A U.C.E.A. CAREER DEVELOPMENT SEMINAR

DIVISION OF EDUCATIONAL ADMINISTRATION
COLLEGE OF EDUCATION
UNIVERSITY OF MINNESOTA

IMAGING ALTERNATIVE FUTURE SCHOOL ORGANIZATIONS

Edited by

Samuel H. Popper
Professor
Educational Administration
University of Minnesota

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A UCEA Career Development Seminar
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Cosponsors

- University Council for Educational Administration
- Division of Educational Administration, University of Minnesota
- Office of Applied Social Science and the Future, University of Minnesota

EDITOR'S INTRODUCTION

The first UCEA Career Development Seminar was held at the University of Chicago, November 11-13, 1957. It was cosponsored by the Midwest Administration Center. Eight distinguished scholars, drawn from educational administration and the social sciences, presented papers addressed to the larger seminar theme of "the role of theory in educational administration." Each of these papers has by now assumed a status of interdisciplinary importance in the literature of administrative theory. We in educational administration stand indebted to Professor Andrew W. Halpin, now at the University of Georgia, for his editorial work which has made these seminar papers available to us between the covers of a book: Andrew W. Halpin, ed., *Administrative Theory in Education* (New York: The Macmillan Co., 1964).

Many UCEA Career Development Seminars have been held since 1957, some more successful than others, and in each instance the controlling desideratum has been to explore reflectively the "cutting-edge" of ideas which are capable of advancing educational administration as a social process. And so it was with the University of Minnesota seminar, "Imaging Alternative Future School Organizations" of October 30-November 1, 1972.

Written large as a graffito of our time on the institutional walls of education is the message that all school organizations in the United States, whether in universities or public school systems, must adapt to changing social aspirations if they are to remain effective. To do so, however, their administrative stewards need to learn how to anticipate future events and to set goals beyond the immediate context. Among other things, this entails learning to think about the future, to study the future, and to use data on the future as a means of achieving functional adaptations in school structure and process. It was on just this challenge to the adaptive capability of educational administration that the University of Minnesota seminar focused intellectual energy.

Accordingly, and in keeping with UCEA expectations of a Career Development Seminar, the Minnesota seminar dealt with three substantive themes: Imaging, Forecasting Methodologies, Futurology in Planning. A seminar day was devoted to each theme. With the exception of one departure, when seminar participants engaged in a computer-based forecasting exercise, the seminar program followed a conventional format. Papers were read, reaction panels responded, and group discussion followed. All of the papers which were prepared for the Minnesota seminar, as well as all reaction-panel commentaries, are presented in this volume.

Perhaps I am indulging an unwarranted bias in judging the content herein to be, by and large, of such a good expository quality as to require no further editorial comment. At any rate, it is easy in this case to resist a universal temptation of editors to write emendations on papers whose authors are in no position "to fight back." Altogether, then, this volume explores the larger parameters of Futurology as a developing field in applied social science and it marks those of its facets which appear attractive for future cultivation by professors of educational administration.

All of which takes me to the congenial task of offering acknowledgements. Many have to be cited. Professor Clifford P. Hooker was Chairman of our Division of Educational Administration at the early planning of the seminar and Professor Van D. Mueller was his successor by the time it was held. Both of these colleagues provided unstinted encouragement from first to last. Nearly all other colleagues in the Division helped by accepting a program spot either as a session chairman or as a reaction panelist. As always, Mrs. Helen A. Warhol and Miss Janet A. Marker contributed superb secretarial skill to the project. Mr. Kenneth A. Swanson and Mr. Richard Klassen, Teaching Assistants in the Division of Educational Administration, gave of themselves generously to the seminar.

Ultimately, the enduring value of a UCEA Career Development Seminar turns on program quality. Talented scholars from academia, government, and business, and whose names appear in this volume either as authors of papers or as reaction panelists, have brought to the Minnesota seminar a multifaceted perspective which is bound to become a frequently consulted reference in the literature of educational administration.

Dr. James Lindsay, Research Coordinator for TIES of St. Paul, conducted a computer-based exercise for the seminar. He was assisted by Mr. Keith Smelser of the White Bear Lake Public Schools, Mr. Robert Nelson of Richfield Senior High School, and by Mr. Clarence L. Peterson of Deerland Distributors. Their collective benefaction brought to the seminar a live demonstration of the computer's critical importance in Futurology.

It is a pleasure to acknowledge the help of both Dr. Jack C. Merwin, Dean of the College of Education, University of Minnesota, and Dr. Malcolm C. Moos, President of the University of Minnesota. Theirs was more than a ceremonial assist. President Moos had prepared well for his participation in the last session of the seminar. Dean Merwin, on the other hand, did even more by snatching from the hidden corners of his Dean's strongbox a generous contribution to the cost of this publication.

Professor Arthur M. Harkins, Mr. Richard G. Woods, and Mr. Earl C. Joseph of the University of Minnesota Office of Applied Social Science and the Future were

always "at-the-ready" for consultation and feedback during the planning phase of the seminar.

Of all my tasks as coordinator of the Minnesota seminar, and now as editor, not a one has afforded me more gratification than does this acknowledgement of my indebtedness to UCEA. It has been my great good fortune over the years to have served on many UCEA Task Forces and, for academic year 1970-71, as a Staff Affiliate. Each of these occasions has enlarged my intellectual capacity as a professor of educational administration. I shall borrow from Professor Wailand Bessent, University of Texas and President of UCEA's Executive Committee for 1972-73, and identify myself with the concluding remarks of his Presidential Address at the 1973 Plenary Session in Atlantic City. He said:

> . . . to end on a personal note, it is not too much to say that UCEA has been the most important single influence in my professional career.

Samuel H. Popper
University of Minnesota

FOR THE DIVISION OF EDUCATIONAL ADMINISTRATION

The Division of Educational Administration was pleased to co-sponsor the UCEA Career Development Seminar, *IMAGING ALTERNATIVE FUTURE SCHOOL ORGANIZATIONS.* The opportunity to interact with the ideas of a distinguished seminar faculty and similar participants has quickened our own reconsideration of the administrator of the future and his preparation needs.

If we are to move education in a future-oriented direction, we must begin with institutional assessment. Some of the resultant changes in school organization may disturb long established habits and processes. Nonetheless, we must welcome the emergence of innovation and make a fresh commitment to the restructuring of educational institutions in which we perform as professionals.

The opportunity to bring the ideas in this volume to the attention of a wider audience will, it is hoped, assist educators in gaining a glimpse of a future which is often difficult to comprehend or imagine.

Finally, appreciation is expressed to Professor Samuel H. Popper for his excellent leadership in conceptualizing, planning, and implementing the seminar design. I trust that you will find his contribution helpful in meeting the challenge to change school organizations in a way which recognizes both current demands for change and claims of the future.

Van D. Mueller, Chairman
Division of Educational Administration
University of Minnesota

FOR THE UNIVERSITY COUNCIL FOR EDUCATIONAL ADMINISTRATION

During the last decade Futurology has emerged as a visible intellectual movement transcending individual scholars. Evidence of the movement is widespread and in varied forms. The following examples illustrate a few of its many expressions: the internationally known research center in Paris called *Futuribles* which concentrates upon social and political forecasting, the World Futures Society which serves growing numbers of individuals, agencies such as the Institute on the Hudson which projects futures of various kinds, a growing list of publications which focus upon topics within a future time frame, and an increasing interaction between those studying the future and those making decisions about the future.

The movement has not bypassed education as witnessed, for example, by the future-oriented inquiry now taking place in federally supported centers at Syracuse University and the Stanford Research Institute. The result is that data and generalizations about education's future, developed through the use of new methods of study, are growing in number and quality. These complement data and generalizations already available about education's past and present.

Since effective educational leaders are always informed by a sense of the future and a concern for a vision transcending the *status quo*, scholarly studies within a future-time frame should be of interest to these leaders as well as to professors who are concerned with the study of leadership and the design of programs to prepare administrative leaders. Therefore, the University Council for Educational Administration (UCEA) was pleased to cosponsor with the University of Minnesota the Career Development Seminar at which the papers presented in this volume were originally presented and discussed.

Prof. Samuel H. Popper of the University of Minnesota played a major role in conceiving and planning the Career Development Seminar. We are deeply indebted to him and his colleagues for their leadership in bringing the Seminar and the resulting publication to effective fruition. We are hopeful that the ideas presented in this volume will not only help administrative leaders examine more carefully relationships between education's present and future but that they will aid in their search for organizational adaptation and renewal.

Jack A. Culbertson
Executive Director
UCEA

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Director
World Problem Handbook Project
The World Institute

Vaughn E. Huckfeld
Research Associate
National Center for Higher Education
Management Systems at WICHE

Ian H. Wilson
Consultant
Business Environment Studies
General Electric Company

Reaction Panel: William M. Ammentorp
Associate Professor
Educational Administration
University of Minnesota

W. Ray Cross
Associate Professor
Educational Administration
University of Minnesota

Don A. Morgan
Associate Professor
Educational Administration
University of Minnesota

ALTERNATIVE FUTURES FOR THE AMERICAN EDUCATIONAL SYSTEM

by

Michael Marien*

The entity that we refer to as "The American Educational System" should not be casually assumed. Increasingly, there are good reasons to reconsider that which might presently be called "the system," as well as possible alternative systems that would be desirable for the future. Imagining such alternatives is no mere intellectual exercise; rather, the view of "the system" that we hold is a fundamental consideration in shaping educational experiences in our society, and, in turn, shaping the kind of society and world we will live in.

It is well to begin with a definition of "system," and that provided by James G. Miller for the Commission on Instructional Technology is adequate:

> A system is a set of interacting units with relationships among them. The word 'set' implies that the units have some common properties, which is essential if they are to interact and have relationships. The state of each unit is constrained by, conditioned by, or dependent on the state of other units.[1]

But, after providing an extensive tour of systems terminology, Miller then goes on, in a companion piece, to unwittingly promulgate the conventional wisdom:

> The components of the elementary, secondary, and higher education of the nation have been described. . . . The national educational system is simply the sum total of these plus the administrators who determine policy for it, like the Office of Education, acting as interfaces between it and the total nation.
>
> The national educational system of the United States has few operating units beyond those mentioned above, with the exception of the regional educational laboratories.[2]

It is obvious that schools and colleges are a central part of the American educational system. But, until recently, schools and colleges – plus relevant administrative units – have been equated with *the* system.

There are two assumptions that have maintained this model of the system: education (or societally valued learning) is only for the young, and such learning results only from schools. But these assumptions are rapidly eroding. As society changes, it is increasingly clear that education must be lifelong and, therefore, concerned with multi-age learning. And it is increasingly apparent that learning, including societally valued learning, takes place outside of schools, and, as a corollary, that learning does not necessarily take place within schools. Indeed, this is so apparent that even President Nixon, who is generally not known for radical statements, has overcome the second assumption (but not the first one) by stating that:

> Most education takes place outside the school. Although we often mistakingly equate "schooling" with "learning," we should begin to pay far greater attention to what youngsters learn during the more than three quarters of their time they spend elsewhere.[3]

The view of the educational system as schools and colleges only persists, however, due to credentialism, habit, and a simple-minded view of self-interest. We might all agree with the new *Saturday Review* that "education is all – all embracing, all dependent," and that "learning extends across the broad range of human experience and throughout our lives."[4] But we also know that the only learning that counts is that which leads to a high school or college diploma. Graduation from high school is the puberty rite in our culture, and the college degree, while still The American Dream for most, could become the new rite of passage into adult society in the future. The American educational system, then, is best understood as the credentials system. But this also raises the question of credentials for what, and, as subsequently discussed, credentials are slowly moving beyond the province of schoolhouse and campus.

The second reason for the persistence of the conventional wisdom of the system is habit. We have a legacy of thinking which views the system as schools and colleges. The U.S. Office of Education restricts virtually all of its data collection to schools and colleges. The habit is reinforced because of the difficulties of settling on any other view. If education is more than schools but something less than all life and learning, where do we draw the line?

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*EDITOR'S NOTE: The author took his Ph.D. degree in Social Science from Syracuse University in 1970. From 1968 to 1972, he served with the Educational Policy Research Center at Syracuse. He is now associated with The World Institute as Director of the World Problem Handbook Project.

Dr. Marien is the compiler of *Alternative Futures for Learning: An Annotated Bibliography of Trends, Forecasts, and Proposals*, the author of *Beyond the Carnegie Commission: A Policy Study Guide to Space/Time/Credit Preference in Higher Learning*, and is the co-editor of *The Potential of Educational Futures*. He has other publications to his credit, too numerous to cite here, as is indicated by the footnote references of his essay.

[1] James G. Miller, "The Nature of Living Systems: An Exposition of the Basic Concepts in General Systems Theory," in Sidney G. Tickton (ed.), *To Improve Learning: An Evaluation of Instructional Technology*. Report of the Commission on Instructional Technology, Vol. II. N.Y.: R. R. Bowker, 1971, p. 245.

[2] *Ibid.*, p. 269.

[3] "Excerpts From the President's Special Message to Congress on Educational Reform," *New York Times*, March 4, 1970, p. 28.

[4] "Life and Learning" (Editorial), *Saturday Review of Education*, Sept. 16, 1972, p. 34.

Finally, one cannot help but suspect some self-interest in maintaining the notion of schools and colleges as the system. Teachers and administrators are no different from anyone else in wishing to retain their jobs while hoping to get better ones. It is thus that the NEA sponsors TV commercials portraying professional teachers engaged with thirsting young minds, while college catalogues – flirting with fraud – continue their rhetoric of education for excellence, democracy, and the whole human being. And most of the public still believes in education as schools and colleges, so why tamper with the faith?

The confusion is vast, the problems are great. But the traditional paradigm is fading, and it shall be subsequently argued that it is in everyone's interest to develop a new paradigm. But this is no simple matter, and this paper merely wishes to establish that we are in an era of paradigm search, while suggesting what some of the elements of the new paradigm might be.

A. Arguments for the Era of Paradigm Search

Before suggesting alternative views of the system, and therefore alternative futures, some further arguments will be presented to free us from the conventional wisdom and establish the notion of an "era of paradigm search." The arguments are overlapping and interrelated: the scientific argument, the societal context argument, the evolving educational system argument, the futures argument, and the problem-solving argument.

1. The Scientific Argument

The notion of an era of paradigm search is derived from Thomas S. Kuhn's widely cited book, *The Structure of Scientific Revolutions.* The basic argument in this history of scientific activity is that a paradigm serves to guide an entire group's research, which in turn is described as "normal science." "The commitments that govern normal science specify not only what sorts of entities the universe does contain, but also, by implication, those that it does not."[5] Crisis brews with a failure of existing rules and a sense of malfunction, leading to the blurring of a paradigm and the consequent loosening of the rules for normal research. Scientific revolutions are the "extraordinary episodes" in which the shift of professional commitment to some new paradigm occurs.

Kuhn's history is confined to the hard sciences, where such history is longer, more discrete, and less controversial, at least today. But there would seem to be no reason why Kuhn's view of scientific revolution could not be applicable to the social sciences – indeed, any model functions as a paradigm.

Several social paradigms that are due for replacement might thus be suggested. "Gross National Product" is a basic paradigm in economics, yet it grows increasingly inadequate as we become aware of, and besieged by, Gross National Pollution and Gross National Waste. "Democracy" is a basic paradigm that informs our national image and directs our political scientists, but the quantity and quality of citizen participation is such that a new concept of governance could prove more accurate. "National security," as military activity, is a paradigm that influences our federal expenditures, but internal insecurities wrought by poor health, housing, and education could force a change in this basic concept.

As previously suggested, the basic paradigm for education is legitimated learning through school and college for the young. The "normal science" equivalent in education is research on how the young learn in schools and colleges. The evidence of crisis preceding a scientific revolution is a dualism: the widespread interest in alternatives, if not the racier concept of a deschooled society, and notions such as non-traditional education, schools-without-walls, and external degrees. These concepts will be picked up again at a later point.

2. The Societal Context Argument

Dozens of writers in recent years have argued that a massive societal transformation has taken place, is taking place, and should take place. Jean-Francois Revel announces that a new American Revolution has begun *Without Marx or Jesus*. Kenneth Boulding has described a transition to post-civilization; Charles Reich applauds Consciousness III; Zbigniew Brzezinski places us *Between Two Ages* as we enter a technetronic era; Peter F. Drucker sketches *The Age of Discontinuity*, most notably including a shift to a knowledge society; the late Paul Goodman celebrated the *New Reformation*; and Margaret Mead figures that we are entering a Prefigurative Culture.

But change is disjointed, resulting in lags – especially in our concepts and our social institutions. Despite our hopes, we could enter an era of "friendly fascism" or a "dossier dictatorship." And thus we have been urged by James McGregor Burns to employ *Uncommon Sense*, Amitai Etzioni suggests *The Active Society*, J.D. Garcia advocates *The Moral Society*, Victor Ferkiss pleads for the development of *Technological Man*, and various scientists, upon viewing the population/resources/environment problem, advocate a steady-state-system, a no-growth economy, and/or eco-librium. The educational implications, whether implicit or explicit, are simply that there are profound learning needs for both mass and elite throughout our society. Stated in the most concise way, we are increasingly an ignorant society, where our learning needs are outdistancing our attainments.[6]

Amidst this cacophony of describing and prescribing social change, there is one clear and inexorable trend that informs our understanding of the educational system. In every sector of human activity there has been an unmistakable trend toward nationalization and globalization. Corporate conglomerates have led the way, with their horizontal and vertical integration and their globe-girdling activity. Agriculture has turned into "food supply systems," and the goal of one conglomerate – Tenneco – is integration from seedling to supermarket. Supermarket chains have forced out the mom-and-pop stores, while hamburger and fried chicken chains are making the local diner obsolete. In transportation, the Interstate highway system provides nationwide linkage and uniformity, while an international system of

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[5] Thomas S. Kuhn, *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, Second Edition, Enlarged, 1970, p. 7. (Originally published in 1962.)

[6] This process of discovering ignorance – perhaps the greatest public "discovery" of the 1970's, equal to the "discovery" of poverty and pollution in the 1960's – is sketched out in scenario form by Michael Marien, "The Discovery and Decline of the Ignorant Society, 1965-1985," in Thomas F. Green (ed.), *Educational Planning in Perspective*. Guildford, Surrey, England: FUTURES IPC Press, 1971.

traffic control devices is slowly coming into use. Amtrak places passenger railroads under a single management, and zip codes and area codes in our mail and phone systems serve to enhance our nationalizing. Health planning is now being undertaken in terms of comprehensive systems, while welfare (the explicit kind, for poor people) is advocated on a uniform national basis.

The growth of learning needs and increasing systemization on national and international levels are important clues to suggesting alternative futures for the American educational system. The evolution of this school and college system to the present can now be briefly reviewed.

3. The Evolving Educational System Argument

There are two simple and fundamental attributes of the school and college system that must firmly be kept in mind: 1) there are basically two systems in education: the higher system of colleges and universities, and the lower system of elementary and secondary schools, and 2) these systems are each becoming more systematized and are slowly linking together into one system.

In casual usage, one often hears reference to "the system" as if it has always been and always will be the same. Such static views are inadequate, and especially so for purposes of forecasting and designing the future. The system is dynamic and is presently expanding in new directions despite, or perhaps because of, financial ill health and dissatisfaction with its services. At the same time, one also hears reference to the "non-system" of education, which is simply alarm at seeming disorder and a prelude to further efforts toward consolidation and coordination. It is to be remembered that, more than fifty years ago, John Dewey expressed dismay at the disconnected pieces of American education, suggesting that education would be improved by an orderly linkage of subsystems.[7] The linkages have taken place, but it is questionable whether the conditions for learning have been improved. It can be granted that conditions have improved absolutely – that there has been Progress – but the important and more painful question is whether the conditions have improved relative to the learning needs of our time.

Nevertheless, both systems continue to consolidate while expanding outward from their central enterprise. The lower system, working out from a base of elementary schools, has expanded upwards with junior and senior high schools (and still further up, some might argue, into the high school-like atmosphere of junior colleges), and is now expanding downwards into preschool activities. The upper system has also expanded upwards into graduate and continuing education and downwards in junior colleges and advanced placement programs in high schools.

Growing integration in "the system" is readily apparent in both of the major subsystems. In the lower system, there has been a dramatic consolidation of school districts, from 128,000 in 1931 to 18,000 in 1971. Horizontal integration has been obtained by combining elementary units, which have shrunk, despite a doubling of enrollment, from 238,000 to 65,000 in the same forty year period. Placing elementary and secondary schools within the same district has aided vertical integration. And, in turn, all of these units become increasingly uniform through the growing influence of state education departments, the U.S. Office of Education and federal largesse, and the standards suggested by the National Assessment of Educational Progress. In the higher system, multi-campus state systems have grown rapidly in the past decade, linked into state master plans for higher education, and furthered by the shrinking role of privately supported institutions. Lateral linkages result from these state systems and from a wide variety of consortium arrangements that have multiplied so fast that there is no record of their number – often on even a single campus!

The higher and lower systems remain separate, as readily shown by two separate bodies of literature and two separate cadres of scholars, with virtually no overlap. In Washington, the lower system assembles its political force in the NEA building, while the upper system is camped a few blocks away at One Dupont Circle, which houses the American Council on Education and various other bodies.

Still, there are a few growing links between the two systems. The College Entrance Examination Board and the newer American College Testing Program, with their growing array of examinations, have served as a powerful but generally unexamined bridging force. To insure an adequate preparation for college work, liberal arts academicians have increasingly entered the field by suggesting curricula for the lower system – a task previously left to high school teachers and professors of education. Finally, the two systems may converge somewhat on the state level through efforts at comprehensive planning.[8]

It is doubtful that comprehensive planning will stop at the boundaries of the school and college system. It is already obvious that too much is being excluded. And, as subsequently discussed, the official system is already evolving off into new and unanticipated directions. The imaging of alternative futures for the system would be far more constricted without an appreciation of the rapid evolution that has taken place in recent decades.

4. The Futures Argument

In recent years, futures research has gained academic respectability, at least in some quarters. There are many virtues to lengthening one's perspective – if it is done well. By expanding one's view backward and forward in time, one can better understand the present. There is also an opportunity – if not a necessity – to widen one's view and develop one's skill in holistic or systemic thinking. Studying future possibilities is helpful in reducing the impact of "future shock," and, because there are so many possibilities, there is a fine opportunity to free the imagination. In doing so, we realize that to some degree we can invent the future, and that we need not – and perhaps should not – be constrained by the beliefs of the past.

We are attracted to the future, then, to the degree that we believe that it will differ or should differ from the present. The futures perspective hastens our search

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[7] John Dewey, *The School and Society*. Chicago: University of Chicago Press, 1899. Rev. Ed., 1915. Chart I, page 65, depicts "the various elements in the school system."

[8] Bernarr Furse and Lyle O. Wright (eds.), *Comprehensive Planning in State Education Agencies: A 7-State Project*. Salt Lake City: Utah State Board of Education, 1969.

for new paradigms, and, in turn, the acceptance of new paradigms hastens the realization of alternative futures. The search is further accelerated if we hold the view of growing learning needs relative to attainments – perhaps the single most important educational implication that can be derived from scanning the literature of trends, forecasts, and proposals.

5. The Problem-Solving Argument

In recent years there has also been a growing academic concern with policy-making, the decisions made today that serve to shape our future. But policy research, similar to futures research, can easily become an exercise in digging the same hole deeper. Legislators and administrators are obviously beset by many pressing problems, but the quick and expedient solution, bolstered by "band-aid" policy analysis addressed to narrow questions, may alleviate some immediate problems but seldom, if ever, serves a genuine problem-solving function in the long run. Good policy analysis should be multi-disciplinary and joined with futures research and general systems theory. It should be independent of vested bureaucratic interests, for the answers as to what we ought to do and the consequences of what we are now doing are generally disturbing. Such work should also be independent of established scholarly interests – the disciplines and professions – for work that is primarily addressed to impressing one's colleagues in non-policy areas will invariably prove too narrow to effectively deal with major policy questions. Funds will continue to be granted by agencies with limited concerns, and scholars will continue to applaud one another for their limited work, but serious coping with the central problems of our society and mankind will not occur until we can sustain a genuine multi-disciplinary effort. We did not land on the moon by confining the preparations to aeronautical engineers.

