical growth, both anatomical and chemical, is the structure upon which intellect is built, the importance of early enrichment is paramount. Third, the most radical increases in the growth of neuronal processes in the human brain occur from birth to four years of age (Altman, 1967). Programs started after four years will not have as much influence on cognitive development as programs started earlier. According to Hunt (1969), deprivation that does not persist too long is reversible. Therefore, programs of the future must be designed to reach individuals early in life.

Heber and Garber (1972) have demonstrated that prevention programs can be implemented. Since the incidence of cultural-familial retardation is high in economically deprived areas, programs for the future should be designed to eliminate the environmental conditions that effect the developmental processes of families that have a high probability of raising culturally-familial retarded children.

Until early intervention programs are readily available, secondary prevention programs are required. In the future, psychopharmacological intervention may be used to improve cognitive efficiency. More specifically, the hypothesized consolidation deficit of the retarded may be reduced by using specific drugs which will facilitate neuronal and metabolic activity required to transfer information from short- to long-term memory. Furthermore, Sprague and Werry's (1971) review of psychopharmacological research supports the contention that drug intervention will be an accepted practice in the near future. However, until empirical evidence clearly substantiates the precise relationship between psychopharmacological intervention and human learning, this type of secondary preventive intervention will remain tentative.

To summarize, evidence from early intervention programs with humans, integrated with current physiological evidence from infrahumans, supports the contention that future programs should focus primarily on early stimulation to ensure optimum cognitive growth and behavioral development. Secondary preventative programs should focus on psychopharmacological intervention and research. The prevention of mental retardation will become a reality only after programs of early stimulation are implemented. The studies reviewed in this paper emphasize the importance of early intervention and justify current planning and programming for the prevention of cultural-familial mental retardation. Implementation should soon follow.

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I Went Back to Visit October: Technology and the Human Side of the Future[1]

Lewis Klebanoff

Massachusetts Department of Mental Health and Boston University

Sixteen years plus 1984 will bring us to the year 2000. By that time, if we haven't incinerated ourselves, science and technology will doubtless have made enormous strides in chemistry, physics, electronics, and biology. Plentiful power sources may be available; high speed transport on land, sea and air may be practicable. Personal T.V. phones with greater than line-of-sight range and factories that need no employees may be commonplace. Behavior may be under chemical control, and babies may be custom ordered like automobiles. The Brave New World may be upon us.

"Us?" Yes, us... people, although it may be nearly impossible to pay much attention to them. By then the population figures of the United States may represent 300 million people crowded into old cities and expanding megalopoli —300 million people disturbing the balance of nature; diminishing plant sources of oxygen; ignoring water tables; polluting air and water; consuming natural resources at an irreplaceable rate; and leaving a legacy of trash and waste.

It is doubtful that behavioral and political science will be able to keep pace with the onrush of technology. If they can't, then the most likely means of maintaining even a semblance of order will be a strong central government with limitations on personal freedom and personal decision making that Americans don't dare dream about.

It is curious, and perhaps prophetic, that this panel was held on Earth Day of Ecology Week. I didn't realize this when I first outlined this paper some weeks ago. However, I gratefully welcome this awesome national sharing of my concern. I wish that it were possible to generate any considerable degree of optimism with respect to the likelihood of much positive change being

[1] Paper presented on a panel entitled, "The Year 2000: Projections into the Future," at the 48th Annual Convention of the International Council for Exceptional Children, Chicago, 1970, and printed with the permission of the author.

effected. The forces of the status quo are rich and powerful and have specific and expensive interests to protect. The forces championing a pure environment have youth, passion, facts detected by scientific inquiry, and facts visible to the gasping man in the street going for them; however, inexperience, lack of organization, and lack of money coupled with the historical difficulty of maintaining interest in a complex, relatively undramatic although devastating problem work against them.

I began with these issues because it is just not possible to think about special education in a vacuum or in a narrow technical sense. If we are to adequately consider the educational needs of those with disabilities, we must take a general look at the world in which they live, at the central and competing concerns of that world, and at the impact of these concerns on the general educational system. From such a perspective, two overriding issues emerge. One of these issues is population control, and I can only mention it here in passing. Unless we limit the explosive growth of people, the quality of our life is doomed even if all the above mentioned problems are controlled. We will all eat algae. I like oysters, lobsters, shrimp and other pleasantries that will be gone as even the haddock are almost gone.

The other issue, the one I intend to take a close look at today, is the necessity for introducing humanism into all education, including special education. Unless children can be reared in a humanistic tradition with an appreciation for diversity, a toleration for ambiguity, and a full, confident awareness and control of their own creative selves, the game will probably be lost. Education must not only be about humanity and being human, it must be humanly and rewardingly presented. Self-actualization must be our goal, not to be sought after college with an extension course in water color painting but undertaken throughout all education. We should welcome all the technological help we can get but we must subordinate it to human purposes. The fortunes recently lost in the teaching machine business exemplify the problem of the money-machine combine moving into an area and ignoring the human issues.

Hopefully assuming that in the year 2000 we are unincinerated, uncontaminated, and unpolluted, what might we wish to see in a special education program? Perhaps by that time we will act on our long proclaimed devotion to individual differences and the meeting of individual needs. Even this has its dangers, however. As Murphy (1969) has said:

> Our habit of referring to a child's differences or to the fact that he is one of the 'children who are different' has blurred our vision of the ways in which he is like apparently unimpaired persons, and has deterred us from focusing more on strengthening and increasing those healthy likenesses (p. 265).

One way out of this apparent dilemma is to respect, value, nurture, support and encourage the growth potential and the eagerness to learn of all children. Perhaps only then should we consider special interventions to meet the needs of children with disabilities. Note that I am not suggesting that there be no special education services until all education is perfected and meets my proposed standards. I have been in government too long not to be fully aware of how that could be distorted into an excuse for doing nothing.

Pursuit of the goal of recognition of the membership of all children in the class called "children" with its implications for providing an appropriate milieu for the optimum development of the members of that group, does not preclude our recognition that there will always be some children who deviate in greater or lesser degree from the norm on one or another or several dimen-

sions. Although their major requirements will involve the needs stemming from their membership in the class "children" (perhaps with some variations), they will require a variety of special considerations. In addition to any intervention aimed directly at them there will be required special attention to their milieu including, especially including, people—family, community, teachers. Intervention with the human environment should be undertaken as soon as developmental difficulty is noted and intensified normal child care is seen as ineffective. Due caution should be taken to avoid inhabilitative "overkill."

I will clarify what I have in mind as it would relate to a preschool child. Shortly after birth the pediatrician detects, either on his own or on following up parental expressions of concern, some developmental slowness or other variation; he may suspect mental retardation. Hopefully, in thirty years' time physicians will be considerably more knowledgeable than many are today and he will not suggest "locking him up and forgetting him." There should be a team of specialists in his community with whom he can consult and to whom he can refer the family. Technology will doubtless have advanced to the point where a rapid and accurate biomedical and developmental diagnosis can be provided. With respect to many parameters, particularly social development and ultimate capacity for independent functioning, I doubt we will have come so far. At any rate, the relationship established with the family and the emotional climate in which diagnostic interpretations are presented are crucial.

The family, including siblings, needs a relationship with competent and concerned professionals in which their fear, grief, anger, and depression about having a child with a disability can be dealt with in a way that provides education as well as counseling. They need to learn about the condition which affects their child, the causes and prognosis, the services they and their child may need, the likelihood of availability of such services when they will need them, and the specific activities in which they can engage with their child to facilitate his development. They may need consultants of many kinds, from dieticians to physical therapists to teachers, and many of these services should probably be rendered in the home, where a warmer, more realistic setting should be possible. The family should be helped to encourage the affected child's coping, and the strengthening, maturing benefits of coping and succeeding should be highlighted. As soon as possible and developmentally desirable, the child should be enrolled in a nursery school where he can learn to relate to other adults and children and develop further skills and greater independence. He should be placed with as developmentally intact children as it is possible to arrange. From here, there should be an easy transition to the next stage of public education. I am assuming that early childhood education will be public and universal by the year 2000.

As the youngster moves on into further levels of the educational system, we can expect that special education will no longer be limited mainly to special class segregation and that the special educator will be not only a classroom teacher but also a psychoeducational diagnostician, a prescriptive programmer, and a specialist consultant to other teachers. Such services, although not widespread, are already beginning to crop up piecemeal in various places. A Federal court in Pennsylvania and laws passed or pending in several states suggest that the pace is accelerating. Whether legal requirements are translated into actual services is something to be seen.