Such a multi-disciplinary effort is needed in education, for most if not all of the major solutions to educational problems are related to situations found outside of the conventional system. This is not by any means to demean the role of learning and those who study it, for the corollary to the above statement is that the solutions to all of our other social problems – health, welfare, defense, housing, transportation, urban areas, the environment – are largely if not entirely educational. Each of these problems can be fruitfully viewed as requiring elite learning; research and education of policy-makers, and mass learning; education of consumers, voters, clients. Accordingly, a massive exchange should be arranged, whereby educators are engaged with the "non-educational problems," while the perspectives of other scholars are brought to bear on education. To do so would facilitate the search for a new paradigm of "education."

B. Elements of the New Paradigm

There is a further argument for an era of paradigm search, which is simply to describe the alternative ways in which the system can be viewed. To the degree that these alternatives are plausible, or even intriguing possibilities, we can appreciate the necessity for abandoning the school and college model. But, as will be apparent, a choice among the alternatives is difficult at this time. It is best, then, to see each alternative as a possible element of the new system that will exist in the future – or could exist if we engage in some extra efforts in planning and social leadership.

1. The Deschooled Society

The best-known alternative future is that proposed by Ivan Illich and Everett Reimer: In place of the school and college system, which is viewed as the secular church of technological society, Illich has proposed a system of lifetime educational accounts assuring equality of resources, reference services to educational objects, skill exchanges, peer matching, and reference services to educators at large. It is contended that such a system would lead to an egalitarian society of independent self-directed learners.[9] In his less-known but parallel work, Reimer advocates a similar system, in addition to legislation that would separate school and state, forbid favoritism based on schooling, require equal sharing of public educational resources, and extend anti-monopoly laws to the field of education.[10]

The two questions to be considered here are whether a deschooled society – the replacing of the present system with a totally different one – 1) can occur and 2) should occur in the future. Ideology wields a strong hand in the answer: proponents obviously see this as a necessary, desirable, and attainable future. Pragmatic liberals would argue that "a deschooled society is desirable, but it is utterly romantic to think that such a condition could ever come about," and, therefore, one does not consider it. (The radical rejoinder is that "Without ideals and clearly stated goals to guide us, humanity is lost.") And then there are the confirmed schoolmen and conservatives who find no merit in the deschooling ideal and/or argument, and, therefore, ignore it as a possible future without any regrets. Such is the politics of forecasting, and the problems of mixing description and prescription, and ignoring possibilities because one does not imagine them himself, or because they do not seem probable or desirable, place us quite far from any "scientific" approach to probing the future. Those who claim to use "scientific" methods, incidentally, generally tend to be the least imaginative – a trait that does not result in good futures research.

At the risk of sounding like a pragmatic liberal, I feel that there is no chance whatsoever of a purely deschooled society – at least in this century. There are too many people – including the poor – who are not about to discard their faith in schooling. And an even greater number, including putative reformers, still wish to play it safe with accredited credentials. Like the promise of Charles Reich's Consciousness III in the wider society, the great humanistic revolution spurred by the counterculture is either overstated or considerably delayed. Given the present conservative counter-wave, which virtually no one anticipated – again a case of ignoring the undesirable – the great promise could prove to be a stillbirth.

Nevertheless, the deschooling argument and its alternative of learning networks and free learning has provoked considerable attention. John Ohliger cites one compilation of at least sixty books by radical critics

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[9] Ivan Illich, *Deschooling Society.* N.Y.: Harper & Row, 1971.

[10] Everett Reimer, *School is Dead: An Essay on Alternatives in Education.* N.Y.: Doubleday, 1971.

since 1970, and another compilation reporting learning networks in at least 131 U.S. communities.[11] At the least, the argument can serve as a powerful heuristic, stimulating alternative schools and colleges, if not alternative systems. But to advance to any significant degree, the ideology must be supplemented by some empirical test providing evidence that the quality and quantity of learning outcomes is equal to, or superior to, those obtained through conventional schools. Curiously, neither the reformers nor the critics have proposed such a test. If and when such evidence is obtained, it will probably indicate that some learners prosper under free conditions, while most still require the usual structure and rewards bestowed by authorities.

The movement to promulgate independent learning will remain and, to the degree that it promotes serious learning about man, nature, and society, I hope that it will grow. But this raises questions of definition and counting, if growth continues to the point where, say, ten percent of the population opts for this learning style. Should the countersystem of learning networks be counted as education, and if so, is it part of "the educational system" in our society? Should we say that the system has been diminished, or that it is more pluralistic? How is this learning distinguished from the independent learning that we all engage in through less formally constituted networks?

In any event, the promise of an alternative system is a direct challenge to the existing model, serving at the very least to blur the boundaries of the system. It is also the easiest way to image an alternative future – a future that is coherent and consistent, rather than, as appears to be our fate, one that is complex, heterogeneous, and necessarily fuzzy. These complexities will now be dealt with.

2. The Space/Time System Break

A "system break" is an occurrence where the nature of a system is substantially and irrevocably changed. It might be argued that the appearance of free schools and alternative schools in recent years constitutes such a break in the lower system. The provision of options within a public system could well become a new pattern, especially if voucher plans prove successful. But a more important break is indicated by the appearance of a few schools-without-walls – a break in the assumption of where legitmate learning takes place. This development is better understood by contrasting it to developments in the higher system.

A break in space and time assumptions occurred in the higher system around 1970. Although some programs had been planned or operative previous to this date, it was generally in 1970 that attention swelled toward the set of new programs and institutions collectively referred to as non-traditional learning, extramural programs, external credit, or – as preferred here – space/time-preference higher learning. A wide array of opportunities are now opening up, offering transdisciplinary multi-media course packages (England's Open University), counselor-based institutions facilitating independently designed programs of study (University Without Walls, Empire State College, Campus-Free College), degrees by examination (New York's External Degree Program) and course credit by examination (College-Level Examination Program). A more extensive analysis of these programs and their prospects – especially in view of developing technologies such as cable television, video cassettes, satellites, and computers – is available elsewhere.[12]

As a result of these developments, six alternative futures for the higher system can be suggested:

a. **The Extended Campus System.** Closest to the future suggested by the Carnegie Commission on Higher Education in its estimates of new students and recommendation of new places.[13] Essentially a continuation of the campus-based system, adding on 80-105 new comprehensive colleges and 175-235 new community colleges, and requiring the non-fulfillment of many promising technologies and reforms.

b. **The Extended Credit System.** Suggested by a different reading of Carnegie Commission recommendations, and prospects for further work.[14] A greatly expanded credit-by-examination enterprise, along with electronically based extramural programs, would constitute a significant portion, say, 25 percent, of the higher system. Such a system, despite rhetoric to the contrary, could greatly enhance the negative aspects of credentialism, the disciplinary and professional guilds, and the fragmentation of understanding.

c. **The Variegated Extended Credit System.** Similar to "b" but promoting the full range of learning modes and organizing frameworks, with particular emphasis on encouraging self-determined, personalized, transdisciplinary learning.

d. **The Learner-Centered System.** Similar to "c" but promoting non-credit learning to the extent that it helps the interests of the learner. Such a system would counteract the negative consequences of making credit more widely available.

e. **The Diminished Campus.** "b," "c," or "d" but with a decrease of more than twenty percent in the utilization of presently existing campus facilities, as a result of high quality of learning outcomes and/or low cost of space/time-preference programs.

f. **The Empty Campus.** Complete replacement with a more desirable system, such as that proposed for the deschooled society, or the inadvertent destruction of all human systems, due to the failure of men and nations to learn how to live in harmony with one another and with the natural environment.

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[11] John Ohliger, "The Visible Dissenters," *Educational Studies*, 1972, forthcoming.

[12] Michael Marien, *Beyond the Carnegie Commission: A Policy Study Guide to Space/Time/Credit-Preference Higher Learning.* Syracuse: Educational Policy Research Center, August 1972. For an abbreviated version of this 116 page report, see Michael Marien, "Higher Learning in the Ignorant Society," *The Futurist*, VI:2, April 1972.

[13] Carnegie Commission on Higher Education, *New Students and New Places: Policies for the Future Growth and Development of American Higher Education.* A Report and Recommendations. N.Y.: McGraw-Hill, October 1971.

[14] Carnegie Commission on Higher Education, *The Fourth Revolution: Instructional Technology in Higher Education.* A Report and Recommendations. N.Y.: McGraw-Hill, June 1972. A reconsideration of the "market" for adult learning is taking place, and reports are planned on channels to life, financing lifelong learning, and the expanding universe of higher education – concerning the new extramural programs.

The shape of the higher system in the 1980's depends on the resulting evidence of learning outcomes and costs for the new S/T-P programs, and the degree to which policy-makers can recognize the major options and work towards the realization of that which proves most desirable – hopefully for the benefit of learners. The resulting shape of the higher system will in turn have an impact on the lower system. If space/time-preference options prove successful, external degree programs and media-based "open schools" and schools-without-walls could well be promulgated in the lower system. Indeed, a high school external degree program has already been proposed, as well as an open school paralleling England's Open University, and several schools-without-walls have already been tried, apparently with success.[15] Added to an array of open, special interest, hard/soft, and traditional schools in conventional space enclosures,[16] the lower system of the 1980's could offer an exciting array of options to learners and parents.

To the degree that diversity is promoted and options are offered within the system, attention will be focused on learning resources "outside" of the system, in turn serving to weaken the school and college paradigm.

At this point, the discussion will leave the conventional system and its various evolutionary paths, to explore the additional elements that could inform the new paradigm.

3. The Learning Force

As it becomes obvious that one can obtain credit without schools, it should also become more obvious that for many years there have been schools without credit. The wide assortment of programs conducted by corporations, the military, proprietary schools, labor unions, churches, and schools and colleges themselves are simply ignored as part of education because they do not lead to accredited degrees.

In 1957, the President's Committee on Education Beyond the High School noted this peripheral activity and announced that "we have become a 'society of students.' "[17] The plea for collecting information in this neglected realm was ignored, but the idea surfaced again in the late 1960's under the label of "The Learning Force," introduced by Bertram M. Gross, utilized by Wilbur J. Cohen when he was serving as Under Secretary of Health, Education, and Welfare, and brought to fruition by Stanley Moses.[18]

Using data supplied by Gross and Moses, Cohen estimated that The Learning Force, composed of students in schools and colleges, added to those in vocational, technical, and other adult programs, was greater than the labor force in 1960 and would stand in a ratio of 1.42 to the labor force by 1970. According to data projected by Moses, the 60.3 million learners in the "educational periphery" would surpass the 59.6 million students in the "Core" by 1970, with a greater relative growth projected by 1975.

Other than usage by a few excitable adult educators, "The Learning Force" concept has been ignored, through ignorance of its existence, or, as argued by Moses, "The Politics of Non-Consideration." "The Learning Force" thus remains as a potentially useful but neglected concept. Surely much of the organized learning that takes place in the "periphery" is replicated in the "core," especially in junior colleges, which are slowly taking over the functions of proprietary schools. We would have a much better understanding of expenditures for instruction in our society, which are probably about $120 or $130 billion, rather than the official figure of $90 billion. Even if we insist that "education" must only include degree credit programs, data on the periphery could be collected to aid in forecasting, for the "system" is just beginning to incorporate elements of the periphery, e.g., in New York State certain proprietary schools can now offer an associate degree.

But "The Learning Force" concept is not without its problems. The data are presented on a head count, rather than a full-time equivalent basis, which would reduce the 60 million learners to perhaps only several million FTE's. Data were pieced together from institutional reports, but could also be collected through a census of individuals.[19] The categories employed by Moses (organizational, proprietary, anti-poverty, correspondence, TV, and other adult) are overlapping and conflicting, e.g., military education could be classified in any one of these. The projections are also inflated because they ignore the recession of recent years that surely must have resulted in the cutback of corporate training. Finally, the greatest difficulty with "The Learning Force" is that by focusing on formally organized programs of instruction, attention is drawn away from self-directed learning efforts. The most honest concept of the learning force might simply be that of including the entire population. As suggested by research on adult learning projects, nearly everyone conducts some sort of systematic inquiry; less than one percent of

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[15] John Bremer and Michael von Moschzisker, *The School Without Walls*. N.Y.: Holt, Rinehart, & Winston, 1972. A High School External Diploma was proposed by The Policy Institute of the Syracuse University Research Corporation (Oct. 1971, 16 pp., mimeo), and an Open School was proposed by Brian Jackson in *The Times Educational Supplement*, Dec. 11, 1971.

[16] The "hard-soft" school, offering a variety of learning environments, traditionally structured, modestly open, and "freaked-out," is being developed at the Ontario Institute for Studies in Education. A model for a wide array of schools within a single system is described by Diane Divoky, "Berkeley's Experimental Schools," *Saturday Review of Education*, Oct. 1972, pp. 44-51. It is a rare community, however, that has the diversity and tolerance of Berkeley.

[17] The President's Committee on Education Beyond the High School, *Second Report to the President*. Washington: USGPO, July 1957, p. 1.

[18] The concept is first mentioned in Bertram M. Gross, "Let's Have a Real State of the Union Message," *Challenge*, May/June 1966, and appears in the context of a discussion of lagging conceptual changes in Bertram M. Gross, "The Coming General Systems Models of Social Systems," *Human Relations*, Oct. 1967. Extensive data on training outside "the formal educational structure" are provided by Wilbur J. Cohen, "Education and Learning," in Bertram M. Gross (ed.), *Social Goals and Indicators for American Society*. Vol. II. *Annals of The American Academy of Political and Social Science,* Sept. 1967. While at the Educational Policy Research Center at Syracuse, Moses wrote a doctoral dissertation on "The Learning Force." The most available and authoritative statement is Stanley Moses, *The Learning Force: A More Comprehensive Framework for Educational Policy*. Syracuse: S.U. Publications in Continuing Education, Occasional Papers No. 25, Oct. 1971.

[19] By doing so, the National Center for Educational Statistics reported only 13.2 million participants in adult education in Imogene E. Okes, *Participation in Adult Education 1969: Initial Report*. Washington: U.S. Office of Education, 1971.

such projects are motivated by academic credit, and seventy percent are totally planned by the learner himself.[20] And thus our attention is turned to the "informal" realm.

4. All Educating Institutions

The idea that learning occurs outside of schools is now quite rooted in at least some minds by the widely circulated observation that children spend more time in front of their television sets than in the classroom. In an elegant essay published five years ago, Herbert J. Gans contrasted the school and the mass media as "in the broadest sense, political institutions competing for cultural power in the society."[21]

And it is obvious to the impartial observer – if there are any – that learning takes place formally and informally, intentionally and unintentionally, through many if not all institutions in society. Such an observation can be phrased in many ways, as indicated by the statements of six prominent educational leaders in the 1970 *New York Times* "Annual Education Review":[22]

> We must recognize that to consider education solely in terms of formal institutions is to hold a narrow and unrealistic concept of the process of learning. Education comes as much or more from outside the schools as within and we must begin to shape the *entire environment of life*. . . .
>
> (James E. Allen, Jr., U.S. Commissioner of Education)

> There is the often overlooked *"macro-educational" system* that extends well beyond the traditional "closed corporation" of formal educational agencies. This system includes television, family, the church, the military, business institutions, and numerous other influential agents that "educate" young people constantly outside of school walls.
>
> There is a manifest need for linkages to unite this diffuse educational system. . . .
>
> (James J. Gallagher, Deputy Asst. Secretary for Planning, Research and Evaluation USOE)

> There has to be a *greater division of labor* among institutions . . . much of teaching can desirably take place in the museums, the hospitals, the courts, the neighborhood institutions with the cooperation of colleges and universities, but not necessarily through their direct responsibility.
>
> (Martin Meyerson, President, SUNY-Buffalo)

> In the past, education has meant the school, and the school has meant formal teaching. In the future, education will be regarded increasingly also as a product of the home, the job, the mass media – a product of several institutions rather than one. And, both inside and outside the school, *informal experiences* will take their place with formal training as a recognized part of education.
>
> (Clark Kerr)

> Now we are an *information-rich society*, with many more educational resources outside the school than within.
>
> There are numerous groups outside school, from groups of volunteer tutors to storefront schools to large corporations that offer educational services. There is television and radio, newspapers, magazines, books. . . .
>
> It becomes possible, in these circumstances, to augment the school's goals through these agencies outside the school.
>
> (James S. Coleman)

> A new flexibility of educational approaches will be necessary. . . . The near-monopoly of the schools and colleges in education is over: *a new architecture of education* exists.
>
> Forces such as television, advertising, the military, films, museums, industry and magazines are now all teaching and training persons in many ways, and often with great effect. The universities, especially the public universities, will increasingly adapt the best of these new techniques while constructing approaches that allow and validate more instruction outside the campuses.
>
> (Samuel B. Gould, Chancellor, SUNY)

Such a collection of paradigm-searching statements has not to my knowledge been duplicated since, indicating that the turn-of-the-decade spirit lifted horizons to an extraordinary degree, or that there has been a backing off from exploring the suggested paradigms.

5. The Global System

Somehow, unless one is explicitly concerned with the international perspective, there seems to be a pervasive habit of confining one's thinking to national boundaries. Yet there is an obvious globalizing process that consequently blurs national boundaries, and there are a growing number of cosmic thinkers who argue that we must take further steps toward world order and a planetary society to insure the survival of mankind.

A plausible alternative future for the American educational system is that "the system" will not be the American system but an indistinguishable part of the global system, or the American subsystem of the global system. Whether this is desirable or not remains to be seen. Ivan Illich warns that "The most sinister [of educational reformers] are the new Masons of the Universe, who want to transform the entire world into one huge temple of learning."[23] The desirability – to

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[20] Allen Tough, *The Adult's Learning Projects: A Fresh Approach to Theory and Practice in Adult Learning*. Toronto: Ontario Institute for Studies in Education, 1971. This on-going empirical work might best be described as the empirical complement to the theory supplied by Illich and Reimer. It is, of course, heretical to go out and observe how people, including a small sample of 10-year olds and 16-year olds, learn in real life.

[21] Herbert J. Gans, "The Mass Media as an Educational Institution," Center for Urban Education, *The Urban Review*, 2:1, February 1967.

[22] *New York Times*, January 12, 1970, pp. 49, 61, 66, 74. (Emphasis added in citations.)

[23] Ivan Illich, "The Alternative to Schooling," *Saturday Review*, June 19, 1971.

Illich and others – may depend on the nature of the global system: whether it is world-wide credentials and pre-packaged programs, as Illich fears, or whether services are made widely available to allow access to all knowledge and skills of one's own choosing.

But the fact of globalizing tendencies, for better or worse, should not be ignored. Yet this is easily done, by statements such as Miller's that "Someday there may be an international or supranational educational system, but we are far from it at present."[24] But how far are we from what? Ten years from major individual transnational institutions? Twenty years from powerful global planning bodies? Or is Miller thinking in terms of hundreds of years – a totally unwarranted forecast?

We already have satellites that can beam common programs to many nations. There are increasing exchanges of U.S. and foreign students. There are extensions of U.S. institutions abroad, although, interestingly, we have yet to see extensions of foreign institutions to the U.S. There is a growing crescendo of pleas for international education, international understanding, and international solutions to problems such as pollution. England's Open University is attempting to market its course packages in many countries, including the U.S.

The trends toward globalization are inexorable; to ignore them is not only to ignore the probable shape of the future system – if not in twenty years, then surely in fifty years – but to impede its evolution and perpetuate the nation-state. There is no neutrality in this matter; whether or not it is conscious, there is a choice between two sets of values. And, in deference to Illich's caution, there is an additional choice between at least two sets of values as to what the nature of this system ought to be. Ignoring this choice will probably serve to promote the meritocratic super-womb that Illich warns against, despite the benign intentions of system designers.

6. Servicing Organizations and Interest Groups

Again one must take issue with Miller, who only acknowledges administrative agencies as part of the educational system. If one wishes to *really* understand the workings of the system – and there is a question in my mind as to whether anyone really does – then serious attention must be paid to the various controllers, suppliers, and interest groups that shape and restrain whatever set of delivery systems that one wishes to designate as the system. In addition to administering agencies, one should look at accrediting agencies, which are very influential in the higher system; testing organizations, which, for many students, have cast their mark on the entire senior year of high school; educational research organizations, foundations, knowledge conglomerates, consultants, and various interest groups such as the NEA, ACE, professional and scholarly associations, alumni groups, parent associations, and even student groups. The simple criterion for inclusion is whether individuals in these organizations consider themselves to be "in" education.

The study of educational interest groups and configurations of power has perhaps been impeded by the absence, until recently, of any scholarly inquiry into the politics of education. With a few exceptions[25] the attention that has been paid to this realm has been confined to the study of how educators acquire public funds. But there are far broader perspectives to be taken, and it might help, at the risk of only slight exaggeration, to state that *education is politics* and, conversely, that *politics is education*. The struggle for power is similar to the struggle for minds, and as we increasingly become a knowledge-based society, the two converge. Maintaining the traditional sanitized view of education as wholly separate from politics may be necessary for a school board candidate, but not for what I would consider good scholarship.

Insofar as it concerns the future of educational interest groups, the general pattern of nationalization and expansion is apparent in virtually all instances. To provide only one example of a generally ignored link in knowledge dissemination, the National Association of College Stores was founded in 1923, but only had 125 members in 1945. By 1959 there were 923 member stores, and by 1968 membership totaled 1,739 – very nearly covering the appropriate universe. Such consolidation enabled NACS to form a subsidiary distributing center in 1967, which now funnels orders from more than 70 publishing houses.

Of much greater interest are the knowledge conglomerates, such as RCA, Xerox, and Crowell Collier and Macmillan, which supply the upper and lower system in the U.S. and abroad, operate proprietary schools, and contribute in many ways to informal learning. Unfortunately, the interest in such conglomerates is only beginning to develop insofar as they are purveyors of technological hardware. Moreover, the articles written about this linkage are generally uncritical, if not written by corporate representatives themselves.

7. Getting It Together: The Education Complex as Suprasystem, Macrosystem, or The System?

All of the elements discussed to this point could be viewed together as an emerging system, macrosystem, or suprasystem; in the sense of a broader system beyond the school and college system. This has been attempted under the label of "the education complex,"[26] in the traditional academic style of grandiosely announcing that "this is the system," rather than the more participative style of suggesting ways to view the system. Unfortunately, the labeling does nothing to suggest the effort at holistic integration, and "the education complex" can and has been used to indicate any system configuration – including the traditional school and college system without any of the added elements suggested here. Given the proclivity of some knowledge users to employ labels without digesting contents, "the

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[24] James G. Miller, "The Living Systems Involved in the Educational Process," in Tickton, *To Improve Learning, op. cit.*, p. 270.

[25] An excellent survey of power in the lower system, except for the absence of a mention of student groups, is offered by James D. Koerner, *Who Controls American Education?* Boston: Beacon Press, 1968.

[26] An attempt to put this in general systems terms, carefully delineating system boundaries, is offered in Michael Marien, "Notes on the Education Complex as an Emerging Macro-System," in E.O. Attinger (ed.), *Global Systems Dynamics*. N.Y.: Karger, 1970. An extensive effort to weave social indicators into a systems framework is offered in Michael Marien, *The Education Complex: Emergence and Future of a Macro-System*. Syracuse: Maxwell Graduate School of Citizenship and Public Affairs, unpublished doctoral dissertation, May 1970. 565 pp.

education complex" is perfectly suited to serve as a whipping boy for radicals and an innocent banner for bureaucrats. But employing a label of "macrosystem" or "suprasystem" would drive the argument into arcane obscurity. The problem of encouraging a systemic view of the future remains very much unsolved. That such a view is ultimately necessary should be patently clear by our recently discovered ignorance of ecological relationships.[27] A clue to the problem of enhancing systemic thinking is the organization of our knowledge into academic departments and the scholarly interest groups that perpetuate this organization.

8. **Abstract and Ideal Systems**

An abstracted system is defined by Miller as "relationships selected by an observer in the light of his interests, theoretical viewpoint, or philosophical bias."[28] But it should be clear by the argument to this point that any configuration of "the educational system" as it presently is, not to mention how it might be in the future, will reflect some bias. By this definition, then, all views of the American educational system are abstracted views.

Yet there are some systems that can clearly be seen as abstracted systems — configurations that can serve heuristic purposes, but are not capable of guidance by any existing authority. The educational system can profitably be seen as a major component of other systems, such as the knowledge distribution system,[29] or the social selection system.[30] Or, it could be seen as part of the national security effort, the welfare system, or the recreation system.