The real issue is the value we place on all of our children, on their education, and on mankind. I have a tape in my car with a number of songs by Judy Collins (1969). It plays on as background music as I commute laboriously in and out of Boston. One line keeps intruding on my consciousness. In a soft,

lovely voice, evocative of youth and beauty, hopes and dreams, comes the words, "When all is come to dust, I'll kill you if I must, I'll love you if I can." The young, who first wanted to love but were not allowed to, eventually learned to kill. These are our children, our dreams, our love, and our immortality—and we are teaching them to kill, to acquire, and to be indifferent, not only to others but to their own potential selves. Lest my example is not persuasive, may I draw your attention to the Academy Award Winner, "True Grit," a film for the general public, for all the family. Fool that I was, or am, I took the whole family to watch one of the most insensitive, bloody, sadistic films I've seen. The tongue in cheek aspects were lost on my eight year old daughter. This was for the whole family; yet, a tender love story which involves any physical intimacy with less than full clothing is forbidden.

We must open our educational system up so that children may paint and dance and sing and explore and travel beyond the narrow confines of a building called a school in search of themselves. They must be helped to feel and to accept feelings, to become aware and accepting and loving and giving. We must no longer make them ashamed of tenderness. This will be very hard for up-tight teachers and administrators to provide for or even allow, so we must begin now in our colleges and universities to work for freedom in education. Allow our students and employees to be free and they may just pass it along.

What about super science and technology? Am I ruling them out? Of course not. We should use any technical machines, aids, devices, gadgets, or advice we can get. As long as we subsume them under human purposes, developmental goals, and self-actualizing potentials, they can be useful. Technology for its own sake may contribute to further dehumanization. As Maslow (1969, p. 729) said, we have to depend on "trusting more the child's own impulses toward growth and self-actualization. This means a greater stress on spontaneity and on autonomy rather than on prediction and external control." As Maslow (1969) also stated, he is:

> convinced that the value-free, value-neutral, value-avoiding model of science that we inherited from physics, chemistry and astronomy, where it was necessary and desirable to keep the data clean and also to keep the church out of scientific affairs, is quite unsuitable for the scientific study of life (p. 725).

What interests me about all of this is that many of the so called "hard" scientists I know are very human and very concerned people. Perhaps they are trapped by their instruments or their funding sources and have not yet been able to free themselves in any great numbers to pursue other than narrowly technical goals.

In conclusion, I would like to recall a time not long ago when I and my wife and my friend Alan and his wife were walking down a street in Sausalito, California. Alan and I had grown up together in modest circumstances in Philadephia. He became a metallurgical engineer now working in exotic alloy scrap and I a psychologist working with children with disabilities. He He becamevery wealthy and I a civil servant. But we are friends, and he flew from Beverly Hills to spend a weekend with us before the start of a meeting I was attending. The air was warm, sky blue and clear and smog free; the flowers were in bloom and the grass was rich and thick. I asked him whether he had been back to Philadelphia recently. "No," he answered, "but last year I went back to visit October." He had boarded a plane, flown to Philadelphia, and gone to a park where he walked among the trees and turning leaves.

After drinking his fill of who knows how many memories, he got back on a plane and returned to seasonless Beverly Hills. As he spoke, the four of us looked at each other with a sign of recognition transcending the ordinary cognitive material he had offered. We drew more closely together, and at that moment we shared a common feeling, an experience, a recognition of something elusive and beautiful—a freely expressed deep feeling reaction to his roots and memories and dreams.

And so the year 2000 is running out and you are doubtlessly wearing out. We have many choices. We can huddle together as Mathew Arnold (1942) seemed to advise when he wrote:

> Ah, love, let us be true
> To one another! For the world which seems
> To lie before us like a land of dreams,
> So various, so beautiful, so new
> Has really neither joy nor love nor light
> Nor certitude nor peace nor help for pain—;
> And we are here as on a darkling plain
> Swept with confused alarms of struggle and flight
> Where ignorant armies clash by night.

We must feel, we must strive, we must participate and struggle for human values. And we must always allow the time to go back to visit October.

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Rehabilitation, Education, Mental Retardation and the Future: A Group Analysis[1]

Kevin McGovern, University of Oregon

Over the past several years, Americans have become intrigued with and increasingly concerned about the possible future consequences of the problems inherent in an increasingly complex society. Titles conveying intimations of 'mortality' persist: ***Mankind 2000*** (Jungk & Galting, 1969); ***An Alternate Future for America*** (Theobald, 1968); ***The Making of a Counter-Culture*** (Roszak, 1969); ***The Population Bomb*** (Erlich, 1970); ***Values and the Future*** (Baier & Rescher, 1969); ***The Environmental Handbook*** (DeBell, 1970); ***Future Shock*** (Toffler, 1970); and ***Famine, 1915!—America's Decision: Who Will Survive*** (Paddock & Paddock, 1967). A common thread which runs throughout this literature is the warning that to insure continuing survival, 20th century man must accomplish pronounced cultural, social, and ethical changes.

A number of institutions and organizations which are directing their attention to these future changes are now emerging. For example, under Title IV of the Elementary and Secondary Education Act, the Educational Policy Research Center (EPRC) was established in 1968 at the University of Syracuse. A fundamental task of EPRC is to systematically address questions such as the following (EPRC, 1969):

- Can we know what life will be like in the distant future?
- Can it be accurately forecast?
- How can we clearly describe something that does not yet exist?
- Is there more than one possible future?
- What might the future hold for education? (p. 3)

A more generic organization, created in 1966, is the World Future Society. Some of the objectives of this educational and scientific organization are ***(The Futurist,*** 1969):

[1] This paper is based upon the small group interactions of participants who attended the seminar entitled, "Rehabilitation of the Retarded: The Future," February 1970, Rehabilitation Research and Training Center in Mental Retardation, University of Oregon.

- To advance responsible and serious investigation of the future.
- To promote the development and improvement of methodologies for the study of the future.
- To facilitate communication and cooperation among organizations and individuals interested in studying the future.

As a professional organization, rehabilitationists—physicians, law officers, special educators, psychologists and counselors, among others—should also be planning for the future. By analyzing what is presently occurring within this complex professional organization and by making predictions about future social, psychological, technological, and cultural movements, rehabilitationists will prepare to more effectively meet the changing social, economic and emotional needs of the people they serve.

Concerned about these needs, the staff at the University of Oregon's Research and Training Center in Mental Retardation, in February, 1970, conducted a two and one-half day conference for professionals who were interested in discussing and formulating strategies for the future. During one part of the program, a number of psychologists, special educators, vocational rehabilitationists, graduate students, social workers and university personnel participated in small-group discussions focusing on the progress of education and rehabilitation as active agents in meeting the needs of mentally retarded clients. The remainder of this paper is devoted to the concerns, issues, and projected strategies that emerged from these discussions.

Education

Current Issues

Appropriate diagnosis. One of the first issues discussed was the development of more effective methods of training teachers to be able to adequately understand the educational assets and limitations of students with various types of learning disabilities. For example, discussants questioned whether primary and secondary school teachers have been trained to accurately differentiate the potentially bright child with a behavioral problem from an individual with limited intellectual capabilities. In short, educational personnel should be equipped with the necessary assessment skills required to accurately diagnose the cognitive and behavioral differences among students with various types of learning skills and deficiencies.

Placement. After an accurate diagnosis has been made, school personnel usually place students with various learning skills into distinct educational groups. For example, the child with an I.Q. score below a certain numerical point is oftentimes placed into a special education class. This classification can place a limit upon the child's future learning experiences. Realistically, his expected level of achievement will be below that of a child placed within a higher accomplishment group. The child within the 'special education' class will be isolated. However, is this type of segregation really in the best interests of the child who learns at a slower rate? Might there be a method for integrating the 'slow', 'average', and 'superior' student into an enriched, learning experience? And, might this 'integrated' type of education be more philosophically sound?