It is also useful to examine ideal systems of education, especially in the context of a future global society that utilizes new developments in electronic communications. For example, as a result of the coming "Fourth Revolution" Isaac Asimov envisions worldwide electronic literacy, the library of mankind available to anyone, and an "enormous" revolution "in education with much learning occurring in the home"[31] — which is something like coming full circle — but this time not just for the Prince, but also for the Pauper. And, of course, the Illich/Reimer vision of "The Deschooled Society" has already proven to be a provocative ideal, even if it can never be realized.

C. **Steps Toward a New Paradigm**

It has been argued that this is an "Era of Paradigm Search" for the "system" of American education. In support of this argument, more than a dozen starting points have been suggested, with the possibilities multiplying as one moves into the future. We are only beginning to open up our minds to searching, and it may be many decades before a new consensus is arrived at. Indeed, the consensus may not be on one model, but on a set of multiple overlapping models.

Educational thinkers and planners are only beginning to think about the future. Similarly, as noted by James Perkins, while promulgating the conventional view of the upper system, "The evolution of systems of higher education is a new phenomenon that has been largely unexamined by scholars, politicians, or administrators."[32] But systems cannot be understood without a futures perspective — a sense of system change, while the future cannot really be understood to any manageable degree without a sense of systems theory. And both the study of the future and of systems is an impotent exercise unless it is combined with goal statements[33] and made relevant not only to formally designated policy-makers but to the citizenry which will suffer or prosper in the human systems of the future that are presently being shaped. To reiterate, *we need futures-oriented, goal-directed systems thinking that is relevant to policy-makers and the public*. At the present time, we are very far from this perspective.

The first step in beginning the search for a new paradigm is to abandon the obsolete notion of schools

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[27] A cogent argument for systemic thinking is offered by Robert Theobald, *Habit and Habitat*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.

[28] James G. Miller, "The Nature of Living Systems," in Tickton, *To Improve Learning, op. cit.*, p. 246.

[29] Fritz Machlup, *The Production and Distribution of Knowledge in the United States*. Princeton: Princeton University Press, 1962. This landmark volume by a well-known economist encyclopedically investigates the varieties of knowledge, forms of education (home, job, church, and armed services, in addition to schools and colleges), research and development, the media of communication, information machines, and information services — culminating in the calculation that the knowledge occupations accounted for 26.8% of national income in 1958. Presumably based on this work, Peter F. Drucker has estimated that the knowledge industries will account for one-half of the total national product in the late 1970's (*The Age of Discontinuity*. N.Y.: Harper & Row, 1969, p. 263). A relatively narrower concept of the "Macrosystem of Knowledge Flow" is offered by Ronald G. Havelock *et. al., Planning for Innovation through Dissemination and Utilization of Knowledge.* Ann Arbor: University of Michigan, Institute for Social Research, Center for Research on Utilization of Scientific Knowledge, 1971, Chapter 3.

[30] Michael Marien, "Beyond Credentialism: The Future of Social Selection," *Social Policy*, 2:3, Sept.-Oct. 1971, pp. 14-21. Viewing the dysfunctions of credentialism, three alternative futures are suggested: a genuine meritocracy — in contrast to the pseudo-meritocracy of the present — an egalitarian society, and a "multi-meritocracy" stressing multiple skills, multiple measures, and multiple chances. The concept of a meritocracy was originally coined in an exemplary future history by Michael Young (*The Rise of the Meritocracy*, 1870-2033. London: Thames and Hudson, 1958; Baltimore: Penguin, 1961).

[31] Isaac Asimov, "The Fourth Revolution," *Saturday Review*, Oct. 24, 1970. In 1967, Sir Eric Ashby also used this metaphor, which serves as the title of a previously mentioned report by the Carnegie Commission on Higher Education.

[32] James A. Perkins, "The Future of Coordination," in Perkins (ed.), *Higher Education: From Autonomy to Systems*. N.Y.: International Council for Educational Development (522 Fifth Ave.), 1972, p. 279. This volume covers state systems, regional systems, national systems, in the U.S. and abroad, and international systems — but there is no reference to the other systems or system elements mentioned in this paper. Unfortunately, most of the papers in the Perkins volume are authored by the leaders of the individual systems in question, and there are no contributions by systems scholars to put this phenomenon in a critical perspective.

[33] The fact that educators do not have any sense of the future (other than that it will be "more of the same") and that there is no "sensible set of educational goals" is cogently expressed by Alvin Toffler, "Education and Emerging Superindustrialism," in U.S. Congress, House Committee on Education and Labor, *Alternative Futures in American Education*. Appendix 3 to Hearings on H.R. 3606. Washington: USGPO, Jan. 1972. This Committee Print is the most comprehensive and stimulating volume on educational futures that I know of, and the monograph by Willis W. Harman, "The Nature of Our Changing Society: Implications for Schools," is especially recommended.

and colleges as "the system." It might be argued that this paradigm is retained in a sense of self-interest. But no one's little puddle of power will be happily preserved if our society collapses or enters a neo-fascist period as a result of our ignorance. If educators were to look at the learning needs of the entire society in the light of changing realities and our changing knowledge, they would discover the virtually untapped "market" for adult learning. Then, instead of facing a projected decline of clientele under the conventional definition, one could project a "boom" in education through new services provided by schools and colleges, if these services are relevant to our learning needs. Indeed, if educators were really serious about changing the schools, they would recognize that it is only through adult education, especially as concerns parents and teachers, that any substantial change will occur: schools ultimately are a reflection of adult society.

If the obsolete definition of self-interest can be overcome, there is still the problem of habit. One step to overcoming the mindless equation of education with schools would be to establish the practice of honest labeling. The U.S. Office of Education should be renamed the Office of Schools and Colleges. Similarly, Colleges of Education, unless they present evidence to the contrary, should become Colleges of School Studies. Individuals should change their titles from Professor of Education to Professor of Schools and/or Colleges, and no individual should be labeled as "educated," but simply as "schooled" for 12 years, 16 years, or whatever. (This, of course, undermines the field of sociology, which has depended on the "educational attainment" variable as a keystone in data collection.)

There is also the habit of not referring to that which we do not know about or feel that we grasp sufficiently. Yet, as systems grow in size and interpenetration, we must increasingly relate the areas of our firm understanding to larger entities that may not be well-understood. It is at least hoped that the questing scholar could refer to connected concerns, unexplored areas, and possible alternative approaches in his footnotes if not in his text. The illusion of understanding, reinforced by the ritual of methodology, inhibits us from facing our ignorance. Rather than veiling our ignorance in research proposals, we might begin to suggest what we do not know in our research findings, and reward those who are courageous enough to do so.[34]

Finally, we might consider the systematic collection of information on who learns what, where, and how throughout society,[35] juxtaposed with information, far beyond the schoolish questions posed only to the young by the National Assessment of Educational Progress, on who knows what – most particularly as concerns our capacity as citizens to understand the complex problems that we face.[36] Various disinterested, or relatively disinterested, bodies might issue annual statements of educational research priorities, rather than continue to produce mountains of fragmented, unrelated, and generally mediocre studies under the rubric of educational research.

"More research," of course, is a familiar cry, bolstered in education by the rhetoric of how little is done in relation to the whole enterprise – even under the narrow definition of this enterprise. But more of the same will not solve our fundamental problems. If we cannot develop a fruitful balance and synergy between general and specialized perspectives, between theory and empirical work, then it would be better to declare a moratorium on all research. To facilitate such a balance of inquiry, a transdisciplinary, transnational, and trans-ideological information system – perhaps an ERIC for Alternative Futures – might be established to bring together the wide variety of visions, proposals, and system views that already exist and will continue to proliferate as we search for a new paradigm.[37]

A reckoning is coming. Either we understand our cognitive lag and develop a new paradigm for exploring the problems and possibilities that we face – and effectively acting upon them – or we submit to the deterioration if not cancellation of The Great Human Experiment, due to the inability of comprehending our condition and acting wisely.

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[34] As an outline of our ignorance, or elite learning needs, in both the hard and soft sciences, one might consider John Platt's classic essay, "What We Must Do" (*Science*, 166: Nov. 28, 1969, pp. 1115-1121). A recent sequel suggesting how we can develop necessary problem-solving knowledge, including knowledge in the realm of education, is offered by Richard A. Cellarius and John Platt in their proposal for "Councils of Urgent Studies" (*Science*, 177: Aug. 25, 1972, pp. 670-676).

[35] Michael Marien, "Proposal: A Census of Education and Learning," *Prometheus,* 1:3, Jan. 1972, pp. 77-83.

[36] Lester Markel, *What You Don't Know Can Hurt You: A Study in Public Opinion and Public Emotion*. Washington: Public Affairs Press, 1972. Markel states that "I would place 20% of the population in the moron category; another 20% are ignorant and unwilling to learn; some 40% do not know, but are willing to learn, provided that the lessons are easily digested. Which leaves the enlightened 20%" (p. 32). Such findings, and the conclusion that "American public opinion is not sufficiently informed to meet the needs of the times," (p. 2) do violence to the unexamined notion of democracy, which, in most definitions, is predicated on informed citizens.

[37] There is not only a need for a futures information system, but a further need for selecting procedures to highlight essential documents. An exploration of such a system is provided by Michael Marien, *The Hot List Delphi: An Exploratory Survey of Essential Reading for the Future*. Syracuse: Educational Policy Research Center, Sept. 1972.

IMAGING FUTURE ORGANIZATION IN HIGHER EDUCATION

by
Vaughn E. Huckfeldt*

In looking at one image of the future organization in higher education, I would like to share with you work that has been recently completed in the Future Planning and Management Systems study at the National Center for Higher Education Management Systems (hereafter referred to as NCHEMS).

The Future Planning and Management Systems study conducted by NCHEMS was designed to gain insight into the changes that would be likely to occur in postsecondary education during the next five to fifteen years. Our purpose in being concerned with the long-range directions of higher education is to assure that the management concepts, tools, and procedures that NCHEMS is currently developing or planning will be relevant when they are ready for implementation. In addition, the forecasts are being used by educational planners in establishing long-range plans that include the appropriate actions that must be taken before the changes occur. A preliminary report on this subject issued earlier this spring was requested by one statewide planning group for just such a purpose. In contrast to planning for long-range activities, forecasted changes may also modify current plans as educators attempt to ensure that forecasted changes do not take place. On the other hand, a predicted change may indicate the occurrence of such recommended reforms as those of the Carnegie Commission or the Newman Task Force.[1]

The identification of changes is today more important than ever before for reasons expressed best by Clark Kerr in an address presented at the 26th National Conference on Higher Education:

> Higher Education in the United States is facing a period of uncertainty, confusion, conflict, and potential change, and it has little to guide it in its past experiences. For most of its three and one-third century history, it has had a manifest destiny and through the period from 1920-1970 was marked by rapid change and some student unrest. Two factors remained constant: public belief in and support of higher education, and the campus and society were both changing, but in compatible ways. This is no longer so and higher education is faced with a staggering number of uncertainties: (1) the direction of change that will be taking place in a society that is ever more divisive, and in a world that is undergoing a cultural revolution; (2) the impact of the new educational technology; (3) its proper functions in terms of teaching, research and services; (4) the governance of the institutions; and (5) financing.[2]

Several types of forecasting methods could be used to identify these uncertainties. The three general types, as outlined by Dr. Samuel Popper (1971) in "The Simulation of a School of the Future," are:

1. *Exploratory* types, which start with past and current trends and then make extrapolations that are projected as images of the future. The common exploratory methodologies include trend extrapolation, contextual mapping, simulation, and modeling.
2. *Normative* types, which start with future needs and goals and then work backward to identify the technology, changes, and decisions required to fill needs and to reach goals. The common normative methods are relevance trees, mission matrices, and questioneering.
3. *Intuitive* types, essentially sophisticated variants of the "wise old men" technique, that make speculative projections into the future. The common intuitive methods include Delphi probes, cross impact matrices, and scenarios.[3]

Since, as Clark Kerr explained, the factors that were constant during previous changes are no longer constant, then the use of exploratory types of forecasting, which would lead to changes dependent on past and current trends, would be questionable. The normative type of forecasting requires the goals to be set for the future. Changes identified with this type would not have an evaluation of those goals that are likely to occur unless measurement of the probability of achieving certain

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*EDITOR'S NOTE: The author is a research associate in the Research and Development Unit of the National Center for Higher Education and Management Systems at WICHE. He holds an M.S. degree in operations research from Case Institute of Technology, and a B.A. degree in mathematics from the University of Colorado. He is a Ph.D. candidate at Case Institute of Technology in operations research. He has served as a consulting operations research analyst to University Associates Inc. in Cleveland, Ohio, as senior operations research analyst at the Anaconda Aluminum Company in Louisville, Kentucky, and as data communications engineer at Ball Brothers Corporation in Boulder, Colorado.

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[1] Carnegie Commission on Higher Education. *Reform on Campus.* New York: McGraw-Hill Book Company, 1972. Frank Newman, *et al. Report on Higher Education.* U.S. Department of Health, Education, and Welfare, Catalog No. HE5.250:50065. Washington, D.C.: USGPO, 1971.

[2] Clark Kerr, "Destiny – Not So Manifest." Address presented at the 26th National Conference on Higher Education, American Association for Higher Education, Washington, D.C., 1971.

[3] Samuel H. Popper, "The Simulation of a School of the Future: A Report of an Exploratory Study." Columbus, O.: University Council for Education Administration, 1971. (Mimeographed.)

goals were also made, and this may be as difficult as identifying the changes.

The use of intuitive types of forecasting prompt reference to the current writings on change in education. Here we find that many books such as *Educational Futurism 1985* and *Designing Education for the Future* contain articles independently prepared by a number of authors for presentation at a conference.[4] Each of these represents excellent work in the field, and the authors have drawn on other writings, but the desire in the NCHEMS study was to obtain opinions and an interaction of ideas from many individuals with a wide variety of backgrounds. The method used to obtain this interaction of individuals in a forecast of educational change was a Delphi survey.

I am sure the presentations to be given tomorrow on forecasting methodologies will present an in-depth analysis of the Delphi method, but let me discuss its characteristics briefly in order to point out some of the details of the NCHEMS Delphi.

The Delphi method was developed at the RAND Corporation as a technique for soliciting and combining the opinions of experts. Its primary initial uses were in the area of technological forecasting, but more recently

[4] Walter G. Hack, *et al. Educational Futurism 1985.* Berkeley, California: McCutchan Publishing Corporation, 1971. Edgar L. Morphet, and Charles O. Ryan, eds. *Designing Education for the Future.* No. 2. New York: Citation Press, 1967.

Table I
PANEL RESPONSE ACCORDING TO PRIMARY POSITION

Primary Position	Number in Group	Percent Responding
Federal Congressmen	4	25
State Governors or Executive Administrators	4	100
State Legislators	9	56
Federal Staff Members for (HEW, USOE, U.S. Congress)	13	92
Staff of Statewide Coordinating or Governing Board	39	97
Foundation Staff Members	5	100
Lay Board Members, Trustees, or Regents	7	100
Members of a National Association	15	93
Board Members or Commissioners of an Education Board or Commission	13	92
Staff Members for an Education Board or Commission	19	100
Members of an Accreditation Agency	4	75
Consultants in Postsecondary Education	11	90
Students	15	93
Faculty	15	100
College or University MIS Director or Staff	39	100
Department Chairman or Deans of Academic Instruction	15	93
College or University Finance Administrators or Staff	30	97
College or University Directors or staff for Institutional Research	51	98
College or University Directors or Staff for: Admissions, Personnel, Physical Plant, etc.	19	100
College or University Presidents or Vice Presidents	54	93
Members of the Education Press	4	50
	385	94%

it has been employed to identify agreement, primarily concerning organizational goals and objectives. The key characteristics of the Delphi approach are:

1. The anonymity of the survey panel members.
2. A statistical analysis of the panel's responses.
3. The use of controlled feedback to panel members in a series of successive rounds.

Basically, the Delphi method attempts to bring together a group of experts in a "conference call" or "seminar" setting. But, through anonymity of the panel, the Delphi method prevents the influence of some members of the panel from unduly overriding or swaying the opinions of other panel members. In some sense, it prevents an important or very articulate expert from controlling the panel's opinion. The Delphi method summarizes the responses to one round of questions and provides this information to the survey panel with the next successive round of questions. In this way, the experts, while remaining anonymous, still communicate with each other in a limited fashion.

Use of the Delphi approach has resulted in studies with proven ability to forecast technological, and, to a lesser extent, sociological change. Delphi has been successful in determining where genuine agreement about change does exist.[5]

The NCHEMS Delphi started in December 1971 by requesting 525 potential panel members to participate in the survey. Of the 525 potential members, 385, or 72 percent, responded with a willingness to participate. In each of the five survey rounds, all 385 panel members received the mail questionnaire whether or not they had responded to the previous round.

In evaluating the results of the NCHEMS survey, one must consider who the panel members were as well as their answers. The names of the panel members cannot be given, as they remain anonymous in order to retain the confidential nature in which the panel gave their responses. The list shown in Table I gives the primary occupation, or position, held by individuals who participated in the survey as well as the number holding that position and the percent responding during the survey.

The NCHEMS Delphi posed six questions over five survey rounds, and these are summarized as follows:

Round I:	Asked what are the possible changes that might take place?
Round II:	Asked what will be the impact of a change if it occurs, and what is the likelihood of the change occurring?
Round III:	Posed these same questions again, this time with feedback of the Round II results.
Round IV:	Asked the same questions as in Rounds II and III and posed the additional question: In what time period will the change occur?
Round V:	Repeated the question introduced in Round IV with feedback and added two non-Delphi questions: Should this change occur, and who will most affect this change?

The first questionnaire, shown in Table II, simply asked the panel members to identify five aspects of postsecondary education that would change most in the next twenty years.

Table II
ROUND I QUESTIONNAIRE

List not more than five aspects of postsecondary education that will change most during the next twenty years: (Include the direction the change will take, i.e.: increasing, decreasing, larger, smaller). If you feel that there will not be any important changes in postsecondary education during the next twenty years, please indicate this and return the questionnaire.

1. _____

2. _____

3. _____

4. _____

5. _____

A response to this first questionnaire was received from 306 of the possible 385 panel members, a 74 percent response rate. The change statements from this first round were analyzed by the NCHEMS staff and a group of graduate students in the Communication Department of the University of Colorado. This content analysis group boiled down over 1500 change statements submitted by the panel into 118 generic changes. The process is illustrated by considering the following statements:

> A federal congressman said, "Occupation training in postsecondary education will dramatically increase, and business and industry will be more closely involved with that training."
>
> An institutional researcher suggested, "Vocational training in wide variety, and in flexible patterns, will receive increased participation."
>
> A college president suggested, "More emphasis on vocational-technical curricula."
>
> A governor said, "There will be greater emphasis on occupational or career education as opposed to general academic training."

From these statements and many others, change statement 15 was developed:

> 15. The proportion of students in postsecondary vocational programs will increase.

The second round questionnaire, shown in Table III, included questions regarding the impact and likelihood of occurrence of each change derived from the first round questionnaire.

[5] Juri Pill, "The Delphi Method: Substance, Context, A Critique and An Annotated Bibliography." Technical Memorandum No. 183, Department of Operations Research. Cleveland, Ohio: Case Western Reserve University, 1970.

Table III
ROUND II QUESTIONNAIRE

CHANGE STATEMENT	QUESTION 1 ASSUMING THIS CHANGE WILL OCCUR, WHAT WILL BE ITS IMPACT? None ... Very Great	QUESTION 2 WHAT IS THE LIKELIHOOD THIS CHANGE WILL OCCUR? Impossible ... Virtually Certain
MORE PEOPLE WILL SEEK AN ADVANCED OR PROFESSIONAL DEGREE.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
SOCIETY WILL PLACE LESS VALUE ON A COLLEGE DEGREE.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
CERTIFICATION OF STUDENT COMPETENCIES WILL BE INCREASINGLY POSSIBLE OTHER THAN THROUGH FORMAL ACADEMIC PROGRAMS.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
RESEARCH WILL BECOME A MORE IMPORTANT FUNCTION OF POST-SECONDARY EDUCATION.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
THE DEMAND FOR PH.D. DEGREES WILL DECREASE.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
AVOCATIONS AND PERSONAL ENRICHMENT WILL RECEIVE INCREASING EMPHASIS IN POSTSECONDARY EDUCATION.	1 2 3 4 5 6 7	1 2 3 4 5 6 7
PUBLIC SERVICE WILL BECOME A MORE IMPORTANT FUNCTION OF POSTSECONDARY EDUCATION.	1 2 3 4 5 6 7	1 2 3 4 5 6 7

Table IV
ROUND III QUESTIONNAIRE

CHANGE STATEMENT	QUESTION 1 ASSUMING THIS CHANGE WILL OCCUR, WHAT WILL BE ITS IMPACT? NONE … VERY GREAT	QUESTION 2 WHAT IS THE LIKELIHOOD THIS CHANGE WILL OCCUR? IMPOSSIBLE … VIRTUALLY CERTAIN
DEGREE GRANTING INSTITUTIONS WILL BECOME MORE ALIKE.	. . (M) . .	. (. M) . .
	Y	Y
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7
THE ABSOLUTE NUMBER OF FOUR YEAR COLLEGES AND UNIVERSITIES WILL DECREASE.	. . .(M .) .	. (. M) . .
	Y	Y
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7
THE CAMPUS AND NONACADEMIC COMMUNITY WILL INCREASINGLY SHARE RESOURCES.	. . . . (M) .	. . . . (M) .
	Y	Y
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7
NEEDS AS EXPRESSED BY STUDENTS WILL RECEIVE INCREASED ATTENTION.	. . . (M) .	. . . (M) .
	Y	Y
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7

It was at the end of Round II that a computer was first used to calculate the summary statistics for each change statement and to print an individualized questionnaire with an individual panel member's responses from the previous round. Each panel member's response to each question was keypunched, and a file of all the responses was created. This file was used to calculate for each question the median, the interquartile range, and the range of responses for the entire panel. Thus, the questionnaire for Round III, shown in Table IV, was first put on microfilm and then printed on 8½ by 11-inch paper. The individualized report gave summary statistics of the entire panel's responses to Round II: M indicated median; parentheses enclosed the interquartile range (or inner 50 percent of the panel's responses); and dots covered the range of responses (in the cases shown there was at least one response of each type). The Y's indicated the answer given by the individual panel member on Round II.

It should also be noted that the third questionnaire requested comments from individuals if their opinions differed substantially from the central majority of the panel on Round II. This afforded everyone the opportunity to communicate to the rest of the panel any insights that he might have. These comments were summarized in a minority opinion report that was mailed along with the Round IV questionnaire.

The fourth round questionnaire, shown in Table V, included the same questions, again using an individualized report with feedback statistics from Round III, but added a specific time-frame question.

The Round V questionnaire, shown in Table VI, was mailed to the panel on April 7, 1972. It included the time-frame question summary statistics and two new questions. Questions 4 and 5 were not Delphi-type questions in that they did not have a range of values on which statistics could be summarized with the questions asked a second time. These questions asked the panel if the change ought to occur and what sector concerned with postsecondary education would most promote or hinder the change.

Question 5 was difficult for the panel members to answer. It required comparison of nine items, two at a time, to reach a conclusion about the one that would most promote or hinder a change. In a number of cases, such as change 117 – "increasing opportunities and responsibilities will be available for all regardless of sex, race, etc." – the panel had difficulty finding any category that would most hinder the change. In some other cases, the categories seemed to omit groups that might have more influence in promoting or hindering a change.

The responses to Round V were returned by mid-May 1972. The survey was completed within a total time of five months.

The response rates obtained in the survey point out one of the advantages of the Delphi method that is not readily apparent. Robert Travers, in *Introduction to Educational Research*, reviews direct mail questionnaires in educational research and finds a questionnaire of some interest to the respondent prompts only a 20 percent return. Only rarely does the response rate reach 40 percent.[6] It is likely that the Delphi method encourages a higher response rate by offering the promise of some amount of useful data or summarized statistics in the form of feedback during succeeding rounds. In addition, the Delphi method provides opportunities for a panel member to respond to a given question during several rounds, resulting in a much higher cumulative response rate.