If the American educational system was willing to re-examine its goals, the answer to the latter two questions might be in the affirmative. Educators must renew their commitment of 'equal educational opportunities' for all children. Stereotypical classifications (retarded) and sterile educational en-

vironments (special education classes) are contrary to the basic principle of equal educational opportunities. Unfortunately, cultural myths have perpetuated segregation and conflict throughout the entire academic structure: whites vs. blacks; apprentice teacher vs. master teacher; school board vs. teachers; parents vs. child; retarded vs. non-retarded. This is especially unfortunate because the educational system represents one of the most profound series of learning experiences in the life span of an individual. If educational personnel continue to segregate particular groups of students from each other, narrowness and the inability to understand people with certain limitations will continue to be perpetuated in our society.

In the future, educational systems should plan for the integration of students with different levels of learning abilities and limitations. Through this important learning process, children will develop humanistic ways of perceiving individual differences. For example, students assisting their less skilled classmates might learn that to share with others is more satisfying than attempting to gain superiority over them. Besides contributing to the development of skills, this type of integrated cooperation among students may in future decades replace unwarranted competition as the prevailing attitude in relating to others.

Viable continuing education programs. Another perplexing problem facing the present educational system is the lack of a meaningful continuing educational system for school personnel. In many cases, the present system does not support a teacher's willingness to become familiar with new learning concepts and strategies. Teachers are often reluctant to acquire a higher degree or special certification because school boards cannot pay teachers with these credentials. Furthermore, teachers are tired of attending wornout courses at night or on an inconvenient Saturday morning.

Teachers are oftentimes annoyed by the concept of continuing education because they are expected to learn new teaching philosophies and methodologies on their own time. In the future, school administrations must find a method of reincarnating the viable concept of continuing education. A combination of meaningful university courses, pay increases for completed hours, and a series of educational learning experiences that are incorporated into the regular school day may stimulate an enthusiasm for learning and applying new knowledge.

Future Strategies

At this point, the discussants elaborated upon what an improved educational institution of the future would be like. These suggestions indicate a few of the desirable directions toward which American education may move in the future.

An innovative team teaching system. Teaching teams will be developed in order to attain maximum instructional efficiency. For example, all mathematical currricula will be taught by educational personnel with specialized skills in this area. Each team will coordinate their resources and cooperate with other educational teams in order to reach the educational goals of their particular school system.

Throughout the twelve-month school year, each member of the team will have an opportunity to serve as an educational consultant. In this role, the consultant will be able to attend workshops, read journals, communicate with the school board, relate with parents, and discover what new teaching tech-

niques are effective and how they can be successfully implemented within the educational system. Through this team system, the educational consultant will provide continuing information to the other team members concerning new teaching systems, educational policies, school-board decisions, and parent concerns.

This futuristic team strategy will provide teaching personnel with ***(a)*** an opportunity to engage in a meaningful, continuous learning experience both within and outside of the classroom, and ***(b)*** a vehicle for providing students with progressive educational information and technology.

Integration. Students will not be stereotyped (dull, normal, bright) nor placed into homogeneous groups which denote their level of achievement. Instead, the teaching teams will be responsible for classes of children with various levels of learning abilities. Through activities such as teacher-student planning, committee work, special projects and individualized instruction, each student will progress at his own rate; yet have the opportunity to function effectively with others. The integrated classroom may alleviate abnormal peer competition and overwhelming feelings of failure and worthlessness. Cooperation, understanding, acceptance and sharing will be emphasized,

In addition, students will be allowed to re-shape their program if they are unable to attain their original goals. In the situation where the child has not yet developed a sense of direction, the educational team, in cooperation with those who have an important place in the child's life, will be responsible for designing a meaningful educational experience.

Academic, vocational and avocational goals. In the futuristic educational network, educational personnel will be required to re-evaluate the meaning of academic, vocational and avocational training. In their analysis, they may find that an overemphasis of academic skills has devaluated the importance of vocational and avocational skills. In many cases, vocational courses have been designed to keep students labeled 'under-average', 'below-par', or 'retarded' occupied. Yet today, many of these 'below-par' students are providing communities with important services. An improved educational system will provide all students with an equal opportunity to learn one or a combination of various academic, vocational, and avocational skills that will assist them in achieving a functional place in society. The importance of avocational and leisure time activities cannot be ignored, for futurists have predicted that 20th and 21st century man is entering an era of greater leisure time.