In Table VII, the response rate for the different rounds is indicated by the crosshatched areas. For example, the response rate in Round I was 80 percent; in Round II it was 81 percent; Round III, 61 percent, Round IV, 56 percent; and Round V, 47 percent. The cumulative response rate of 80 percent in Round I moves up to 94 percent in Round V; that is, 94 percent of the panel responded in at least one or more of the five rounds. To achieve a response from 362 of 385 panel members in any general survey that involves this much work for unpaid panel members is highly unlikely, and the response is definitely a positive statement about this panel's interest in the future course of events in postsecondary education.

Data collected during the course of the survey have been stored in the data base shown in Table VIII. The data base contains the responses or raw data from each of the 385 panelists for each of the 118 change statements and for each of the 11 questions asked during Rounds II through V. The 385 panel members are defined by a classification code that describes the position or positions that the individual holds related to postsecondary education. These codes may, of course, be used to classify panel responses into various subgroups for analysis. This data base will be available from NCHEMS with the described identification codes. No further identification of the panel is possible in order to preserve the confidential nature of the responses.

Obviously, many interesting questions could be asked, and perhaps someday other researchers will be able to derive some additional utility from these data.

All of our analyses are subject to certain qualifications; for example:

> Our question relative to the specific time that a change would occur may have been interpreted in a number of ways. Many of the changes listed in the survey questionnaires have already happened, at least in isolated cases. In fact, the results show that the panel had a great deal of difficulty in thinking about change in higher education beyond a five-year horizon, an important result in itself. In any case, the question is whether the panel considered that such changes had already occurred? Or, whether they assumed that some undefined threshold level must be attained before the change can be said to have an impact on planning and management systems. I believe that most panel members implicitly had some critical mass or threshold level in mind, but this concept undoubtedly differed across the panel.
>
> When we asked who might promote or hinder changes, we left out some key categories of people. We assumed that the public was largely synonymous with state and federal government, and this was rightly questioned; higher

[6] Robert M. W. Travers, *An Introduction to Educational Research.* New York: Macmillan Company, 1958.

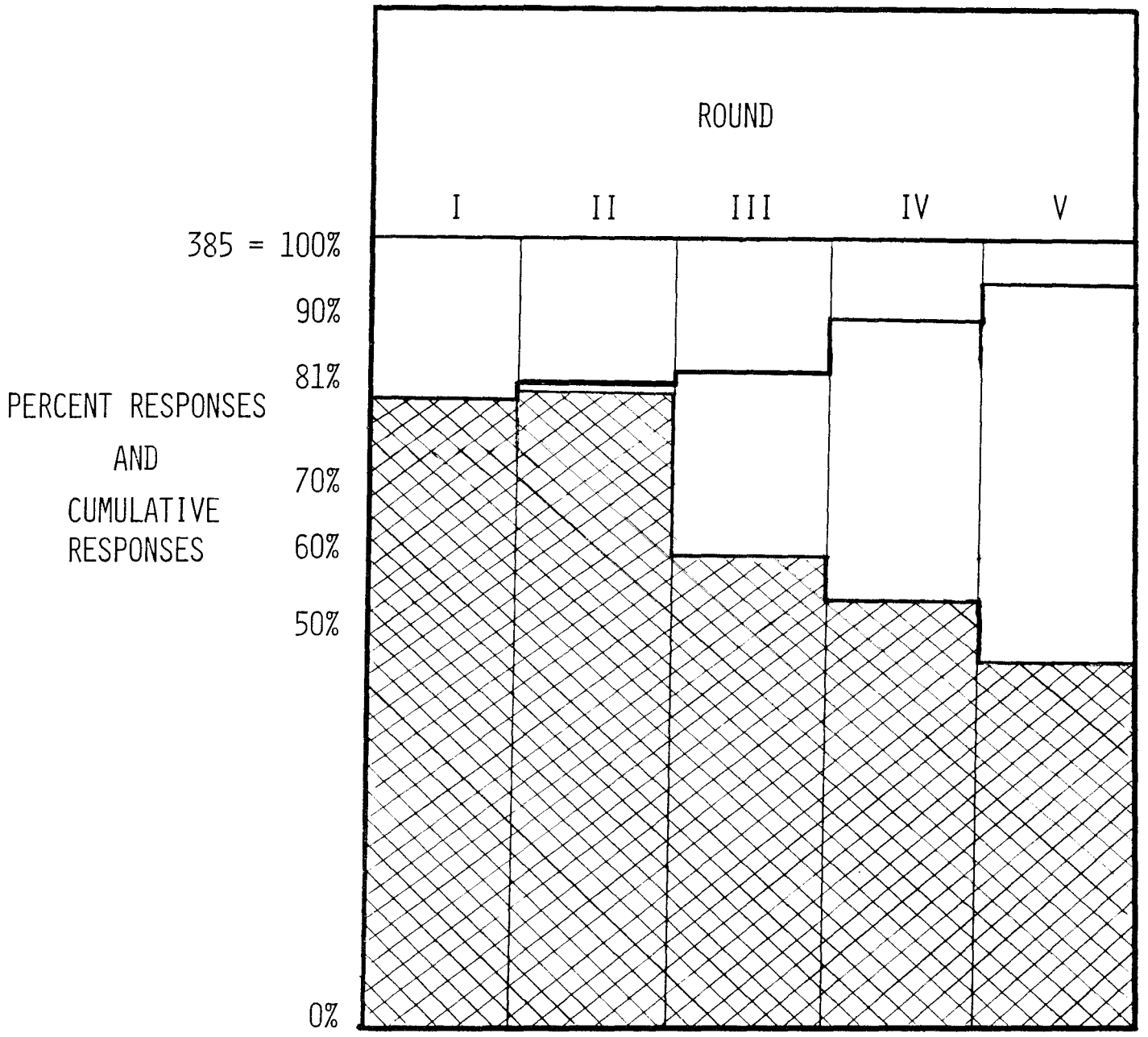
Table V
ROUND IV QUESTIONNAIRE

CHANGE STATEMENT	QUESTION 1 ASSUMING THIS CHANGE WILL OCCUR, WHAT WILL BE ITS IMPACT? None ... Very great	QUESTION 2 WHAT IS THE LIKELIHOOD THIS CHANGE WILL OCCUR? Impossible ... Virtually Certain	QUESTION 3 IF YOU BELIEVE THIS CHANGE IS LIKELY, WHEN WILL IT OCCUR? By 19--
THE ABSOLUTE DEMAND FOR PH.D. DEGREES WILL DECREASE.	. . . (M) Ẏ	. . (M Ẏ) .	
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7	75 80 85 90 95+
USE OF INDIVIDUALIZED INSTRUCTION WILL INCREASE.	. Ẏ . (M) .	. . Ẏ . (M) .	
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7	75 80 85 90 95+
USE OF THE LECTURE METHOD OF INSTRUCTION WILL DECREASE.	. Ẏ (M) .	. Ẏ . (M) . .	
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7	75 80 85 90 95+
STUDENT PROGRESS WILL BE MEASURED BY COMPETENCY AND NOT TIME.	. . Ẏ (M) .	. Ẏ . (M) .	
COMMENT	1 2 3 4 5 6 7	1 2 3 4 5 6 7	75 80 85 90 95+

Table VI
ROUND V QUESTIONNAIRE

CHANGE STATEMENT	QUESTION 3 IF YOU BELIEVE THIS CHANGE IS LIKELY, WHEN WILL IT OCCUR? By 19--	QUESTION 4 SHOULD THIS CHANGE OCCUR? YES	NO	QUESTION 5 WHICH ONE OF THE FOLLOWING WILL MOST PROMOTE AND WHICH ONE WILL MOST HINDER THIS CHANGE? FEDERAL	STATE	NON-GOVT	INDUSTRY	STUDENT	FACULTY	PUBLIC INST	PRIVATE INST	PROPRIETARY	
DEGREE GRANTING INSTITUTIONS WILL BECOME MORE SPECIALIZED.	. (M Y) . .			1	2	3	4	5	6	7	8	9	PROMOTE
	75 80 85 90 95+	Y	N	1	2	3	4	5	6	7	8	9	HINDER
THE ABSOLUTE NUMBER OF FOUR YEAR COLLEGES AND UNIVERSITIES WILL DECREASE.	. (M) Y . .			1	2	3	4	5	6	7	8	9	PROMOTE
	75 80 85 90 95+	Y	N	1	2	3	4	5	6	7	8	9	HINDER
THE CAMPUS AND NONACADEMIC COMMUNITY WILL INCREASINGLY SHARE RESOURCES.	(M Y) . . .			1	2	3	4	5	6	7	8	9	PROMOTE
	75 80 85 90 95+	Y	N	1	2	3	4	5	6	7	8	9	HINDER
NEEDS AS EXPRESSED BY STUDENTS WILL RECEIVE INCREASED ATTENTION.	(M Y) . .			1	2	3	4	5	6	7	8	9	PROMOTE
	75 80 85 90 95+	Y	N	1	2	3	4	5	6	7	8	9	HINDER
THE MANPOWER NEEDS OF SOCIETY WILL RECEIVE INCREASED ATTENTION.	(M Y) . . .			1	2	3	4	5	6	7	8	9	PROMOTE
	75 80 85 90 95+	Y	N	1	2	3	4	5	6	7	8	9	HINDER

Table VII
SURVEY RESPONSE



education associations were not specifically mentioned; and while we intended that college and university administration be part of the public institution and private institution categories, we know that it was not interpreted that way by some panel members.

The time required of the panel went beyond our control when we could not narrow the list of change statements submitted in Round I to a smaller number. We mixed the sequencing of questions across the panel in the later rounds so that we could test whether boredom set in as the questionnaire was being filled out. Our analyses have indicated that this was not a problem.

We also tested the reproducibility of responses by asking a small number of panel members to fill out the same questionnaires a second time, approximately one week later. On the basis of this simple test, we conclude that the results are reproducible.

Considering the diverse makeup of the panel, one might expect a wide range of opinion with little agreement between those with different occupations. Actually this is not the case, since the agreement across panel position was very great. The highest agreement over all of the change statements on the impact, likelihood, and time questions was found between the panel members working in regional agencies, state governments, educational institutional administration,

Table VIII
SURVEY DATA BASE

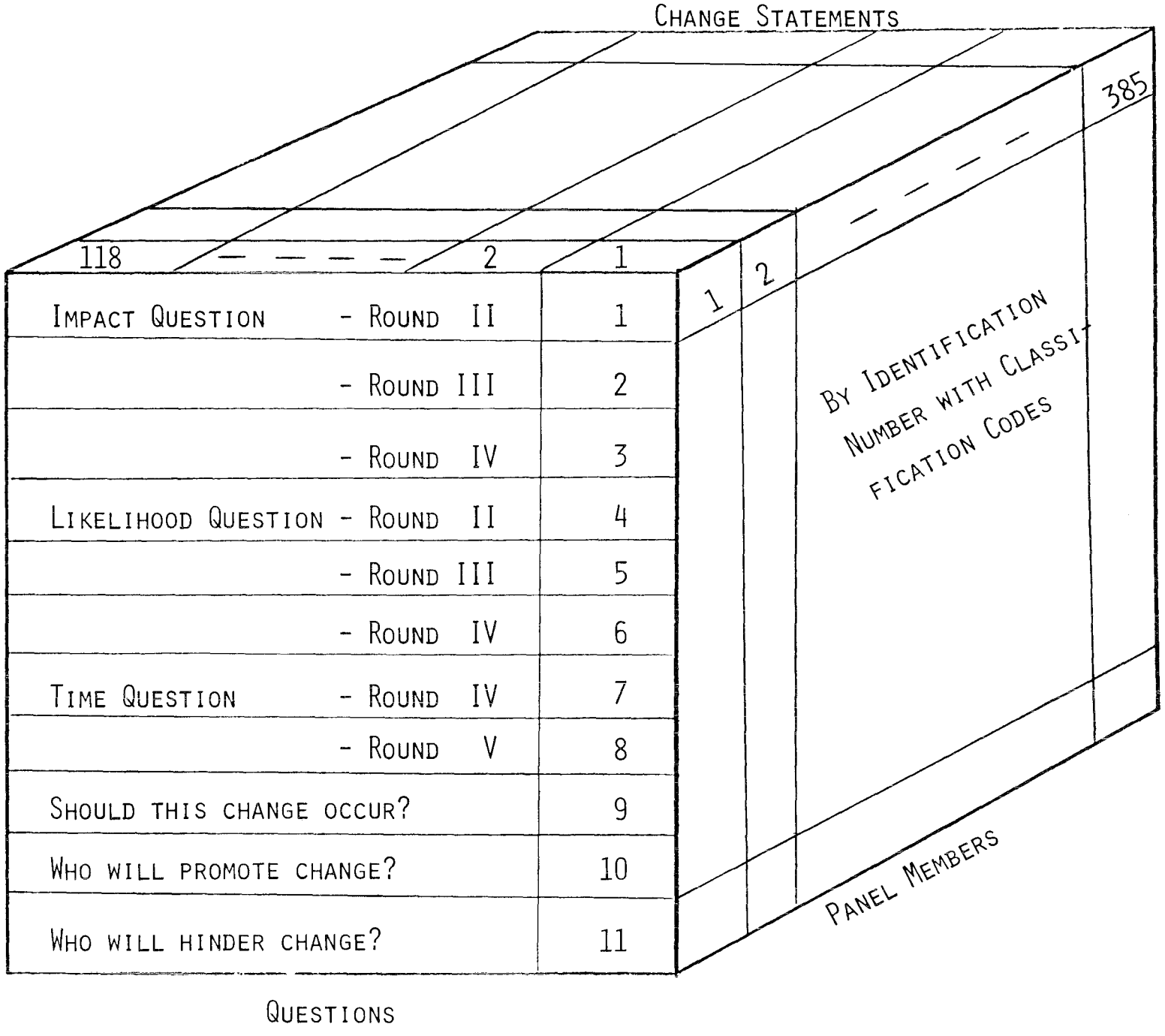


Table IX
PANEL SUBGROUPS WITH DIFFERENT OPINIONS

	CHANGE STATEMENT	SUBGROUPS THAT DIFFER HIGH	LOW	QUESTION
51.	THE FACULTY WILL HAVE GREATER FREEDOM RELATIVE TO WORKLOADS AND ACTIVITIES.	STUDENTS-ADMINISTRATION FACULTY-STUDENTS		IMPACT LIKELIHOOD
67.	POSTSECONDARY EDUCATION WILL BE MORE READILY ACCESSIBLE FOR ALL.	FEDERAL-STUDENTS		LIKELIHOOD
78.	A LARGER PROPORTION OF HIGH SCHOOL GRADUATES WILL ENTER POSTSECONDARY EDUCATION.	FEDERAL-STUDENTS		LIKELIHOOD
112.	THE FEDERAL GOVERNMENT WILL INCREASINGLY EMPHASIZE FUNDING SPECIFIC PROGRAMS (CATEGORICAL AID).	FACULTY-FEDERAL		LIKELIHOOD
118.	OPERATIONS AND ADMINISTRATION IN POST-SECONDARY EDUCATION WILL BECOME MORE CONSOLIDATED AND CENTRALLY CONTROLLED.	NATIONAL-EDUCATION ASSOCIATIONS	STATE	IMPACT

Table X
OPINION OF PANEL SUBGROUPS RANKED BY
HIGH IMPACT, HIGH LIKELIHOOD, AND EARLIEST TIME

HIGHEST IMPACT AND LIKELIHOOD	FEDERAL	EARLIEST TIME
	NATIONAL EDUCATION ASSOCIATIONS	
	REGIONAL ORGANIZATIONS	
	STATE	
	ADMINISTRATION	
	DEPARTMENT CHAIRMAN AND FACULTY	
LOWEST IMPACT AND LIKELIHOOD	STUDENTS	LATEST TIME

and faculty. The few areas in which a statistically significant difference of opinion did exist were found between students and federal, state, or national education associations on the impact and likelihood questions. On the time question, the federal panel members were significantly different from others in saying changes would occur earlier. Table IX shows several of the change statements in which significant difference of opinion did exist. In change statement 51 of the survey, a difference of opinion existed about the likelihood of faculty freedom relative to work loads and activities. Students felt this was more likely than did the faculty, and yet the students felt it would have less impact than did the administration. In change statement 67, the federal panel members expressed the opinion that postsecondary education would be more readily accessible to all, while the students thought this would have lower likelihood.

The same relationship existed on change statement 78, where the federal panel members felt a larger proportion of high school graduates would enter postsecondary education, but the students did not agree. In the question on the likelihood of categorical aid, the faculty said "highly likely" and the federal panel members said "very low likelihood." State spokesmen felt centralized control of operations and administration would have moderate impact while the national education association members said it would have high impact. Twenty other changes did have significant differences between panel subgroups, and these are discussed in the final project report.

It is interesting to note the opinions of subgroups about changes that are most likely to occur with a great impact and at an earlier time. When the panel subgroups are ranked with high impact, high likelihood, and earliest time, as shown in Table X, the order of the panel subgroups follows the natural order from federal down through the organizational levels to the students.

Turning from the background of the data for this report and the general agreement of the panel to the highlights of the survey findings, we will investigate the anticipated changes in the six areas as follows:

AREAS OF CHANGE IN POSTSECONDARY EDUCATION

1. Access and Participation
2. Competence and Performance
3. Educational Structure and Components
4. Resource Availability
5. Planning and Management
6. Non-Traditional Education

As we examine the forecast in these areas, we want to emphasize that this is a forecast by 385 individuals associated with postsecondary education and not a forecast by, or the opinion of, WICHE or NCHEMS.

First, let us consider the relationship of the total panel's opinions about which of these six areas will most likely occur, which will have the greatest impact, and which will occur first. Table XI shows that changes in planning and management are the most likely to occur and that the educational structure is least likely to change.

Considering the impact of changes, the panel felt changes in planning and management would have the highest impact and changes in the educational structure the least impact. The only difference between impact and likelihood is that changes in access and participation are second in likelihood, but changes in resource

Table XI
TOTAL PANEL OPINION BY GROUPS OF CHANGE STATEMENTS

RANK	IMPACT	LIKELIHOOD	TIME
			EARLIER
HIGH	PLANNING AND MANAGEMENT	PLANNING AND MANAGEMENT	ACCESS AND PARTICIPATION
	RESOURCE AVAILABILITY	ACCESS AND PARTICIPATION	RESOURCE AVAILABILITY
	COMPETENCE AND PERFORMANCE	COMPETENCE AND PERFORMANCE	PLANNING AND MANAGEMENT
	NON-TRADITIONAL EDUCATION	NON-TRADITIONAL EDUCATION	EDUCATIONAL STRUCTURES
	ACCESS AND PARTICIPATION	RESOURCE AVAILABILITY	NON-TRADITIONAL EDUCATION
LOW	EDUCATIONAL STRUCTURES	EDUCATIONAL STRUCTURES	COMPETENCE AND PERFORMANCE
			LATER

availability will have greater impact. The panel's responses forecast changes in access and participation occurring earliest and changes in competence and performance occurring last. One possible reason that changes in competence and performance will occur later than other changes is that this is the only area in which the panel identified only one force — the faculty — as most hindering change.

In each of the six forecast areas, I would like to present the image as seen by looking into the crystal ball provided by the NCHEMS Delphi.

Access and Participation

Perhaps the most important area of agreement by the survey panel was that, by the late seventies, postsecondary education will be more readily accessible to all. Students will tend to be more casual about their participation in the postsecondary education process. They will attend full-time when they think it suits their needs and part-time on other occasions. They will increasingly drop in and out of the educational process as they desire, but there is no evidence that high school students will delay entrance into postsecondary education. The federal government will be a principal force encouraging this increased accessibility.

With increased accessibility, in what areas of postsecondary education will students participate? At the graduate level, an increasing percentage of students will seek professional degrees as opposed to Ph.D. degrees. At the undergraduate level there will be no discernible shift in emphasis from bachelor's degrees to associate degrees, but the proportion of students in vocational programs will increase, and the manpower needs of society will receive increased attention.

Competence and Performance

While certification on the basis of competency will eventually become more routine, major changes will likely not arrive until after 1980. In the 1970's, little success will be met in modifying the rigid structure of certification and evaluation. However, it should be noted that student experience in the nonacademic community will be increasingly accepted for academic credit. The analysis also shows that the emphasis on grades will not decrease.

Structure of the Educational System

Postsecondary education will be more coordinated, the ease of transferability of credit will increase, and institutions will gradually begin to share resources. But the panel felt these changes would not likely cause institutions to become more alike. The control that may influence changes in the postsecondary education structure will arise without the federal government increasing its emphasis on developing a master plan for postsecondary education but will come more from state-level agencies.

Structure of Program Content

The content of programs in postsecondary education will shift to give social problems and public service increased emphasis by the late 1970's. This will not, however, include ethnic studies, which will probably exhibit a relative decrease in emphasis during this period. While institutions will place more emphasis on social problems, the role of institutions as direct change agents in society will not increase substantially.

Emphasis on research as a major program of institutions will tend to stabilize, but postsecondary education itself will be the topic of more of the research and development activities. In four-year colleges and universities, there will be an increased emphasis on upper division and graduate programs.

Structure of Faculty

The relationship of the faculty to management will be a subject of ferment during the seventies. There will be an increase in collective bargaining. Understandably, then, the panel felt the faculty will not have an increasing role in the formal governance of their institution. It is unlikely that faculty tenure will be eliminated, but the faculty will have less freedom relative to work load and activities. There will be an increased emphasis on teaching and little change in the "publish or perish" concept.

Structure of Students

Housing for students will generally be reduced. However, cut backs in other student services such as recreation, health, and counseling will not likely occur until the late '70's, if at all. The institutions will drop the "in loco parentis" concept. Prior to the '70's institutions will not provide a larger governance role for students.

Structure of Educational Technology

Changes in educational technology will occur later than other changes in the educational structure. Even after 1980, the relative emphasis on the techniques and processes for learning will not have changed as compared to emphasis on subject matter. Changes that seem likely to occur will be in the increased flexibility and versatility of educational facilities and increased use of TV, computers, and new instructional technologies. The increased flexibility will include facilities, which will be used more hours of the day and more days of the year. The most distant prediction of the panel finds psychopharmacy and psychoelectronics not being used until the 1990's to induce and augment learning if at all, and the majority felt such a change should not occur.

Resource Availability

Funding sources will increase scrutiny as to how well available resources are being utilized, and new planning and management techniques will be used in this scrutiny. At the same time, the panel felt it unlikely that the general level of resources available to postsecondary education will decline. Diminishing amounts will be spent for new capital construction in larger institutions.

In spite of the labels that may be attached, funding from federal sources will not increasingly emphasize providing general aid. Federal and state dollars to private institutions and to students directly will increase during the next decade.

Planning and Management

Educational outcomes will be an integral part of the analysis of postsecondary education by the late 1970's. The use of new planning and management techniques

Table XII
STATEMENTS WITH HIGH IMPACT THAT ARE HIGHLY LIKELY TO OCCUR

	CHANGE STATEMENT	LIKELIHOOD	IMPACT	% RESPONDING SHOULD OCCUR	MOST PROMOTED BY:	MOST HINDERED BY:
69	The number of students involved in continuing education throughout their lifetime will increase (caused by retraining, dropping in and out, etc.).	Very High	Very High	99	Students	State
15	The proportion of students in postsecondary vocational programs will increase.	High	Very High	97	Industry	Private Inst.
67	Postsecondary education will be more readily accessible to all.	High	Very High	97	Federal	Private Inst.
58	Faculty collective bargaining will become more widely adopted.	Very High	Very High	42	Faculty	Public Inst.
35	Two year colleges will be established at an increasing rate.	Very High	High	66	State	Private Inst.
31	Social problems will receive increased attention.	Very High	High	95	Students	Industry
16	The use of TV, computers, and new technologies in postsecondary instruction will increase.	Very High	High	97	Industry	Faculty
100	Scrutiny by funding sources as to how well resources are being utilized will increase.	Very High	High	95	State	Public Inst.

Table XIII
OTHER STATEMENTS WITH VERY HIGH LIKELIHOOD OF OCCURRENCE

	CHANGE STATEMENT	LIKELIHOOD	IMPACT	% RESPONDING SHOULD OCCUR	MOST PROMOTED BY:	MOST HINDERED BY:
9	The absolute demand for Ph.D. degrees will decrease.	Very High	Moderate	48	Industry	Faculty
79	Mens institutions and womens institutions will increasingly become coeducational.	Very High	Very Low	89	Students	Private Inst.
87	Postsecondary education will be the topic of more research and development activities.	Very High	Moderate	91	Federal	Faculty
89	The in loco parentis responsibility will become less prevalent.	Very High	Low	90	Students	State
70	Less student housing will be provided by postsecondary education institutions.	Very High	Low	84	Students	State
105	Postsecondary education facilities will be used more hours in the day and more days in the year.	Very High	Moderate	98	State	Faculty
13	Use of the lecture method of instruction will decrease.	Very High	Moderate	85	Students	Faculty
112	The federal government will increasingly emphasize funding specific programs (categorical aid).	Very High	Moderate	36	Federal	Public Inst.

will increase, as will the requirement for comparability and compatibility of data. The faculty and students involved in the governance of institutions will continue to support their individual group directions rather than the collective goals and objectives of the institution.