The preceding description conveys an image of a school system providing students and teachers with opportunities to reach educational goals far beyond those usually provided in the school of today. Major improvements in the quality of education for all children and teachers can only be accomplished by making viable changes in present educational practices. These and other changes may provide the teacher and student with a meaningful, developmental learning experience.

Rehabilitation

A Current Issue

In their task of providing wide-range professional services to disabled clients manifesting a variety of physical, emotional and cultural handicaps, rehabilitation counselors are often confronted with realistic problems impeding the delivery of rehabilitation services. For example, in some northwestern states, counselors are responsible for approximately three hundred clients

living within a broad, rural, geographical region. It is not unusual for these counselors to travel thousands of miles a year in the role of on-the-road consultant, educator, and coordinator of services. Furthermore, rehabilitation counselors believe that they are required to successfully habilitate a fixed number of cases each year. Although rumors about a fixed quota system have never been publicly documented by the state or federal government, this "belief" influences the practices of many counselors. When the complex variables of travel requirements, number of clients, case reports, range of disability types, and inadequate service facilities are coupled with this distracting quota system, the counselor's willingness to work with the more seriously handicapped may be inhibited. This inhibition may be reinforced by the concept that the more disabled the client is, the longer the rehabilitation process will take. The idea that a certain number of cases have to be successfully processed each year could easily cause emphasis to be placed upon those cases having a higher probability of being successfully rehabilitated in the least amount of time. Where does this philosophy leave us? Could it be that the clients with the greatest need for services are being turned away? DeMann (1963) conducted a study to investigate this hypothesis. He concluded that:

> At least one implication to be drawn from the findings was that those counselees who were successfully rehabilitated were those who might be expected to be the easiest to rehabilitate (p. 341).

What effect would this philosophy have upon retarded clients? Do rehabilitation counselors perceive them as having a low probability of being successfully rehabilitated? If this is the case, the mentally retarded client may be actively avoided by rehabilitation counselors in the future.

Future Rehabilitation Strategies

A qualitative philosophy. Rehabilitation administrators could resolve the high probability vs. the low probability issue by placing emphasis upon qualitative case closures. In other words, the rehabilitation counselor's job performance could be evaluated either qualitatively and/or quantitatively. For example, the successful habilitation of 15 severely disabled, low probability, time consuming clients would be as creditable as the successful habilitation of 50 mildly disabled, high probability, minimal time consuming cases.

With this new philosophy, the counselor would find his job more challenging and rewarding. The counselor in the future will be recognized for both qualitative and/or quantitative services. Hopefully, rehabilitation administrators will place emphasis upon the qualitative delivery of services for the most needful clients.

Unless this or some other comparable philosophy is built into the rehabilitation process, counselors and administrators will become involved in a tragic numbers game, while severely culturally, emotionally, and/or physically disabled clients are rejected from services.

The rehabilitation counselor specialist. Since the majority of rehabilitation counselors provide services for a wide variety of disabled clients, rehabilitation administrators must in the future place greater emphasis upon the employment of rehabilitation counselor specialists. These specially trained counselors would be responsible for a constellation of disabled clients with similar handicaps. For example, within a particular geographical area, one counselor or a team of counselors would be responsible for habilitating retarded clients only. Within the specialist system, each counselor could concentrate upon the spe-

cific needs, assets, and deficiencies of his particular group of retarded clients. Unless there was an existing secondary disability, the counselor would not have to concern himself with the rehabilitation strategies and problems of other disability types. Instead, the counselor could continuously acquaint himself with current vocational, psychological, behavioral, and medical advancements within his area of specialization. This, coupled with a comprehensive understanding of the problems and issues related to the habilitation of a specific disability type, would enable rehabilitation specialists to provide qualitative, efficient services for their clients.

The concept of highly skilled rehabilitation counselor specialists will not, of course, solve all of the issues related to the successful rehabilitation of the severely disabled. For example, some agencies would hire only one specialist, and this individual would be confronted with an overwhelming caseload. The rehabilitation counselor would again be placed in the awkward position of providing services for clients having the highest probability of being successfully habilitated.

In the future, rehabilitationists must discover viable alternatives that will close the gap between disabled clients who are seeking professional assistance and the delivery of qualitative rehabilitation services.