Nontraditional Education

The panel felt that the relative roles of nontraditional institutions, *vis-á-vis* colleges and universities, would not change in the 1970's. This perceived stability is probably explained by the makeup of the panel, which was heavily oriented toward traditional higher education. It also likely reflects the fact that the survey was conducted prior to the passage of the new higher education legislation.

Some Specific Change Statements

With this image from the panel's Delphi responses, let us turn for a closer look at some of the specific change statements that form this forecast. In Table XII, we find statements that are highly likely to occur with a high impact. The data on the "should or should not" question are presented as the percentage of the panel responding that they felt that the change should occur. The "promote or hinder" question is also tabulated by listing the group that the highest percentage of the panel thought would promote or hinder the change.

Other change statements with a very high likelihood of occurrence are shown in Table XIII. Note that these changes have lower impact ratings and represent changes in the educational structure.

In conclusion, I would like to view the results of this survey as a single data point in a time series. Longitudinal results of this kind, which would reveal changes in panel opinion over time, may well hold the key to using this forecasting approach more effectively. It may be possible to repeat the survey over the next few years, after we have had the opportunity to narrow the number of change statements and have focused on a smaller number of questions.

The results presented here are mainly the highlights of one image of the future organization in higher education. More can be obtained from the final NCHEMS project reports, which include:

1. "Change in Higher Education Management," an analysis of the impact of the forecasted changes on management systems in higher education.
2. "A Forecast of Changes in Postsecondary Education," an analysis of the panel's responses. This report contains the specific results of the NCHEMS Delphi in greater detail than has been presented here.
3. "Methods for Large-Scale Delphi Studies," a documentation of the methodology used by NCHEMS in conducting a Delphi study with a large panel. This will benefit future NCHEMS studies and the educational community, since the number of factors in postsecondary education often will dictate panels of more than 100, and large-scale Delphi studies do present a number of technical and logistical problems.
4. "Documentation of Large-Scale Delphi System Software," a complete documentation of the computer software developed for the NCHEMS Delphi survey. This software is available as Type II NCHEMS software; available at cost but with no guarantee or program support.
5. "Data from the NCHEMS Future Planning and Management Systems Survey," a complete documentation of the NCHEMS Delphi survey data base, which is available at cost to anyone wanting to do additional research on the data.

While many have contributed to these results, special mention should be made of the guidance received from Dr. Wayne R. Kirschling in conducting the statistical analysis from which these interpretations have been developed. The initial design for the study was developed by Dr. Robert A. Wallhaus, NCHEMS director of research and development, who provided many helpful suggestions during the project. The significant contributions of Dr. Robert Judd of the University of Toledo as project consultant on Delphi methodology are gratefully noted.

One group that deserves special recognition for its contributions to the content analysis of change statements includes Dr. Joanne Arnold and Sidney Micek of the NCHEMS staff and the graduate students from the University of Colorado Department of Communication. The project staff that made possible the enormous logistical task of returning individualized questionnaires to each of 385 panel members within four days after the closing of each round consisted of graduate assistants Edward Wood (Delphi questionnaire analysis), David Kasik (computerized Delphi system), and Herbert Welton (computerized data analysis).

The major contributors to this study must remain anonymous, even though they gave freely of large amounts of time. This group is, of course, the 385 panel members whose responses provide the basic data on which these conclusions are drawn.

IMAGING FUTURE VALUE SYSTEMS: PARADIGMS AND PARADOXES

by
Ian H. Wilson*

Nothing is more indicative of the mood of uncertainty that afflicts our country than the current ambivalence about economic growth. It is not merely an uncertainty about the pace of recovery from the 1970-71 recession, and an uncomfortable feeling that the twin problems of inflation and unemployment might persist longer than most people care to admit. These are specific concerns we have had to live with in the past and shall, doubtless, continue to worry over in the future. The questioning I refer to is far more general and fundamental: it seeks to re-examine the value and nature of growth itself, and the uses to which growth is put. For a nation in which aspiration to material success, and dedication to untrammeled growth, is so basic a part of our culture, this is questioning of the most serious kind.

At first sight the paradox of a love-hate relationship toward growth seems all the more perplexing for its occurrence in this, the most affluent of nations. I hasten to add that, much as we might like to, we cannot dismiss these doubts as anti-capitalist propaganda of the New Left or reckless proposals of some "ecology freaks." They are rooted in some very real problems we must face in the Seventies; and they are shared by many at both ends of the political spectrum. Consider, for example, the following quotations from President Nixon's State of the Union message two years ago. Reviewing our prospects for progress he said:

> "Our gross national product will increase by 500 billion dollars in the next ten years. . . . The critical question is not whether we will grow, but *how we will use that growth.*" (emphasis added)

Elsewhere in the same message he asked: "Does this mean we will be 50 percent richer in a real sense, 50 percent better off, 50 percent happier?" The answers he gave to those questions are, in a sense, less important than the fact that he raised the questions in the first place.

I have chosen this particular example as a point of entry into my topic of future value systems because it dramatizes the depth and breadth of the impending shift in the operative values of our society. Any change as pervasive as that which seems indicated must be a matter of concern to you in education as it is to those of us in business. The immediate impact may be on the attitudes and aspirations of those with whom we have to deal – employees, customers, and owners; faculty, students and alumni. Of perhaps greater significance will be the effect on the overall social, political and economic environment in which our institutions will have to operate.

We should, at the outset, be clear about the limitations inherent in any exploration of possible value changes. At best, forecasting is a tricky business; as Alvin Toffler noted, quoting a presumably apocryphal Chinese proverb, "To prophesy is extremely difficult . . . especially with respect to the future." We would be well advised, therefore, to consider what follows, not as a prediction, but rather as a framework for speculation about the future. Lacking certainty in our vision, we must speculate about "alternative futures," the range of possibilities that *might* develop within the next fifteen to twenty years.

Further, this paper is not an attempt to predict events, but rather to discern the broad flow of societal trends – disregarding the superficial eddies and cross-currents – as they may be reflected in changes in our operative values.

It is the operative values of society that determine what that society will become and, in large part, what will happen. Speculation about future events *without* considering the potential discontinuities inherent in value shifts is all too apt to degenerate into a series of assumptions that the future will be, essentially, pretty much like the present – only bigger, gaudier and more crowded. Imaging future value systems, on the other hand, may not tell us much about the nature and timing of specific events. But it can tell us a great deal about the quintessential nature of the future – if, of course, we succeed in capturing the elusive thread of truth that can lead us through the labyrinth of speculation.

Basic Forces for Change: Momentum Behind the Shift

Talk about change is cheap today, but we still have apparently failed to grasp the full significance and impact of the forces we discuss. It is as if we agreed that all the physical attributes of our society were in flux, yet maintained that nothing really fundamental – such as social institutions and value systems – need be changed. The paradox in such a view is, I think, self-evident, but it is lost on those who cling firmly to it. And when they look for an explanation of the unmistakable intellectual turmoil about priorities and values, they are apt to confuse cause with effect and blame it all on "the kids on campus."

I am deeply convinced that these changes are *not* of "the kids' " making. They may reflect the changes in most obvious form; they may be the cutting-edge of the future; but they did not set the basic forces in motion.

What we loosely call the "generation gap" may perhaps more accurately be termed an "experience gap"

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*EDITOR'S NOTE: The author is engaged in futures research with General Electric Company in New York. Born and educated in England, he came to the United States in 1954, and has worked with General Electric in public relations, management education and development, as well as in Business Environment Studies. He is a co-author of *The Business Environment of the Seventies* (McGraw-Hill 1970).

— a differential in the extent of experience of the new world being shaped around us. Although we in the older generation have started to experience the emergence of this "new world" during the past ten years, it does not constitute our *total* experience, as it does for the younger generation. Perhaps we can get a sense of the magnitude of the change by considering an analogy with the first and second generation immigrants. The original immigrants made a physical passage from an old world to a new world. They could never make the accommodation to a new way of life as easily or as naturally as could their children who grew up in the new world, with little more than the stories their parents had to tell them to tie them to the old world. In such a setting, it was natural, therefore, that the second generation would feel more at home in the new setting, and would really lead the older generation in new patterns of thought and new life styles.

I think this analogy holds good, to quite a considerable extent, in our present situation. We are perhaps not quite so acutely aware of the transition to a "new world" because there has not been the same sense of a physical passage, at a specific point in time, as in the case of the immigrants; but the degree of newness is nonetheless as real.

Most of us sense, at any rate, that something more than a conventional generation gap is abroad in the land. To explain *basic* shifts, we must look to *basic* (and new) forces. I believe that we can discern the direction of future momentum by analyzing four composite forces:

1. Change in the character of change itself;
2. The transition from an industrial to a post-industrial society;
3. The "criticality" of a number of well-established social forces;
4. The emergence of a "world macroproblem."

It is in the crucible of such forces that the shape of future value systems will be forged.

1. **Change in the character of change itself:** Without in any way denying that there are forces for stability, I want to state, as strongly as I can, my conviction that change is now more rapid, more complex and more pervasive than ever before in human history.

   (a) **Change is more rapid than ever before.** Consider, for instance, the simple fact that more people are working at the job of creating change, especially technological change. And, with a large and growing population, even a small percentage can represent a substantial number and have a measurable impact on society. Then, too, we have witnessed in our lifetimes a radical compression of the development time for new products and new systems, from the original invention to its diffusion through society. Such a speeding up in the process of invention and development is, after all, what you would expect to result from our massive investments in R & D since World War II. Another phenomenon of our times is a shortening of the "doubling time" in so many fields. Where world population once doubled in 1500 years, it now does so in a mere 35 years; most Western economies now double their capacity in something like 12-18 years; and the store of technical knowledge supposedly doubles every 10 years or so. Finally, as evidence for the rapidity of change, we can cite the speed-up in the transfer of ideas and information through mass electronic media, increasingly on a world-wide basis.

   (b) **Change is more complex than ever before.** Here I would point to the rapid progression from what Kenneth Boulding terms "folk knowledge" (such as led Watt to invent the steam engine) to highly abstract, theoretic knowledge as the dynamic of new technologies (such as nuclear physics). This progression to a higher level of abstraction and complexity seems to be a hallmark of the post-industrial society. Secondly, complexity of change is increased by the growing interdependence of our world — a fact that is itself compounded by the related phenomena of population growth and urbanization. Nations, institutions and individuals are now so inextricably interrelated by so many webs of communications, economics, culture and ideas, it is difficult to predict how a tug on one thread in the pattern will affect other parts of the design. It is partly this complexity that has now, almost belatedly, heightened our concern over the second- and third-order consequences of technology. But, as Jay Forrester has shown, it is this complexity that bedevils much of our social policy-making and so often makes the "intuitive solution" to a social problem wrong and counter-productive. Finally, we must consider the differential impacts and rates of change. Complexity is compounded by the fact that change impacts in different ways on white and blue collar workers at home, on developed and underdeveloped nations in the world at large. It is further increased by the different rates at which change comes into a society: technological change may occur within 10-20 years, social (institutional) change requires more like 25-50 years, and biological change occurs only over millennia. It is these differential rates that account largely for the tensions that beset so much of our modern world.

   (c) **Change is more pervasive than ever before.** We are, manifestly, dealing with more powerful technologies than ever before. Nuclear power, cybernation and the still-young biomedical revolution have had, and will continue to have, a more pervasive influence on human life, I believe, than any previous three technologies in human history. The increasing scale of so many of our projects — not only in these technologies, but also in engineering projects like the Aswan Dam — also ensures that more people will be affected more deeply by

changes that we set in motion. Above all, we must note, it is not just economic and technological change that affects (or afflicts) us, but social, political and cultural change, too. There is, in short, virtually no aspect of our society that is now totally unchanging.

We can perhaps sum up these points by saying that the process of change has been institutionalized in our society; and that change is shifting from a purely quantitative and physical mode to include an increasingly qualitative and psychological mode.

2. **Transition from an industrial to a post-industrial society:** We find ourselves, in the United States in the year 1972, in the throes of a major historic transition in society, the like of which has occurred only two or three times previously in the history of man. A comparable transition took place when man the hunter and nomad became man the settled farmer; again, when life in cities – civilization, in its literal sense – became the norm; and again when the agricultural society gave way to the industrial society. Now our society is on the brink of becoming something different, a form of society that the world has not seen before.

Exactly what this new society will become is still hard to say, though we can begin to perceive some of its outlines. Some futurists have labeled it the "post-industrial society"; others refer to it as the "technetronic age"; still others, as the "learning society." Whatever term future generations may give to it, we can scarcely doubt that it will be a new world, quite radically different from our present world, not only in its physical properties, but also in its attitudes, its values and its perceptions. Small wonder, then, that we are experiencing, in this period of transition, such agonies of uncertainty, unrest and turmoil, such questioning of our social, political and economic institutions – including, of course, business and education.

Although the term "post-industrial" is not very descriptive of the form of society we may become, it does accurately indicate one of its developing features – the relative decline of manufacturing industry as a prime motive force of the economy. To a generation grown up with the notion that industrialization is the hallmark of the U.S.A., such a prospect may seem far-fetched and even alarming. I have found that bringing this message to any group with "industrial" or "manufacturers" in its title ensures one of the same sort of chilly reception that might have been accorded to a speaker who, one hundred years ago, was far-sighted enough to tell a convention of plantation owners that the U.S. was about to enter into a "post-agricultural" era.

However, perhaps this analogy with agriculture may help to put the future in historical perspective. Agriculture is clearly still an important force in the United States today – it supplies most of our food and fibers; it accounts for nearly 20 percent of our exports; its productivity improvement is exceptionally high – but no one would describe this country as an agricultural society. Farming employs only about four percent of our work force; it is not the source of major innovations in our society; and, above all, it no longer determines our values and way of life.

Something of the same sort of decline – in a modified form, and over the next 20-30 years – faces industry today. In a sense, it will be a victim of its own success. From now on manufacturing's share of both employment and gross national product will be a steadily declining one. By 1985, for instance, we shall be able to produce all the "things" our society needs – all the food, fibers and ores; all the buildings; all the machines and other products – with only a quarter of our work force; or under 10 percent of our total population.

The major growth area of the post-industrial society will be in the services sector of our economy – education, communications, health care, leisure and cultural activities, the professions, government and non-profit institutions. Clearly this will represent a major shift in the nature of work: perhaps it will be more appropriate, in such an economy, to refer to employees as "brains" rather than "hands," as we have done in the industrial age. If the skilled mechanical craftsman has been the archetypical employee of our industrial world, then it will be the professional, technical, white-collar employee who will fill this role in the post-industrial society.

One sign of our unwillingness or inability to acknowledge the extent of this change, which is already upon us, is our tendency to look at the old indicators to determine our economic progress. So engrained is the habit that we still put prime emphasis on indexes of automobile sales and steel employment; and it is the Dow-Jones industrial index that the financial pages follow most closely.

Insofar as a dominant institution will arise in the new growth sectors (which are, for the most part, characterized by smaller, decentralized units) it is more likely to be the educational institutions (particularly the university) than government. This is because, in the post-industrial society, key importance will attach to innovation and new theoretical knowledge, neither of which will government be well equipped to supply. The university, on the other hand, is by its very nature designed to produce and mobilize innovative knowledge, as the industrial firm was geared to mobilize resources for mass production. Thus, even though educational institutions may not, by themselves, account for a majority of employment, education will be the dominant force determining our way of life and value systems. It is from this probable development in the new society that an alternative title – the "learning society" – derives.

3. **"Criticality" of some well-established social forces:** Affluence, education, and technology have been features of our society for many years. However, it is worth noting that when an established trend 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 a difference in kind. And, indeed, these three forces do seem now, like a nuclear reactor, to be approaching a point of criticality at which a new chain reaction of attitudes and trends is likely to be started.

The first of these newly critical forces – affluence – is a good illustration of this point. As a rough rule of thumb, we can say that, since 1800, per capita income has doubled every generation. In the five generations from 1800 to the mid-1960's per capita income has thus grown to $200, 400, 800, 1600, 3200 (in constant dollars). The quantitative results of this affluence to date are well-known: but who can really doubt that a *qualitative* difference will ensue if this generational doubling continues – to $6,400; 12,800; 25,600 . . .

Or take another example. If we take $15,000 as the current starting point for affluence in our society, we find that, in 1970, 12 million households fell in this category. By 1980, just ten years later, one study projects, 25 million households – *more than twice as many* – will meet this standard of affluence. If we already consider ourselves an affluent society, what are we to make of such a super-affluent society?

Far more significant than changes in income levels, however, are the prospective changes in ways of thinking about one's self and one's world that occur as a consequence. We can see this most notably perhaps in the increasing emphasis that is being placed on quality rather than mere quantity – the switch from "more" to "better." Interestingly enough, one consequence of affluence has been a heightened awareness of the pockets of poverty that continue to exist, and a heightened determination to eliminate them, because the age-old problem of poverty seems at last to be manageable. We can also note some changing attitudes toward work and leisure. In part these changes may be due to changes in the character of work itself – the move from manufacturing to services, for instance – but they are also a consequence of the fact that there is no longer, in an affluent society, quite the same grinding necessity to strive for survival and security. We seem to be raising our sights and our activities to a higher level at which we can begin to choose among types of work (selecting those that seem most rewarding), and to consider leisure as a valid activity in its own right. Finally, it is this sense of affluence and choice that has perhaps contributed to a growing impatience with the progress we have so far made in resolving our social problems – a "lower frustration tolerance," if you will, with all forms of economic hardship, social injustice and inequity.

As with affluence, so with education, the significance for our discussion lies only partly in the physical manifestations of this trend – more schools, more funds, changing curricula and methodology. Of at least equal importance are the attitudinal changes triggered by higher levels of education. The better-educated person will, for instance, have more self-respect; will want to be treated more as an individual; will be far less tolerant of authoritarianism and organizational restraints; will have different and higher expectations of what he wants to put into a job and what he wants to get out of it. For a variety of reasons, education will be occupying a more and more focal part in our lives; and it may be that the "knowledge industry" will be the prototype of the post-industrial economy, as the steel and automobile industries were in the industrial era.

Probably nothing has been more characteristic of the U.S. economy in the past thirty years than the application of technology to industrial systems. The general expectation is that it will continue to be a distinguishing characteristic of the post-industrial society, so much so that Zbigniew Brzezinski has coined the alternative title of "technetronic age." However, almost certainly the future does not hold simply "more of the same" in this regard. One might say that the high-water mark of the "old" technology occurred in 1969 with the landing on the moon and the concurrent fact that millions around the world were able to watch it as it happened. Since that time we have become convinced that nothing is now technically impossible.

Yet, starting almost precisely at the same time as this celebration of a supreme technical victory, there has been, as never before, a widespread questioning of the nature, the value and the extent of technological progress. At one level we are developing a heightened awareness of some of the negative environmental and societal consequences of technical developments, and insisting that, in this field too, "better" replaces "more" as our motto. At another level there is a questioning that asks "Do we *have* to do it, simply because we *can* do it? Does 'can' imply 'ought'?", in effect substituting a moral imperative for a technological imperative.

While it is highly improbable that society will totally reject technology in the next fifteen years, it is equally certain that we shall experience a major redefinition of its aims and purposes and a redrawing of the constraints within which it will be required to operate. Societal and environmental concerns will not be a passing fad: they are strong and developing forces inherent in the type of society we shall be evolving.

Two aspects of technology in particular have done much to reshape our thinking and our world. We are now on the brink of having instantaneous worldwide communications generally available, and of the emergence of what Marshall McLuhan has called "the global village." Naturally, we take a different view of our world, of international relationships, and of world events: you need only consider the impact on public opinion of TV coverage of the Vietnam War to get an immediate and dramatic instance of this general point. The other aspect of technology that may perhaps do even more in the Seventies and Eighties to change our attitudes about ourselves – giving rise to the ultimate question, "What is man?" – is the field of biomedical research. Gordon Rattray Taylor has referred to the possibilities here as a "biological time bomb" that is ticking away under so many of our preconceptions and social institutions.

4. **Emergence of a "world macroproblem":** This fourth factor can be viewed as a variant or derivative of the third because it, too, results from the interaction of a number of critical forces – in this case, rising population levels and increasing industrialization (technology and capital investment). However, it deserves separate consideration because of the pervasiveness and complexity of the problem.

The term, "predicament of mankind," has been used by Aurelio Peccei of the Club of Rome and others to denote a complex of overlapping problems. As Willis Harman, director of the new Center for the Study of Social Policy at Stanford, phrases it:

> "One aspect of this world macroproblem is the host of familiar problems of the ecosystem – ecological imbalances, fouling of the environment, resource depletion, overpopulation with consequent famine and plague.

"Another is the area of 'technological threats' – weapons of mass destruction; vulnerability of a complex society to sabotage or breakdown; misused capabilities to "engineer" the human body, mind, foetus, and genetic transmission; threats to privacy and individual rights; mental stress of complex living; etc.

"A third is the persistent or increasing 'have-have not' gap with the resulting internal and external dissension, intensified by the knowledge or belief that the world agricultural-industrial system could easily produce enough of the necessities to meet the needs of all."

The paradox and the irony in all this is that it represents, in large part, the failure of success. We have succeeded so well in our direct attempts to harness technology to production, raise the material standard of living, prolong the life span and reduce infant mortality that the negative second- and third-order consequences of our actions have caught up with us. We find ourselves trapped in a series of Jay Forrester's negative feedback loops. Specifically, we are confronted with the paradox of the aggregate or what Garrett Hardin has called the "tragedy of the Commons." What might be a perfectly logical and desirable intention on the part of each individual – whether to prolong his life or maximize his profit, to purchase his own automobile or to use the "free goods" of air and water – has all too often, in aggregate, disrupted society and frustrated the individual.

A most perceptive view of the poignancy of this problem as it applies to the United States appeared in an article in the London *Economist* three years ago. After referring to us as "Mammon's own country," Norman Macrae wrote:

"The United States in this last third of the Twentieth Century is the place where man's long economic problem is ending, but where his social problems still gape. On any rational view, the enormous fact of that approach to economic consummation should rivet all attention. It is almost certainly the most momentous news story so far in the history of the world. But people in the United States are at present wracked by the stretching to snapping point of too many of their temporary social tensions, so that this society which represents man's greatest secular achievement sometimes seems to be on the verge of a national nervous breakdown." (The article, incidentally, was entitled "The Neurotic Trillionaire.")

The relevance of this macroproblem to our discussion of future value systems is highlighted by Harman's observation that, to him, the problem viewed as a single whole "appears to be *essentially unsolvable* within the context of present operative values and basic cultural premises." Certainly, the virulence of the public and professional reaction to the publication of "The Limits to Growth" indicates that a basic societal value has been challenged, a raw nerve has been touched.

Yet, as I indicated earlier, there is evidence of some shifting of values in the face of the "negative externalities" of unrestrained economic growth. Without accepting, unconditionally, all the Forrester-Meadows projections (they are *not*, emphatically, predictions), and without getting into a detailed discussion of policy alternatives, I would merely point out that:

(i) There is a growing recognition that there are limits to *exponential* growth, particularly in many of our traditional areas of industrial growth. We are, in other words, prepared to accept the validity of the S-curve, and recognize that growth, while continuing, may do so at a slowing rate.

(ii) There is widespread evidence of a developing public consensus that there are limits to *population* growth. While future population predictions are notoriously unreliable, it remains a fact that our current fertility rate has been hovering around the bare population-replacement level for about a year. And the declared career and family intentions of the younger generation lend support to a continuation of this trend.

(iii) There is now no doubt in the public's mind that there must be imposed or voluntary limits to *pollution* growth. Even though the familiar "trade-off" problems with employment and energy availability, for instance, will cause modifications of this conviction in particular cases, the basic public policy course has been set, and the mechanisms of audit, enforcement and protest are fast being institutionalized.

(iv) There is a new emphasis on conservation and a belief that there must be some limits to growth in the consumption of *natural resources*. Certainly, the range and diversity of public and private programs concerned with waste management and recycling indicates that this is something more than a passing fad.

(v) There remains the fact that, in the post-industrial society, the major growth emphasis will be less on goods per se, and more on *services*. As services are inherently less polluting and less resource-consuming, they will provide part of the resolution to our growth dilemma – as, indeed, both Forrester and Meadows recognize.

These observations do not, of course, deal with the whole of the macroproblem or the whole of the solution. They are, however, valid indicators of an impending significant shift in the structure of an important segment of our social and economic value systems.

Future Value Systems: A Framework for Speculation

I think that we may safely postulate, then, that any value shifts that do come about will occur, not because of the dictates of a relatively small college elite, but because of the imperatives of basic structural changes in our society and the world. The preceding section has, in fact, only hinted at the force and speed of some of these changes – and has, doubtless, omitted some factors that another might include. We should not, therefore, be surprised that a virtually uniform prediction of futurists is that the next few decades will be a period of questioning, uncertainty, potential turmoil, and confrontation.

One consequence of this uncertainty is, as I have already noted, that our speculation about the future must admit the possibility of alternative outcomes. Perhaps the most that can be accomplished in this paper is to suggest a framework for our speculation and imaging.

One way of anticipating probable changes in values, attitudes and behavior is to view them as the consequences of a progression, on a national scale, up Maslow's hierarchy of needs. The late Abraham Maslow postulated that we could arrange man's needs in a hierarchy of five levels:

1. Physiological needs (for food, shelter, warmth, etc.);
2. Safety and security needs (to induce a measure of stability into one's environment, to secure the physiological gains already achieved);
3. Social needs (for giving and receiving love and friendship; for being part of something larger than oneself);
4. Ego needs (for self-respect, independence, achievement, status, recognition);
5. Self-actualization needs (to realize one's full human potential).

This way of looking at human needs is useful as a predictor of attitudes and behavior because progression tends to be in a single direction — upwards, from the first to the fifth levels — rather than random. Since man is a creature of seemingly endless needs, we can predict that, when one need has been satisfied, another will appear in its place; when one level of needs has been satisfied, man will proceed to the next level. The levels are progressively *less* essential in terms of sheer survival, and *more* important in terms of living at one's fullest human potential (which seems to be the ultimate level of aspiration).

History seems to validate the Maslow hypothesis, at both the national and the individual level. It is possible, for instance, to plot the position on this hierarchy of each nation according to the level(s) at which the majority of its people live. Thus, virtually all the populations of the underdeveloped nations exist at the survival, or — at best — security level; while in the United States the majority of the vast middle class operates on the basis of social or ego needs. Similarly, an individual may, if conditions are favorable, progress from purely physiological needs in infancy, through security needs in childhood, toward the satisfaction of social and ego needs in adult life.

When discussing shifts in national values, some gross generalizations and over-simplifications have to be made: yet it should be possible to predict major trends and changes in emphasis. In a society as complex and varied as the United States, the population cannot be slotted at one level only, for there are people operating at *all* levels. A profile of the population makeup, with its various modes of living, will thus be needed to represent the full range of values; and future changes in this profile will be indicative of shifting value-systems.

In projecting a possible population profile in terms of these five need levels, it is useful to bear in mind the correlation which seems to exist between these need-levels and levels of affluence and education. Both intuition and available evidence suggest that there is a table of relationships along the following lines:

Need level	Income level	Education level
Level 1	< $3,500	8th grade or less
2	$3,500 - $ 7,500	Some high school
3	$7,500 - $15,000	High school graduate /some college
4	> $15,000	College graduate
5	----------	

Such a table is obviously shot through with generalizations and exceptions, and breaks down on the linkage between self-actualization needs and income level. There seems to be no real correlation between these two levels — and this very fact may offer a useful clue in speculating about the future.

Generally speaking, however, the predicted increases in affluence and education bear out the hypothesis that there will be a marked shift in the population profile from the lower-level needs to the higher-level needs. Specifically, as a start, it is possible to predict that by 1980 there will be fewer people in the poverty class, and so a reduction of emphasis on survival and safety needs nationally. At the other end of the spectrum, increasing affluence, more education and the changing composition of the labor force will mean a rise in the number of high-income individuals, college graduates, professional and managerial personnel, and so an increase in emphasis on social, ego and self-fulfillment needs.

Focusing on levels 3 and 4, it is possible to note an upward shift within the range in the recent past, and to project further movement in the future. The Fifties might well be characterized as a decade of belongingness, conformity and "the organization man" — a time during which perhaps half the adult population operated, by individual disposition, at level 3. In the Sixties the new emphasis on college education and the growth of professional and technical personnel (note the new slogan "A man is now motivated more by concern for professional integrity and advancement than by loyalty to his company") brought increased emphasis on knowledge, competence, professional recognition and status. Forces for the future indicate a growth in the level 4 population to a point where they approximate in numbers those at level 3; and, combined, these two segments would account for perhaps two-thirds of our total adult population.

In fact, the significance of this upward movement is somewhat understated if it is viewed solely in terms of number of people at each level. This is so for two reasons:

1. The *quality* of the needs at each level will be progressively upgraded. To take an obvious example, what we now consider adequate for survival and security is at a higher level than in an underdeveloped country, or even than it was in this country thirty years ago. We must expect that the poverty-level budget will continue to be raised in accordance with rising expectations of the poor and the public's concept of social justice. Similarly, ego needs can be met by conspicuous consumption or by professional acclaim. There is a clear qualitative difference between these two modes of satisfaction, and the evidence suggests that move-

ment will tend to be away from the former and toward the latter.

2. The trend-setters, "influentials," and power-holders of society tend to be heavily concentrated in levels 3, 4, and 5, rather than proportionately distributed throughout the population. Therefore, the *influence* of these groups in setting the tone and direction of our society is considerably greater than mere numbers alone might suggest.

Combining, then, the evidence of impending trends with the deductions that can be drawn from the Maslow thesis, it is possible to construct a profile of some of the more significant value-changes that may occur. In our work at General Electric we have attempted to plot some value-shift possibilities in graphic form. *This chart should be viewed, not as a detailed scientific measurement, but merely as a useful way of looking at the future.* Its plottings are meant to be indicative — pointing the way to a more comprehensive and systematic study of value changes — rather than definitive.

To point up the possible attitudinal changes as dramatically as possible, the chart which follows:

- has been made up of contrasting pairs of values (to a greater or less extent, that is, enhancement of one value implies a diminution of the other — e.g. war vs. peace; conformity vs. pluralism). Each society and generation has tended to seek its own new balance between these contrasting pairs, with the weight shifting from one side to the other as conditions and attitudes change.

- emphasizes the value changes likely to be most prevalent among the trend-setting segment of the population (young, well educated, relatively affluent, "committed"). These are the people among whom organizations recruit for the managerial and professional talent they require.

On the chart are plotted two value profiles — one representing the approximate balance struck in 1970 by these trend-setters between each pair of values; the other indicating the hypothetical balance that might be struck in 1985. It is important to stress that the chart attempts to predict value changes, *not* events: even though trend-setters may value, say, arms control agreements, events may lag behind their influence (e.g. due to political thinking of the electorate as a whole) or lie outside their control (e.g. regional wars among developing nations).

Some of the reasoning behind the plottings on this chart was given in our study, "Our Future Business Environment: A Re-Evaluation" (1969), but need not be re-examined here. Let me rather just summarize the character and extent of these value-shifts in a few broad-brush strokes.

First, however, it is important to stress that I am not talking here about "new" values. It would, indeed, be remarkable if, after many millennia on this earth, mankind had truly discovered a "new" value. What we shall be encountering might more accurately be described as a New Reformation — a major reformation or reordering of our public and private value systems. The major elements of this prospective reordering can be discerned in the shifts in emphasis:

- From considerations of quantity ("more"), toward considerations of quality ("better");
- From the concept of independence, toward the concept of interdependence (of nations, institutions, individuals, all natural species);
- From mastery over nature, toward living in harmony with it;
- From competition, toward cooperation;
- From doing and planning, toward being;
- From the primacy of technical efficiency, toward considerations of social justice and equity;
- From the dictates of organizational convenience, toward the aspirations of self-development in an organization's members;
- From authoritarianism and dogmatism, toward participation;
- From uniformity and centralization, toward diversity and pluralism;
- From the concept of work as hard, unavoidable and a duty, toward work as purpose and self-fulfillment, and a recognition of leisure as a valid activity in its own right.

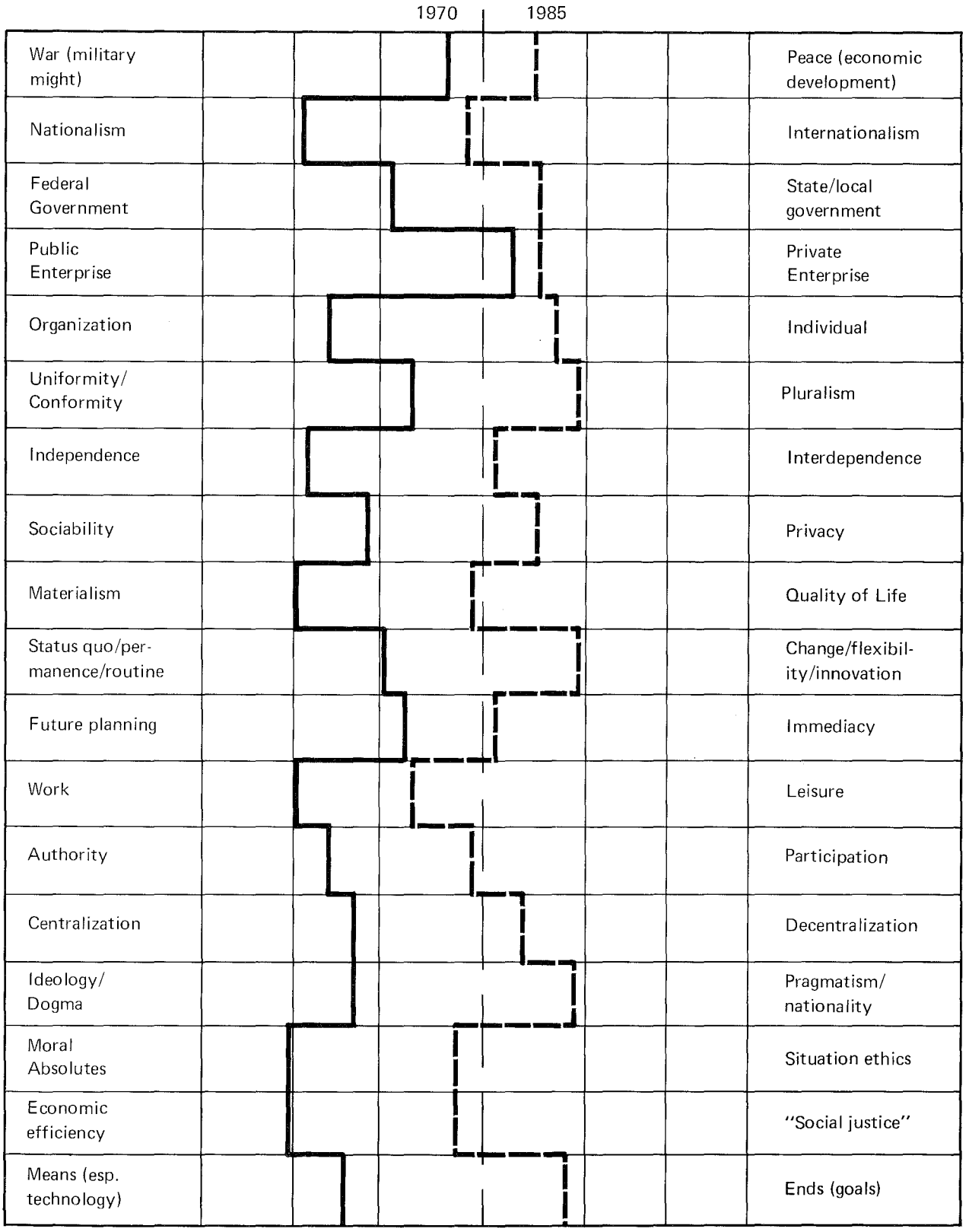
In total, such shifts represent a change of major proportions. Willis Harman goes so far as to equate this with a change in the "dominant paradigm" of our society. He uses this term in the sense which T.S. Kuhn gave it as "the basic way of perceiving, thinking and doing, associated with a particular vision of reality, largely embodied in unquestioned, tacit understanding transmitted primarily through exemplars." Thus Harman characterizes the industrial-state paradigm as:

- development and application of scientific method;
- wedding of scientific and technological advance;
- industrialization through division of labor;
- progress defined as technological and economic growth;
- man seeking control over nature; positivistic theory of knowledge;
- acquisitive materialism, work ethic, economic-man image.

Since Harman is convinced, as already noted, that the world macroproblem is essentially unsolvable in the context of the current paradigm, he postulates the emergence of a new paradigm. This new guiding philosophy he defines as "ecological consciousness . . . a metaphysic asserting transcendant man, and the goal of a person-oriented society."

It is, to a large extent, semantic quibbling to debate whether we should name this possible (I would say, probable) values-shift after my "New Reformation," Harman's "paradigm change," Theodore Roszak's "counter-culture" or Charles Reich's "greening of America." There are substantial differences among these

PROFILE OF SIGNIFICANT VALUE-SYSTEM CHANGES: 1970-1985



1970 Values Profile

1985 Values Profile

and other theories about the extent and timing of the shifts, about their impact on public-private sector relationships -- particularly, on the future role and nature of the business corporation -- and about the policy steps that should be taken to bring about, or facilitate, the change. However, there is a substantial area of overlap and agreement as to the fundamental causes and thrust of the potential change.

Just how possible or probable this value-shift may be remains a question. Herman Kahn throws his weight behind the theory of a "counter-Reformation" or "counter-counter-culture," contending that the "silent majority" of Middle America will not quickly abandon the old order of values. If the change were dependent solely on the outcome of a struggle for supremacy between the counter-culture of the campus and Middle America, I might be more persuaded by this line of reasoning. However, while conceding that there is no historical inevitability to the change, my contention is that it derives its momentum from some fundamental structural changes and "lines of stress" in our society. It is thus likely to change Middle America as well as the campus, and must be given a higher probability rating as an alternative future.

Some Concluding Observations

This is not the place in the seminar, nor am I the appropriate speaker, to start speculating about the educational implications of these trends. That exercise can be left to others. I would, however, like to offer a few concluding observations -- randomly selected, but, I hope, pertinent.

And the first observation concerns another apparent paradox. I would guess that most would conclude that my speculation concerned a shift to values that are "good," that this would be a step in the "right" direction. Some may even dismiss it as utopian or wishful thinking. I would point out, however, that this new concern with "good" values will not, of itself, usher in an era of sweetness and light. To the contrary, I envisage a period of *increased* tension as public debates polarize about conflicts in values.

One conclusion that we may draw from all the foregoing is that there will be greater importance, and greater complexity, attached both to the articulation of values and the formulation of more explicit goals -- for ourselves, for our institutions, for our society. It should be evident, I think, that, as the "quality of life" becomes more and more our aim, so it becomes increasingly important that we identify and debate our values -- an exercise in which few of us are adept or happy -- for these will be major determinants of the specific goals we set.

"Better" requires more philosophizing, if you will, than "more." So long as our goals were mainly quantitative, there was less need to debate about the nature of the next steps for our society and economy. The immediate physical needs had an obviousness and compulsion to them that made philosophizing largely irrelevant. They also, incidentally, generated a powerful unifying force in our society. To be sure, we have debated value-laden issues of the distribution of wealth and, increasingly, of the ordering of our economic priorities.

It seems obvious that, as values have to be made more explicit, goals established and priorities selected, the potential for confrontation, conflict and polarization will be increased. Daniel Bell notwithstanding, I have the feeling that reports of the death of ideology have been greatly exaggerated. Values, however "good," are always arguable: the new schema of values that I have outlined could, indeed, be said to represent a new ideology.

A further point is that it is not enough that values should be "good" for them to be adopted. They must also have social utility; and we must work to give them organizational expression. I trust that I have made clear my belief that these values are both the effects of basic societal trends and, at least, the potential causes of future solutions to societal problems. Therein lies their social utility. There remains, however, the task of building into our institutional systems the possibilities for a fuller expression of these values.

We are not perhaps fully aware of the extent to which these systems currently reflect certain values. We are more used to thinking of them as delivering a product or service than as reflections of our values. The current trouble -- the trouble that puts so many of our institutions on a collision course with the future -- is that they reflect almost exclusively organizational values such as order, routine, output, authority, efficiency. They reflect inadequately such other values as individualism, self-development, personal relationships, due process, equality.

Our task, therefore, is to recognize the potential danger of this collision, and to set in motion the process of institutional reform needed to avoid it. This will be an effort in social change of the first magnitude. "The tasks of social change," John Gardner has said, "are tasks for the tough-minded and the competent." He added that "those who come to the task with the currently fashionable mixture of passion and incompetence only add to the confusion."

I have suggested that institutions will increasingly have to subordinate considerations of organizational convenience to the wants, needs and aspirations of their members and their clients or customers. Combined with the need for flexible response to fast-changing conditions, this means that we must start to look at "organization" in a different way.

Organization appropriate to these changes will tend to become:

- *less a structure* within which carefully predetermined courses and objectives can be pursued,
- *more a framework* within which the "undetermined" -- which is to say the innovative, the improvised, the spontaneous -- can occur.

Unsettling though it is for the bureaucrats among us to contemplate, temporariness rather than permanence will be the hallmark of the post-industrial organization.

A further change in our perspective on organization may perhaps best be indicated by a change in imagery. We traditionally represent an organization as a pyramid when we draw it on a chart. It neatly reflects the fact that you have one man "at the top," then a "layer" of five or so subordinates, then another "layer" of maybe 30 supervisors, and so on to the "lowest level" of nonmanagerial personnel.

For me, this representation suffers from two defects: it over-emphasizes the notion of "superiority" as between one level and the next; and it -- falsely, I think -- represents the organization as being literally dependent on one all-seeing, all-knowing manager at the top.

I would be prepared to dismiss this as "just a picture," and so unimportant, were it not for the fact that people in organizations often behave as if it were true. This is one of the images we live by, as Kenneth Boulding would say, and people act out these appearances of "superiority" and "dependence."

I believe that a circle, if anything, more nearly represents reality. At least this image accurately indicates the responsibility of the central manager for supplying a focus for the organization's activities and a centripetal force that holds together the various components of professional expertise that make up the whole. It also suggests – again, accurately – that the central manager is the one mainly responsible for imparting an inner dynamism to the organization.

This schematic representation would show the professional and technical, i.e., nonmanagerial, personnel on the periphery of the circle; and this would represent them as being what, in fact, they are – the real "cutting edge" of an organization.

Finally, coming to the focal theme of this seminar, I would note the key and changing role to be played by education in our post-industrial world. The term, "the learning society," is indeed an apt, even if partial description, in view of the primacy of new knowledge and the consequent imperative of career-long education. At a time when knowledge keeps no better than fish, as Alfred North Whitehead once remarked, we shall most certainly have to institutionalize this process of life-long learning and finally reject the dictum, made real in all too many career-patterns, of "Get educated, *then* go to work." This, in turn, suggests a blurring of the division between formal education and other institutions in our society. For instance, I find it quite conceivable to imagine the emergence of the corporation as a degree-granting institution, in association perhaps with a university, or an educational consortium, to take care of the self-development needs of its employees, and to help solve the problem of "recertification" of those professionals hardest hit by the continuing obsolescence of their knowledge and skills.

There remains, however, the question of what should be the basic purposes of formal education, at least through the years of adolescence and possibly through young adulthood. In the sort of fast-changing and "pre-figurative" culture, to use Margaret Mead's term, that we seem to be adopting – in which, in a sense, the young are the leaders – education will be less concerned than it has been in the past with the objectives of transmitting accumulated knowledge and perpetuating the culture. Without in any way implying that the past has lost its educational usefulness, I would submit that the purposes of education will be fundamentally concerned with three objectives:

1. helping students "learn how to learn," through stressing the cognitive and perceptual skills needed for life-long, self-motivated learning;
2. helping students learn how to manage change, through stimulating an understanding of the forces of change in our society;
3. helping students toward satisfying their self-actualization needs, through making the individual student the prime focus of the educational system.

I shall let those propositions stand without further elaboration at this time and conclude with a quotation from the country wisdom of Robert Frost that seems particularly appropriate, both to my remarks and to the theme of this seminar:

"When I was young my teachers were the old.
I gave up fire for form till I was cold.
I suffered like a metal being cast.
I went to school to age to learn the past.

"Now I am old my teachers are the young.
What can't be molded must be cracked and sprung.
I strain at lessons fit to start a suture.
I go to school to youth to learn the future."

FORECASTING AND CONTROLLING SOCIAL CHANGE: FOCUS ON HIGHER EDUCATION

by
William A. Ammentorp

When we reflect on the topic of societal change, at least two major problems come to mind. First we confront the broad changes in the fabric of a society resulting from those social processes which are interdependent but are a relatively uncontrolled set of new conditions for men and their institutions and organizations. These are developments we try to predict since they will be the occasion for social and organizational problems in the future. Our second problem is our interest in controlling the course of social change and in modifying the organized aspects of our society to realize some rather general goals held by all citizens. The specific questions these problems raise are: "What are the large-scale social changes subject to little control and what is their potential impact on the goals of the society?" and "What institutional and organizational forms and practices are most likely to lead to the attainment of societal goals in the future?"

The two papers to which this response is directed speak to these questions in the general areas of social goals and the structure of higher education. Although there are some problems of interpretation in the two papers as to their contribution to the above view of societal change, there is considerable substance for speculation as to the ways higher education might meet the expectations of a mature social order.

There is a suggestion in Wilson's paper that we are likely to experience a shift from a means oriented society to one concerned with some very humane ends. This shift is a reasonable expectation in a nation where the technical means to manage growth in population and scarcity of resources is effectively applied. However, because Wilson fails to deal with the problem of social control, his world of the future is a good deal brighter than seems reasonable. If we accept the principle that man's growth in numbers and, to a degree, in possible behaviors, has a finite limit, bounded by the earth and its resources, then control over the directions of growth becomes a central issue. For example, it is easy to imagine that a future society will have less of the "good" values suggested by Wilson and more of the tension and frustration associated with intolerable environments, ever increasing discrepancies between those who have and those who have not. This would lead, if one accepts Maslow's rather simple view of motivation, to those "needs" lower in the hierarchy – we would then speak of survival rather than fulfillment as a reasonable view of the society of the future. Instead of a "green" America, we could readily progress to one of a more terrible hue such as described in the *Clockwork Orange*.

The most elemental constraint on the future course of society is correctly identified by Wilson; namely, that mankind and its surroundings are linked in an impressive array of complex systems. These systems cannot be controlled or directed by conventional wisdom; their many internal feedback structures dictate a durability of direction almost resistant to man's attempts at management. If these systems cannot be adequately analysed so that causal variables can be identified, then the crises of frustration will not be limited to those removed from the levers of control.

The most telling contribution of Wilson's paper is the articulation made between a finite world where growth must be checked and the ends we will attempt to attain as controls are applied. For it is apparent, at least to me, that growth must either be managed or the environment will react to limit the scope of man's use of space and resources. As Forrester suggests in *World Dynamics*, uncontrolled growth may have already gone too far, so that the quality of life available to man can only decline in the future.[1] The fact of physical limits to growth, coupled with a declining pool of the resources for the "good life," makes the immediate future a time when some very hard decisions will have to be made regarding the mode of social control and the distribution of personal benefits to members of the society.

These two dimensions to the future raise old issues, those of the appropriate locus of government and the ends government is to attain; issues which have long occupied philosophers. We are beginning to see that speculation and reasoning from certain basic principles produce very little in gross betterment of mankind at large. In fact, reasoning of this type produces the ideologies which divide the world and permit men to exploit their own kind and their environment. Clearly, there is a need for a science of society and for the commitment to control social development through government. This implies a mature form of government which will be able to use collective power for the general good rather than for the benefit of limited economic and class interests. This would have to be a first priority in institutional change, if we are to manage our adjustment to an increasingly finite world.