A progressive educational training model. As the future unfolds, industry, education, medicine and other organizations will be developing innovative therapeutic tools. These rapidly occurring advancements should be made known to the practitioner at the earliest possible date. The following training system will facilitate the dissemination of these findings and enhance both the qualitative and quantitative aspects of rehabilitation services and cases processed. The suitability of such a model will depend upon each state's particular needs and objectives, regional policies, urban-rural problems, and manpower needs.

In cooperation with the State Training Directors of the Division of Vocational Rehabilitation, the 19 Regional Rehabilitation Research and Training Centers across the nation will develop more extensive and comprehensive continuing education training programs. Although these centers are currently providing training for rehabilitation personnel, in the future, trainers will emphasize both the dissemination of important updated and useful information and the training of perspective trainers. In fact, programs will be designed expressly to teach rehabilitation personnel how to train their colleagues.

The staff of these regional centers are aware of the impracticality of having each rehabilitation counselor travel out of state twice a year to attend training programs. Thus, specialty teams from each center will travel to their respective states and assess the training needs of their trainees. The aim will be to provide each region with programs meeting the training objectives of rehabilitation personnel. After the particular problems of the various geographic areas have been surveyed, viable training programs will be constructed for each area, and perspective trainers will be invited to attend these training programs.

During this process, the staff will evaluate the effectiveness of the training programs and revise those areas not meeting certain specifications. After the revisions are completed, the trainees will return to their respective states equipped with materials, demonstrations, and other media constructed by the Regional Research and Training Centers and conduct similar workshops for their particular agencies. Continuous evaluation of their training programs will provide the trainers with information for making decisions regarding future program planning, implementation and improvement.

The regional centers will also negotiate with colleges and universities re-

garding additional training opportunities. Qualified instructors and graduate students may, for example, act as training consultants for a local or state division of vocational rehabilitation. In working together, the practicing rehabilitation counselor and the scholar could learn about each other's philosophical assumptions, methods, techniques and problems. The discrepancies that occur between the theoretical and the applied would become apparent, and the practitioner and the scholar would become both student and teacher.

Although a continuous, up-to-date in-service training program is an essential element in the rehabilitation process, a system which demands continuous training will pose practical problems for rehabilitation personnel. Counselors will question whether they can legtimately spend one month of every year away from their clients to attend in-service training programs. Who will be responsible for their caseload during this time? One alternative is the use of adjunct personnel. Capable individuals will be looking for ways to usefully spend the large amount of leisure time the future seems to promise. Mans' humanistic drive to help the handicapped and disadvantaged among him could be channeled into a new helping avocation. If avocationists were given responsibility and opportunities to make decisions, the rehabilitation counselor would have the opportunity to attend continuous training progams, visit other rehabilitation facilities, become more involved with the more difficult case closure clients, and finally, maximize his own skills and humanistic ambitions.

Summary

In conclusion, a number of possible futuristic alternatives have been discussed. In working toward these objectives, there is a definite need for an integrated team approach. Since rehabilitation as a professional organization consists of a variety of members with diverse educational and vocational training backgrounds, it is not surprising or unusual to find a physician, counselor, teacher and physical therapist working together as rehabilitationists within a rehabilitation setting. These and other rehabilitation personnel are faced with the challenge of developing an effective system for solving a wide variety of present and future problems related to the habilitation of the culturally, emotionally and physically disabled. This system can only evolve through a cooperative integrated team effort among the various disciplines represented within this profession. In other words, the rehabilitation profession must develop a spirit of cooperation among its members. Through this cooperative, sharing relationship, individuals from a variety of professional fields of interests will be working collectively toward one goal—the successful habilitation of the client.

The concept of an integrated professional team approach is certainly not a new idea. Rehabilitation teams have already been functioning within a variety of rehabilitation settings. The important question is whether these teams are functional. These teams would be more effective if the individuals within these groups did not become involved in an often meaningless power struggle. For example, the physician and psychologist are often observed debating the efficacy of the medical and the psychological methods of therapeutic intervention. The truth of the matter is that both professions can learn important therapeutic strategies from each other's respective discipline.

In short, rehabilitationists should involve themselves in a cooperative, integrated team involved in the process of discovering cogent strategies for habilitation. Through this process, solutions to present and future problems may be more readily uncovered.

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