The need for reformed organizations and practices is quite apparent in the futures seen for higher education by our current generation of policy makers and managers. Huckfeldt's paper is ample testimony to the weakness of collective wisdom as a means for dealing with the complexities of social change. Pooled ignorance is, not surprisingly, still ignorance. As the reader compares the two papers, he must be struck by the degree to which the respondents in Huckfeldt's reported Delphic probe are unaware of the cosmic social changes suggested by Wilson. It seems as if those who predict coming events in education are able to accomplish only a limited extrapolation of their own educational experiences.

The main impact of the Huckfeldt paper is, then, the woeful inadequacy of education management for the complexities of the future. Education, like all other forms of human activity, is a part of a system of interdependent flows of people and resources with a rather intimate relationship to commonly held social goals. The only way that education can be integrated with broad questions of social change and control is to set the constraints confronting society upon educational organizations. Only when these limits have been quantified can we take a sensible look at some alternate policies for education and their balance between social achievement and expenditure of resources.

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[1] Jay Forrester, *World Dynamics*. Cambridge, Mass.: Wright Allen, 1971.

If this kind of accounting is done, the most striking finding is that the present structure of education – and especially higher education – is insufficiently adaptive to the management requirements of complex systems. Research on education systems carried out at the University of Minnesota has demonstrated that social systems with rigid, incremental movement of personnel and resources are not susceptible to control; using output measures as a basis for policy. This fact alone renders any attempt to manage the present system of higher learning an exercise in futility. Instead, the education system must be restructured to account for continuity in flows of people and resources and to make explicit the interactions between educational activities and social development.

No matter what values we attempt to maximize through education management, we are clearly approaching a crisis in the government of schools. This is parallel to the crisis of governments which cannot adapt current forms of control to dynamic systems. To speak to this problem, there are two lines of intellectual development which are essential: 1) a new view of management control as an intimate part of the dynamics of social systems and not an artifactual distribution of authority among competing interest groups and 2) a "science" of organization which can treat the dynamics of human systems both at the organizational and societal levels.

For educators, these needs are preceded by one overriding concern; that is, to impress on those who design and manage education organizations that their activities are a part of a dynamic system. Such is not presently the case. In my own conversations with Dennis Meadows – now at Dartmouth College – we agreed that education as it is currently structured and managed is insufficiently dynamic to be an interesting topic for study. When we see education as a dynamic social process, and one capable of being controlled, then we will be on the path toward a managed contribution to the social changes of the future.

IF – THEN

by
W. Ray Cross

Rather than wrestle with the accuracy or inaccuracy of Ian Wilson's prophecies, I think I shall elect the cop-out of the weatherman, who, confounded by the data on his meteorological charts, turned to the TV audience and said, "After all, only God really knows." The single critical comment I would make is related to the usefulness of the Maslow hierarchy for conceptualizing society's values. Originally, Maslow's framework was designed to explain and predict the motivations of individuals; E.C. Bouge has recently applied it to the behavior of organizations, and now it is being applied to an entire society. While I personally find this use of the framework intriguing, I'm sure that the limits of the application of the Maslow hierarchy fall somewhere short of an analysis of the inter-stellar social order or the behavior of the deity.

What I prefer to do is to adopt an if-then stance by accepting Wilson's forecasts as valid and then suggest what influence his predicted value shifts might have on elementary and secondary school organizations. Assuming, then, the accuracy of Wilson's predictions, the value shifts, will, of course, have a decided impact. The answer to George Count's question "Dare the Schools Build a New Social Order?" has been a resounding "No!", and I would expect that schools will continue to reflect rather than shape the dominant cultural values.

As I examined Wilson's profile of projected value changes, it occurred to me that one might perform a sort of eyeball factor analysis and thereby reduce the number of value dimensions. War vs. peace and nationalism vs. internationalism, for example, would clearly load on one factor; ideology vs. pragmatism and moral absolutes vs. situation ethics would load on another, and so on. While I did not push the analysis to completion, there did emerge one factor which would have vast implications for elementary and secondary schools. On this factor would load the dimensions of organizations vs. individual, uniformity vs. pluralism, authority vs. participation, and centralization vs. decentralization. One may call this factor anything one chooses, if you care to acknowledge its existence at all, but I would call it universalism vs. particularism. The trends in all of the continua coming under this factor suggest a trend toward greater responsiveness to individuals and small social segments. *If* this is valid, *then* how might this value shift become manifest in schools? It seems to me that there would be two major manifestations, both already evident to some degree. These are the provision of alternative schools and the decentralization of decision-making in public school organizations.

Alternatives to the dominant, and usually monolithic, public school system have historically been available only in the realm of private education in the United States. Until recently, the options were typically private preparatory schools or church affiliated schools. New forms are rapidly developing, however. The so-called free schools, or alternative schools, have, since 1957, experienced a growth pattern which Allen Graubard has displayed as a J-shaped curve, and one can only expect that, as the value shift continues toward particularism, the emphasis on alternative forms of schooling will increase. Already, some public school systems are bidding to coopt the free school movement through the provision of alternatives and it seems reasonable to think that the monolithic, district-wide program will become obsolete.

I do not share Ivan Illich's apocalyptic vision of a de-schooled society. In spite of evidences of dissatisfaction with public schools, I don't think Americans know what else to do with their children except send them to school, and public schools are, in the main, the only ones available. Furthermore, teachers' organizations constitute a powerful deterrent to any efforts to de-institutionalize education.

There will, I think, be one constant among the alternatives, and this is basic skill training. I find compelling the logic which suggests that those without the basic skills would fare poorly in what Wilson refers to as a "technetronic age." Furthermore, some recent research conducted at the University of Minnesota indicates that even parents who have chosen to send

their children to free school place considerable priority on basic subjects.

If I may editorialize here, I'm not sure that the movement toward the provision of alternatives is an unmitigated good. There is a great potential for the intensification of social cleavages in the options bag. Again, some of our research has suggested that there *is* some self sorting along social class lines when parents choose their children's school.

The decentralization of decision-making in school districts would appear to be a natural concomitant of alternative programs. A non-monolithic program requires a non-monolithic administration. The decision-making should move out to what Wilson refers to as the cutting edge of the circular organization – from school boards and the superintendency to teachers, students, principals, and parents; from the central offices to the attendance centers. I would not be surprised to see the greatest opposition to decentralization coming from leaders of teachers organization, who would find collective bargaining a much less manageable means of exercising power in a highly decentralized organization. Nevertheless, if Wilson's value shifts do occur, there will be an inexorable shift from top-down to bottom-up decision-making in public school organizations.

Finally, I think we will be making a mistake if we expect cataclysmic changes in school organization. I hold to the view that the best way to project the future is to pay attention to the past. Though there have been some rather significant social changes over the past half century, schools have not undergone revolutions. Changes have typically been of an incremental nature, and I would expect that pattern to continue in the future. In "the long run," I'm sure that schools will be quite different from their present state. Resisting the impulse to quote the time-worn cliché about "the long run," I would simply say that we must operate schools in some fashion in the meantime, and we must, therefore, be careful about making plans based on expectations of dramatic upheavals in the nation's schools.

BEYOND JESUS, MARX, SKINNER, AND ILLICH

by
Don A. Morgan

In an egalitarian society such as ours, a basic problem is the assignment of economic roles and economic role expectations.[1] In the main, this function has been transferred to educational institutions and away from primary groups. First an economic role for an individual is established through a certification process called education, and the result is the distribution of the educated throughout the economy. This has been accomplished both through success and failure relative to individuals subjected to the process; i.e., success results in one economic role and failure in another. Self actualization and ego needs are not regarded as the principal center of this process; which is to say, the individuals being educated are *not* as important as what they are being educated for – doing rather than the being.

Following this general mandate, education of the formal variety – that which excludes the conglomerate of experiences and learnings occurring beyond the classroom – has been marked and marred by practices blatantly elitist, racist, and sexist. This process has not sought to include people, but in the main has functioned to exclude. This reflects, in major part, the predispositions and desires of the supporting society.

The tendencies of education as an institution to mirror society has led also directly to the rise of something which might be described as either a "unicorporation" or perhaps the "corpouniversity"; either being the capstone of the union between the economic realities of a society and the educational processes formally designed by that society to meet its needs and more clearly seen in higher education's relationship with industry.

In the broad sense, there is nothing immoral relative to either the practices or the consequences of presently organized education so long as the basic needs of the society are met. There is everything immoral about both the practices and the consequences if the needs of the society are not met.

The question which emerges is, of course, what is the role of the present-day individual in his society and what is the role of education as a social catalyst. This question is particularly pertinent in a time when there exists a plethora of human beings not needed or wanted in the production processes of this country. Schools have competed for these excess humans in a non-thinking, empire-building fashion by inventing new educational opportunities for those they have just excluded and with little regard for the consequences – the promise of economic placement and mobility which may not be realized in fact.

The full schizophrenic situation of education can now be visualized. Education has come to be required to be the principal excluder from further educational opportunity, and hence to enhance or limit economic role, and the principal includer of those just excluded. The not unexpected response has been the invention of a whole new series of schools to pick up the debris cascading out of existing institutions, and a critical problem is that the new schools mirror in large part the practices of the old ones; which requires yet unheard of schools to be invented.

The two papers under review – Huckfeldt's and Wilson's – would seem to agree that change in education is both inevitable and desirable. Further, they seem to agree that such changes will result from the convergence of pressures created from present inequities and inefficiencies which flow from both organizational and philosophical shortcomings. Both have tried valiantly, and within carefully delineated parameters, to mark out in advance some of the directions which might be taken.

[1] Unless otherwise specified, basic references are: Jean-Francois Revel, *Without Marx or Jesus*. New York: Doubleday, 1972; B.F. Skinner, *Beyond Freedom and Dignity*. New York: Alfred A. Knopf, 1971; Ivan Illich, *Deschooling Society*. New York: Harper and Row, 1971; T. Parsons and E.A. Shils (eds.), *Toward a General Theory of Action*. New York: Harper and Row, 1951.

Neither has come to grips adequately, in my opinion, with concern for the underlying causes of the present problems which begin in part with a marked characteristic within education, supported by its proximity to the economic sector of the society, of not only resistance to change but impermanence to realistic change.

Underlying the present dilemma to me is the harsh fact that this society produces too many people and too many goods and services, and it is not sufficient to me to redefine education merely as the more efficient consumer of people and goods not wanted or needed elsewhere. Behind this criticism is the appearance to me, in both papers, of an underlying assumption that it will continue to be "right" for all people to expect and be required to "do" something, even though this will require an endless invention of new things to do which may, or may not, address the real needs of either society or the individual. The corollary of this assumption appears to me to be that the learning of how to do whatever it is that is going to be done can still best be achieved through subjecting people to the collective efforts of that enterprise known as education. Secondly, it is assumed that education, in some modified form, is capable of, in Wilson's language, a "new reformation" or other self-actualizing process which will make it adequate to the task. McCarry, in writing about Nader, cut much closer to the reality of social rigidity:

> The public Ralph Nader, with one foot on the carcass of the establishment, may be seen as the implacable in pursuit of the doomed. But after five years of fame, during which he has gathered about himself a great coalition of the disgruntled, he still sees nothing but desolation. *The system cannot change and it will not die.* This truth has made him hoarse.[2] (emphasis added)

Schools are very much part of that "system" to which McCarry refers.

Utopians come in various guises and with various persuasions. Each, in however indirect a manner, suggests the possibility of a Nirvana. Each supports the notion that the human is not now embraced by this heavenly grace, and each suggests the human can move steadily towards such a possibility – Marxists above all seem to fall endlessly into this simplistic trap.

Each utopian, from Christ to O'Leary, has strong convictions about how the "trip" might best begin and towards what goal. The two papers by Huckfeldt and Wilson perch on the edge of this rhetorical precipice. Each does not entirely avoid the trap that words such as progress and perfection set. Both did not really deign to grapple with a future in any other terms than in schooling, and both seem haunted by the Skinnerians that perhaps "control" stemming from properly managed behavioral objectives and properly managed social systems will lead man out of the present dilemmas of freedom and choice. "Control" is another trap leading to the farther reaches of elitism where answers are prepared and imposed. It would be extremely efficient if only some single unit could gain total control but this has never occurred. The problem then becomes, as for example in the case of Roosevelt vs. Hitler, one of somehow reconciling what is meant by "elite" and "control."

Illich keeps insisting, "The central issue of our times remains the fact that the rich are getting richer and the poor poorer." Revel notes that in order to redress present inequities, ". . . one must be able to see a clear relationship among nature, technology, economic power and political power." And further that, "Beneath every revolutionary ideal we find a conviction that man has become a tool of his tools." It is my conviction that more of the same, in the sense of endlessly extending services in the name of education in however modified a form, misses the whole point. Education has not contributed to the eradication of poverty, and it has not led the "educated" to the "clear relationship" of man and his *milieu* as called for by Revel.

Though the present process of extending school in terms of the years an individual is involved, and in terms of inventing modified forms is *not* supported by experience. There is also *no* attempt to recommend that all join forces with Illich to "deschool society." This suggestion of Illich's does not make good sense to me. This would seem to suggest that a basic social institution in its entirety can be abandoned and there is no documented precedent in the whole of human existence to suggest this to be even a remote possibility. Revel's notion that a revolution is in progress also leaves little to cheer about. *All the revolutions of the world laid end to end have not done away with either the family, the church, some basic form of economic order and none will do away with education.* Not even the present favorite whipping boy of higher education is in any real danger.

So if education can not be done away with, and if it has proven remarkably resistant to any real reform or change in the past and is likely to in the future, why bother?[3] Let it be! It is an anachronism which, as with many old wives' tales, contains germs of truths relative to societal needs. In this connotation Huckfeldt's and Wilson's papers make sense. Education can be made more elitist, racist, and sexist by making it more efficient than it now is. Efficiency alone does not address directly the underlying problem of too many people and too much available energy, but this is not the proper concern of education in the first place. It adds nothing meaningful, to me, to have education continue in the role of a major consumer of human beings. This succeeds only in placing education alongside welfare and war as short-term, woefully inadequate methods of dealing with a common problem.

It would have pleased me more in these papers, in regards to the future, to have education assigned a role of cleaning up its own house – the first order of business being to avoid what Lippmann called the tendency of democracies to fall prey to their own propaganda.[4]

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[2] Charles McCarry: "The Public Ways of the Private Nader," *Saturday Review of Literature.* February 12, 1972, p. 36.

[3] Lane, Corwin, and Monahan, in *Foundations of Educational Administration*, attribute line and staff administrative organization to Philip of Macedonia. I suggest that, approximately 2,500 years later, this is still the basis of school administration. Humanistic and behavioristic attempts at modification of line and staff have had modest success at reform and have in no way dented the basic theories involved.

[4] Walter Lippmann, *Public Opinion*. New York: Harcourt and Brace, 1922.

Education firstly has not been the answer, but has been instead one of the major problems for increasingly large numbers of people, and it is time those involved recognize and admit this is so. There is slight chance that any real change in the value structure of the country will allow education to be much different than it is, and there is no real source of pleasure in considering an endless invention of alternative approaches to the same result.

What is needed, to me, is a consideration that schools are here, they can do certain specified things and no more, and then we can best turn our energies towards the invention of a wholly new institution to deal with the unmet problems now gravitating, willy-nilly, towards the educational enterprise. This will require that we proceed past Christ, Marx, Skinner, and Illich, to name only a few.

No attempt to criticize these substantial papers point by point will be made here. As restrained and concise approaches, they each made contributions. The critique has centered up to now on the perspectives which seemed to underlie the approaches to the studies. However, before moving totally on and away from them, I think it of some value to pose some questions.

The use of Delphi *without validation*, in the study Huckfeldt reported on, must be criticized. Even his own statement that the Delphi approach, ". . . has resulted in studies with proven ability to forecast technological, and, to a lesser extent, sociological changes," should be documented.

Part of the problems with such studies, as Huckfeldt reported, spring from time; events subsequent to forecasting do some damage to previous conclusions. For example, there was really no way the experts involved in this study could have correctly foreseen, nor judge, in 1970 the impact of the shifts and downward trend in student enrollments in higher education seen first in 1971 and repeated in 1972. With a major conclusion of the study that higher education will become more accessible, it does not now seem to follow that students will be attracted to existing forms of it.

The most serious flaw of Huckfeldt's study is found in the quality of "experts." First, the student experts are "winners" and not "losers"; student body presidents rather than those who came to the university and did not find anything of value and left. Other experts were clearly drawn from the establishment; those hardly likely to come up with anything very futuristic, let alone revolutionary.

Wilson's paper was *not* flawed by a calculated risk of using the word "value." The difficulty with such an approach is, of course, the globalness such a word imposes. And perhaps because he is from the private sector, there was too easy an assumption made that all were on the same value scale; e.g., increased doses of education and subsequent income increase are "good" and they lead to "good trend-setters." This would not be expected to be accepted as valid by many.

One must also question the suggestion of good resulting from the further interposition of business practices and firms into the social sector — the Job Corps and Texarkana both suggest unpredicted and severe limitations in the purely entrepreneurial approach when applied to the social sector.

Following Sinclair, who noted the proclivity of the private sector to "train managers" struck him as much like, "training ants to make insecticide," the prospects of a further union of business and formal education such as Wilson has suggested poses a paradigm fraught with peril.[5] There once was a pronounced morality relative to the individual in education. There has been only one morality within business — from Calvin to now — profit, even if it involves the manufacture for use of napalm.

[5] W. Sinclair, an address to the Association of Canadian Community Colleges, October 16, 1972. Toronto, Canada. Dr. Sinclair is Vice President, the Canadian Broadcasting Corporation.

PART II

"Forecasting Methodologies"

Papers By: Denis F. Johnston
Senior Demographic Statistician
U.S. Department of Labor

Stuart Sandow
Associate Director
Educational Policy Research Center
at Syracuse

Reaction Panel: Robert H. Beck
Chairman and Professor
Social and Philosophical Foundations
of Education
University of Minnesota

Luther P. Gerlach
Professor of Anthropology
University of Minnesota

Richard H. Hall
Professor of Sociology
University of Minnesota

Jack N. Shuman
Program Analyst
U.S. Department of Health, Education,
and Welfare

Paper By: Earl C. Joseph
Staff Scientist
SPERRY-UNIVAC

SOCIAL INDICATORS AND SOCIAL FORECASTING

by

Denis F. Johnston*

Part 1. Types of "outlook statements" and their uses

In considering alternative forecasting methodologies, it may be helpful at the outset to distinguish among three basic types of outlook statement: predictions, projections, and forecasts. Predictions and projections are commonly regarded as synonymous, particularly when they are prepared by means of rigorous quantitative procedures involving expressions in the form of equations. Nevertheless, a prediction can be differentiated from a projection by virtue of the degree of confidence associated with the governing law which permits a prediction to be made in the first place. The act of prediction is commonly viewed as analogous to that of explanation. A phenomenon is explained when we have identified a governing principle – or a covering law – and a set of initial conditions which jointly give rise to its occurrence. By the same token, a phenomenon may be predicted when the initial conditions and governing principle which jointly entail it are found to exist.[1]

Valid predictions are by no means restricted to the realm of the physical world; the occurrence of Presidential elections in the United States at four year intervals, the volume of traffic passing a given point over a specified time interval, the number of deaths per year in a particular population, and the number of young people entering elementary school each Fall are obvious examples of social behavior which can be "explained" with sufficient confidence to permit prediction. But even these examples suggest the limited domain of our predictive powers in the area of social behavior. If we may confidently predict a national election in 1976 and 1980, can we be as confident about 1984, or 2020? Obviously, the "covering law" relating to national elections can be amended in the future. Similarly, predictions of mortality, traffic volume, or school enrollments assume the continued operation of observed regularities which might be profoundly altered at any future time, no matter how disturbance-free they may have been in the past. In general, if our ability to predict social phenomena presupposes our ability to explain them, such predictions must reflect the highly contingent and partial nature of our understanding of their underlying causes. One consequence of this circumstance is that the confidence associated with most of our social predictions is inversely proportional to their time span. In other words, even in those rare cases where our understanding provides sufficient grounds for valid prediction over the short run, the extension of such predictions over a longer time span converts them into projections.

A projection, like a prediction, usually involves the application of some governing principle – or covering law – together with some specified set of initial conditions, from which may be derived future values of the phenomenon in question. Unlike a prediction, however, a projection involves the explicit *assumption* that some governing principle or observed regularity will continue to operate over the projection period. The typical expression of a projection in the form of an "If . . ., then. . . ." statement emphasizes its conditional nature. In fact, a projection may be, and often is, developed to reflect the hypothetical interaction of postulated conditions for which there is little supportive evidence, or which have a low probability of occurrence, or which are deliberately counter-factual.[2] In short, we rely upon projections in dealing with phenomena whose determinants are insufficiently understood, or inadequately controlled, to permit valid prediction. But in addition, we may utilize projections as exploratory or heuristic devices whereby we can consider the potential effects of conditions which lie outside the range of observed experience.

Finally, the basic distinction between a projection and a forecast primarily reflects the different purposes they are designed to serve. A forecast may be defined as a projection which has been selected from some set of alternative projections as representing the "most likely" outcome. Its distinguishing characteristic is the judgment, or decision, which underlies such a selection. The need for a forecast is, of course, the usual reason for the

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*EDITOR'S NOTE: The author is Senior Demographic Statistician, Office of Manpower Structure and Trends, Bureau of Labor Statistics, U.S. Department of Labor, and Professorial Lecturer in Sociology, Georgetown University. His primary research interest at the Bureau of Labor Statistics is the development of long-range projections of labor force. Dr. Johnston is the author or co-author of a number of articles on labor force characteristics and projections, published in the Monthly Labor Review, and has recently completed illustrative projections of labor force for the Commission on Population Growth and The American Future. He has also served as consultant to the United Nations Secretariat and the International Labor Office on demographic aspects of manpower development.

[1] The argument that "prediction" and "explanation" are symmetrical processes is more fully developed by Carl G. Hempel, "The logic of functional analysis," in Llewellyn Gross (ed.), *Symposium on Sociological Theory* (Row, Peterson, 1959), pp. 271-307, and in Hempel, *Aspects of Scientific Explanation* (The Free Press, 1965) chapter 10. Also informative in this regard are Robert Brown, *Explanation in Social Science* (Aldine, 1963) and Eugene J. Meehan, *Explanation in Social Science: A System Paradigm* (The Dorsey Press, 1968). For a recent criticism of this view see Wesley C. Salmon, *Statistical Explanation and Statistical Relevance* (University of Pittsburgh Press, 1971).

[2] Projections based on "counter-factual" assumptions are both useful and common in the social sciences. For example, population projections assuming zero net migration, or assuming no net immigration, or school enrollment projections assuming no "loss" due to scholastic failure, mortality, or migration. In sociology, some of the Weberian "ideal type" constructs would also be of this nature.

support given to projection exercises. Our commitment to any definite plan of action extending into the future implies our commitment to some forecast or set of forecasts.

The major uses of outlook statements in general, and of projections in particular, may be described under the following six headings:

1. **Anticipatory functions** — This is probably the most important use of the every-day, working variety of projections which underlie the innumerable plans and decisions affecting the course of our activities in every sphere of life. In the field of education, for example, the expected number of school entrants at each grade level may be anticipated by examining trends in rates of school enrollment, and trends in population size by age. Similarly, projections of the anticipated number of new entrants to the labor force, including re-entrants, can provide some advance warning of year-to-year fluctuations which might affect their employment prospects.

2. **Program planning** — Both the formulation of policies and the development of programs designed to execute these policies are necessarily future-oriented activities. The rational pursuit of such activities, therefore, implies the application of a conceptual framework which permits a systematic appraisal of the possible or probable future environment in which these policies and programs are likely to operate. The development of projections, and particularly of forecasts, relating to the pertinent factors involved in such plans is, therefore, an essential component of program planning activity.

3. **Program evaluation** — To evaluate the effectiveness of any program, it is necessary to develop some notion of the outcome, or situation, which might have occurred in the absence of the program in question, or if some alternative program had been in operation. Without such an assessment, we cannot usually be confident that the results observed are attributable to the program in question rather than to the random, or accidental, effects of a host of "exogenous" factors. The fact that this truism is frequently overlooked in practice is probably due to the difficulties encountered in constructing the somewhat hypothetical projections, either forward or backward in time, which are called for in carrying out such evaluations.

4. **Inputs to more comprehensive outlook statements** — Projections or forecasts are seldom prepared *in vacuo*. In fact, it is likely that their greatest usefulness stems from their systematic linkage in a "chain of conjecture" which provides a more comprehensive outlook than any of its elements considered separately. An obvious example is the development of population projections which provide necessary inputs to projections of labor force supply, which are in turn used in the development of projections of potential employment by industry and occupation. Such projections, in turn, may be used to develop estimates of training needs on the one hand, and GNP on the other.

5. **Public information** — Experts on the functioning, or malfunctioning, of all forms of social organizations have commonly stressed the need for a steady and penetrating flow of information, with ample "feed-back" channels, both within the organization and between the organization and its principal clients. The specter of the "credibility gap" — a threat which is by no means limited to governmental institutions — is not only attributable to the faulty or misleading content of official communications; it also arises when the channels of communication are themselves faulty or inadequate.

   When Bertrand de Jouvenel proposed the institutionalization of a "surmising forum," he was concerned with the need for a colloquium of representatives from the several European nations, organized for the purpose of exchanging views on their mutual long-term planning objectives.[3] But his proposal has obvious applicability to any social organization which enjoys more than an ephemeral existence. Because the basic policies and program objectives of such organizations must extend into the future, and because the attainment of organizational goals must require some degree of public understanding and support, the need for comprehensive "outlook statements" is apparent. Equally apparent, of course, is the need to expose such outlook statements to public scrutiny, and to develop an appropriate mechanism for their revision in the light of the "feedback" they elicit.

6. **Exploration of "alternative futures"** — Viewed in the most general terms, projections may be described as heuristic tools whereby the possible consequences of alternative sets of initial conditions and governing factors may be delineated. Such exercises may have a certain limited educational value for those who actively participate in them. But in addition, they may serve a highly practical function for individuals and groups who are charged with the responsibility of developing long-range policies and related programs. The attempt to explore alternative futures can provide policy-makers with an improved awareness of both the constraints, or "trade-offs," and the degrees of freedom which characterize their operational environment. The important role of projections viewed as explorations of possible futures is well expressed in Dennis Gabor's dictum that the future cannot be predicted, but futures can be invented. Only by means of such "inventions" can the policy-maker be provided with a sense of the possible in a world which is neither fully deterministic nor fully random.[4]

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[3] Bertrand de Jouvenel, *The Art of Conjecture* — Translated from the French by Nikita Lary (Basic Books, 1967), chapter 20.

[4] Dennis Gabor, *Inventing the Future* (Penguin-Pelican Books, 1964), p. 161.

Part 2. Alternative projection techniques[5]

The techniques of projection which are available to the social scientist range from the impressionistic and value-laden speculations of the social critics to the quantitative forecasting techniques of the econometricians. Strictly speaking, any outlook statement, whether it merits designation as a "prediction" or is merely a projection, forecast, or outright guess, is an extrapolation from our perception of our past and present condition. In his provocative criticism of the current generation of outlook statements, Robert Nisbet makes the trenchant observation that these efforts tell us very little about the future, but are quite revealing about the forecasters' perceptions of the past and present, as filtered through their adopted methodologies and values.[6] This profound and sobering truth is derived from the epistemological principle that all knowledge of the past, present, and *a fortiori*, future must take the form of ideal constructs whose components can only reflect the current state of our knowledge, and whose selection and organization reflect current notions of relevance and scientific acceptability. One consequence of this insight is that the art of forecasting must be recognized for what it is: an attempt to develop a plausible prognostication under environmental conditions whose workings are only partially understood and whose future states are only partially controlled at best.

1. The Delphi method

One of the most flexible projection techniques is the "Delphi" method. This approach is actually a rapidly growing family of techniques which have been applied to a wide variety of projection problems.

The Delphi technique was developed initially for the purpose of pooling the informed opinions of selected panels of experts with respect to the likelihood and timing of the appearance of different technological items or developments currently envisioned but not yet realized. In its original form, this procedure involves, first, the preparation of a questionnaire relating to the subject area of concern. The questionnaire items may consist of any combination of codible materials; statements with which the panel experts may agree or disagree, or questions which they can answer by choosing the most appropriate of the responses provided, as in multiple-choice examinations. Some allowance for lengthier expressions of opinion may of course be made as well. Next, an appropriate panel of experts in the particular area of concern must be selected. When the panel has received, completed, and returned their questionnaires, the results are pooled, coded, and averaged. In the second phase, these integrated data are circulated among the same panel members. In this phase, panelists whose initial responses differed markedly from the group norm are asked to either modify their responses or to provide more elaborate defenses of their positions. These responses are again pooled, averaged, and redistributed. The cycle can be repeated as long as the process appears to yield significant changes in the expressed views.

Two features of this technique would appear to warrant its adoption in social forecasting. First, it avoids the need to bring the experts together in a committee setting. Second, its reliance upon a readily coded schedule of items permits a rapid and objective measure of the "range" and "central tendency" of the responses obtained. Experience with the Delphi technique is rapidly accumulating, particularly in connection with technological forecasting efforts, where its chief value consists in what Hacke aptly terms "delineating the boundaries of the possible."[7] The advantages of the technique, in addition to the welcome avoidance of time-consuming committee meetings, include the avoidance of some of the distortions commonly associated with committee settings, such as the spurious consensus obtained via the "band-wagon" effect, or the tendency to support the opinions of the more "authoritative" individuals, or the tendency to adhere rigidly to previously expressed opinions because their later modification is thought to imply a lack of conviction or competence. This technique may also reduce the distortions induced by the pressure of time which so often results in a last-minute profusion of hasty decisions.

The Delphi technique is not, however, free of dangers and limitations. The initial selection of the panel of "experts" is both crucial and difficult. Persons who enjoy the highest professional status in a given field may be fully in tune with the present, since they have probably influenced its evolution in some small measure, but they are not necessarily harbingers of the future. A more serious problem is the design of the questionnaires to be employed. If the items on the schedule are to be objectively coded, they must be presented in a rigid format; either as statements with which the respondent may agree or disagree, or as a set of alternative "answers" among which a choice must be made. Such techniques suffer from a twofold weakness: first, they force the expert to adopt one of the alternatives presented, so that the very subtleties of judgment which qualify the individual as an expert may be lost to view. Second, overly facile "box-checking" techniques invite rapid, off-the-cuff responses which may not reflect the careful consideration that is needed. Finally, the Delphi technique suffers from the loss of certain features which are unique to the committee setting. The interplay of judgments and influences that occurs in face-to-face

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[5] For further detail on this subject, see the author's "Long Range Projections of Labor Force," in *Long Range Forecasting Methodology*, A Symposium held at Alamogordo, New Mexico, 11-12 October 1967, (U.S. Air force, Office of Aerospace Research, issued by the Clearinghouse for Federal Scientific and Technical Information, 1968) pp. 97-129, and his more recent article, "Forecasting Methods in the Social Sciences," presented at the International Future Research Conference in Kyoto, April 1970, and reprinted in *Technological Forecasting and Social Change*, vol. 2 (1970), pp. 173-187.

[6] Robert A. Nisbet, "The Year 2000 and All That," *Commentary*, 45 (June 1968), pp. 60-66. A fuller development of Nisbet's insights is his *Social Change and History* (Oxford University Press, 1969).

[7] The underlying theory for this technique is presented in Olaf Helmer and Nicholas Rescher, *On the Epistemology of the Inexact Sciences* (RAND Corp., 1960). The findings of an early use of Delphi are well presented in Theodore J. Gordon and Olaf Helmer, *Report on a Long-Range Forecasting Study* (RAND Corp., Sept. 1964). For a recent summary of the technique, see Olaf Helmer, "Analysis of the Future: The Delphi Method," in James R. Bright (ed.), *Technological Forecasting for Industry and Government* (Prentice-Hall, 1968), pp. 116-133. For Hacke's exposition, see James E. Hacke, Jr., "Anticipating Socioeconomic Consequences of a Major Technological Innovation," in U.S. Air force, Office of Aerospace Research, *Long Range Forecasting Methodology*, (*Op. Cit.*) pp. 131-146.

association may be of great importance in the development of reasoned views on a given subject. Only through such contact can the participants perceive the nuances of meaning and intensity of convictions so essential in assessing the true significance of expressed views. Much of this contextual matter is lost when we resort to written communication. All of it is lost when that communication takes the form of statistical measures of coded responses.

A more recent modification of the Delphi technique is the development and analysis of "cross-impact matrices" whereby the interactions among specified sets of postulated developments and conditions may be systematically evaluated.[8] For example, such a procedure might permit the assessment of the impact of actual, or potential, developments in computer technology on the future demand for teachers or on teacher-training requirements. Furthermore, such analysis may provide a more realistic awareness of the "trade-offs" in terms of which the decision-maker must make his decisions.

In summary, the Delphi method, despite its limitations, is a highly promising approach to social forecasting in areas which are poorly quantified, or where the role of judgment is of paramount importance.

In his exposition of the twelve "modes of prediction," Daniel Bell provided an excellent summary of the major "governing principles" which have enabled social thinkers to develop their prognostications in the past.[9] A series of Delphi exercises, designed to identify such "governing principles" and to explore their implications and consequences in our own society, would provide a wealth of illumination in regard to the society's current directions and potentials for development.

2. **Trend extrapolations**

As soon as one moves from the area of qualitative judgments toward a concern with quantitative measures or indices of some phenomenon, one encounters a wide variety of techniques which may be employed for purposes of projection. The simplest approach, given a single observation or the latest of a series of observations, is to assume no change over the projection period. Almost as simple is the technique of fitting a trend line, or curve, through a series of observations plotted against time, extending the line to the forecast date and reading off the indicated value. Despite their alleged "naiveté," neither of these handy techniques should be dismissed. If, as is frequently the case, the period under consideration extends no farther than the interval between one or two of the past observations, and if the observed changes among these past observations display no evident trend, a projection of no change may be perfectly defensible. Similarly, if a time series of observations displays a fairly uniform linear pattern, and if the values observed are not approaching an asymptotic limit, the conventional line of least squares through the series in question may provide a satisfactory projection of expected future values.

A theoretically appealing but hazardous modification of these simple extrapolative techniques is to develop a projection on the basis of an observed or assumed periodicity in the movement of the phenomenon over time, or in conformity to an assumed "growth curve." Many social phenomena display some kind of cyclical variation over time, around some secular trend line. If an examination of a time series of data reveals such a pattern, it is possible to construct a projection by extending the observed pattern of periodic fluctuations around a linear extrapolation of the basic trend line.[10]

From the viewpoint of the social scientist, the chief difficulty in extrapolating a trend of any kind is the need to accept some numerical measure as an index of the phenomenon with which he is concerned. The problem is not that such indices are unavailable, but rather that they are commonly misinterpreted as reflecting more of the underlying phenomenon than they do in fact. Two examples may suffice to illustrate this problem. Labor force projections are commonly prepared by extrapolating observed trends in the activity rates of the several age-sex groups of the population. The rates observed do not reveal the intensity of labor force participation; i.e., hours worked per week or weeks per year, nor do they reflect the work commitment of the individual worker; i.e., whether he is working temporarily or permanently. Similarly, projections of the educational attainment of the adult population and labor force are prepared by extrapolating the years of school completed of successive age-sex cohorts, with an allowance for current school enrollment rates. Obviously, these data reveal nothing whatsoever in regard to what was learned in school or out of school or has been since forgotten. Insofar as we are willing to accept a labor-force participation rate as an index of the economic activity of a population group, or a percentage distribution by years of school completed as an index of educational attainment, extrapolations of trends in these indices provide valid and useful descriptions of future prospects in these areas. These indices can hardly be criticized for failing to do something for which they

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[8] Theodore J. Gordon, "New Approaches to Delphi," in James R. Bright (ed.) (*Op. Cit.*), pp. 134-143. Also see Richard Rochberg, T.J. Gordon, and Olaf Helmer, *The Use of Cross-Impact Matrices for Forecasting and Planning* (The Institute for the Future, Report No. R-10, April 1970). For more general examples of the applicability of the Delphi technique in social forecasting, see T.J. Gordon and Robert H. Ament, *Forecasts of some Technological and Scientific Developments and Their Societal Consequences*; Raul de Brigard and Olaf Helmer, *Some Potential Societal Developments — 1970-2000*; and Selwyn Enzer, Dennis Little, and Frederick D. Lazar, *Some Prospects for Social Change by 1985 and their Impact on Time/Money Budgets*. (Institute for the Future, Report Nos. R-6, R-7, and R-25, Sept. 1969, April 1970, and March 1972, respectively.)

[9] Daniel Bell, "Twelve Modes of Prediction — A Preliminary Sorting of Approaches in the Social Sciences," *Daedalus*, Summer 1964, pp. 845-880. Also useful here is Fred E. Emory, "The Next Thirty Years: Concepts, Methods, and Anticipations," *Human Relations*, vol. 20 (August 1967) pp. 199-237, reprinted, in part, in Michael Young (ed.), *Forecasting and the Social Sciences* (Heinemann, 1968) pp. 41-70.

[10] The experience of demographers with logistic curve projections suggests their limited applicability in the area of human behavior. For example, the "medium" projection of the National Resources Committee, published in 1938, yielded an ultimate U.S. population of 158 million by 1980. U.S. National Resources Committee, *The Problems of a Changing Population* (U.S. Government Printing Office, 1938) pp. 22-27.

were not designed. But the interests of social scientists in the phenomena they purport to reflect cannot be met fully by this kind of convenient measure alone.[11]

A further limitation of trend extrapolation is familiar to all practitioners of the art: except for arithmetical errors, such projections are likely to be reasonably accurate so long as the underlying trend is maintained. But they quickly become disastrously inaccurate as soon as the trend is disrupted for any reason. Thus, they "fail" at precisely the point where foresight would be most helpful; where the assumed continuity is broken at a turning point.

The attempts of economists to project on the basis of observed periodic fluctuations in a time series, and those of demographers in applying growth (logistic) curves to observed trends in total population, do not offer great hope for the applicability of these techniques in other areas of human behavior. While many forms of behavior display periodic fluctuations, the recognition and measurement of this periodicity is useful mainly in establishing the existence of a trend when the effect of the periodicity has been statistically controlled. The fluctuations by themselves cannot provide a basis for useful forecasts beyond the period required for the manifestation of one or two cycles at best. The problem with the logistic curve is the need to specify both its upper asymptote and the time period required for its attainment. Furthermore, unless the curve is postulated as symmetrical, there remains the problem of establishing the locus on the curve of the "present status." It is well established that the growth cycle of many forms of life conforms to this kind of curve, given a fixed ecological environment and a constant mode of adaptation thereto. Insofar as human populations are concerned, it is equally obvious that the mode of adaptation to the ecological environment is continuously modified by both social and technological developments.

Despite the above limitations, three arguments may be raised in support of the technique of trend extrapolation. First, such projections are simple to develop, and the underlying assumptions and procedure can usually be described in a straightforward manner. Such simplicity should not be confused with naiveté. When dealing with social phenomena whose inner dynamics are only partly understood, the simplest procedure may well be the most defensible. Second, the technique is highly flexible, particularly when the mechanics are carried out by computer. Such extrapolations can be quickly updated by the insertion of the most recent observed values. More importantly, the observed time series can be reassessed periodically with the aim of removing, or reweighting, data which are deemed to be obsolescent, irrelevant, or aberrant. Finally, this technique, by its very simplicity, minimizes the danger that the resultant projections will be misconstrued as predictions reflecting the inexorable movement of some causal force within a deterministic framework. Given the strong pragmatic arguments in favor of this technique, it is likely that social scientists will continue to use it. Therefore, it may be appropriate to conclude by quoting Winkler's admonishment to those economists who rely so heavily upon quantitative time-series analysis:

> . . . we seem to have forgotten that every time series is in the first place quantitative history of a situation and its analysis, historical analysis. This predominatly historical nature of time series has two aspects: first, in every series the definitions, survey and computing techniques have their own development. They are part of the data and must be considered when analyzing the series. Second, each series is embedded in a complete historical landscape of other events, most of which cannot be quantified. The data in a time series therefore are not a simple sequence of pure algebraic numbers, but history presented in statistical terms.[12]

This reminder is a plea for the social scientist to retain a critical awareness of what is involved in attempting to deal exclusively with those aspects of historical reality which can be readily quantified. It is also an argument for the continued development of qualitative projections wherein our interpretations of historical processes may find expression.

3. Forecasting models

Models, or equation systems, relating to some aspect of social behavior share certain fundamental characteristics in common, despite the enormous variety of their composite elements. In the first place, any model is an attempt to represent the actual functional relationships which characterize the behavior in question. Second, these relationships must be expressed in quantitative terms, although these measures may be supplemented by the inclusion of unmeasured factors in the form of "dummy" variables.

The difficulties encountered in developing such forecasting models in the social sciences can readily be appreciated by considering the fundamental requirements of such model construction. The first requirement is a theoretical grasp of the relevant processes and relationships in the system; a requirement which presupposes the identification of such a system and its boundaries. Second, a body of quantitative data must be available which reflects the observed operation and mutual influences of the key elements in the system. Finally, there is need of appropriate statistical techniques whereby the postulated processes and relationships can be expressed in testable form; i.e., as a system of equations permitting separate identification of the influence of each major variable in the system.

There are three sets of conditions under which such relationships are used to develop projections. First, it is sometimes possible to find variables which "lead" the variable of interest in a consistent manner, such as the number of order slips for a particular item "leading" the number of deliveries of that item. In such a case, an

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[11] A.J. Jaffe has prepared a useful manual on techniques of projection of school enrollment: U.S. Department of Health, Education, and Welfare, Office of Education, *Handbook of Statistical Procedures for Long-Range Projections of Public School Enrollment* (U.S. Government Printing Office, 1969). For recent examples of projections by trend extrapolation, see Sophia C. Travis, "The U.S. Labor Force: Projections to 1985"; Denis F. Johnston, "Education of adult workers: Projections to 1985"; and Denis F. Johnston, "The Future of Work – three possible alternatives," *Monthly Labor Review.* Vol. 93, Nos. 2 and 8 and vol. 95, No. 5 (Feb. 1970, Aug. 1970, and May 1972, respectively).

[12] Othmar W. Winkler, "A critical view of time series analysis in business and economics," *1966 Proceedings of the Business and Economic Statistics Section of the American Statistical Association*, pp. 352-370.

observed trend in the leading indicator up to time X may be used to "predict" future values of the lagging indicator up to time X + N, where "N" is the duration of the lead-lag period.[13] In addition to the difficulty of finding reliable "lead-lag" relationships of this kind, it is evident that such relationships, when found, cannot ordinarily be relied upon for projections beyond the period which separates the two series of observations. Typically, these intervals, considering also the inevitable delay in obtaining the latest observation for the leading series, are too short to permit more than very short-range projections. The principal exception to this rule is in demography, where current birth cohorts of a population may be traced with some reliability through the several stages of their life cycle via long-range projections.

Second, there may be instances in which some or all of the "independent" variables are subject to control or manipulation, so that their future values may be assigned in relation to specified policy objectives. Given these assigned or "target" values, the corresponding future value of the "dependent" variable may be deduced from the equation expressing their initial observed relationship. Given the unforeseeable exigencies which necessitate constant changes in policy objectives or priorities, the projections resulting from this kind of approach should be regarded as a form of "target" projection; i.e., as normative projections designed to describe a path toward the attainment of a specified goal. For example, a projection of employment classified by occupation or by the major sectors of economic activity which assumes that the total amount of available employment will approximate the total supply of workers is a target projection.

Third, there remains the far more common circumstance, in which each of the associated variables must be projected independently. It is this circumstance which greatly restricts the usefulness of regression and correlation analysis as a projective technique, despite its obvious value in revealing the associations which may currently exist among selected indicators. A further limitation, particularly in relation to long-term projections, is the need to assume stability or a predictable trend in the underlying structure of the relationships expressed in the initial equation system. From a purely analytical viewpoint, all of these requirements are potentially beneficial, since they impose a need to examine trends in each of the variables separately, and in the structure of their interrelationships. But from a practical viewpoint, these requirements are frequently overwhelming. No matter how far the subdivision of a given phenomenon into its component parts may be carried, it is ultimately necessary to assume, assign, or extrapolate future values for the components one ends up with. At that point, the exercise of considerable judgment becomes inescapable.

The prospects for the development of "social accounting schemes" as a tool for projective purposes may be more hopeful. In manpower analysis, for example, the distribution of employed workers by occupation and industry as observed at a given census date can be utilized to distribute a projected employed labor force total for a future date so as to yield an estimate of the future occupational and industrial distribution of workers. In addition, such an approach can be given a greater degree of verisimilitude by incorporating information on past trends in the occupational mix of the several industries. It is also feasible, in principle, to incorporate information on the changing educational or training qualifications of workers in the future and, thus, to assess the probabilities of an emerging imbalance between anticipated work requirements and available personnel possessing the requisite skills. Where these jobs requirements, in turn, are prescribed by the expected manpower needed to attain specified social goals, the resultant matrix can be viewed both as a "target" for appropriate social and economic programs and as a prescription of the intermediate objectives which must be reached in order to achieve the primary goal.[14]

Similar input-output matrices might be useful in forecasting the need for teachers and facilities in the area of education, particularly in those fields where the attainment of specified social objectives entails the supply of certain numbers of qualified persons. More challenging, perhaps, is the possibility that input-output analysis could provide social scientists with a powerful tool for estimating and objectively demonstrating the probable spread of consequences stemming from particular inputs within the framework of human ecology. If, as is currently being suggested, concern for the ecological consequences of our continuing industrial development is to become a major issue in the coming decades, the possibilities for interdisciplinary research in combining ecological theory with input-output analysis merit serious consideration. The exploratory work with "cross correlation" techniques in forecasting the implications of given, or assumed, technological breakthroughs is a highly promising start in this direction. As Gordon points out, a major criticism of the conventional Delphi technique is that it yields "linearly independent" forecasts whose possible interrelations may be overlooked.[15] Placing these alternative developments into an "input-output" matrix provides a framework for assessing the probable impact of a given development or event on the probabilities of occurrence of the other elements in the matrix. At present, these assessments involve nothing more than the crude judgment that the occurrence of event X may be expected to increase, lower, or have no significant impact upon the probabilities of occurrence of the remaining events in the matrix. But this approach at least introduces the notion of interdependence of outcomes into our reflections on future prospects.

The use of models of social behavior for the simulation of through-time social processes is the most

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[13] For a general account of the requirements of econometric model building, see Carl F. Christ, *Econometric Models and Methods* (Wiley, 1966).

[14] The on going research of the National Planning Association provides excellent examples of this kind of approach. See, for example, Leonard A. Lecht, *Manpower Needs for National Goals in the 1970's* (Praeger, 1969).

For a summary of the work of the Bureau of Labor Statistics in this area, see BLS Bulletin 1673, *The U.S. Economy in 1980* (U.S. Government Printing Office, 1970). More detailed information on the development of the national industry-occupational matrix is provided in BLS Bulletin No. 1606, *Tomorrow's Manpower Needs* (in four volumes) and particularly in Bulletin 1737, which is a revision of volume IV of *Tommorrow's Manpower Needs* (U.S. Government Printing Office, 1971).

[15] T.J. Gordon, in James R. Bright (ed.), *Op. Cit.*

obvious and promising direction to pursue in "building upon" economic and demographic constructs for purposes of projection. Equally obvious is the observation that the verisimilitude of such exercises can be no greater than that of the underlying construct or model. But granting the artificial simplicity of such models, the fact that their use in simulations can be effective with computers gives them an enormous advantage in speed, flexibility, and accuracy over conventional speculations in this area.[16] Perhaps the greatest benefit to be gained from simulations of particular systems is an improved appreciation of the "sensitivity" or "robustness" of the given system when specified changes are introduced among its endogenous variables, or when exogenous shocks or disturbances are entered into the system. Such estimates are a useful supplement to the conventional measures of the deviations of the particular variables in the system, since they permit us to assess the probable impact of changes which fall outside the range of past experience.

It must be recognized that the "systems" approach, at least in theory, is an ideal conceptual framework for purposes of long-range projection. The principal architects of this approach have argued persuasively that the emerging conception of a "system" is better suited to the analysis of dynamic processes of social change than are the static constructs of social structure which they are designed to replace. The greater realism and flexibility of this approach, it is argued, stems from its recognition of change as normal in any living system. Furthermore, this approach allows the analyst to interpret on-going changes not only as adaptive responses to exogenous factors, aimed at preserving or restoring homeostasis, but also as expressions of internal growth and development.[17] To the extent that a "system" can be identified; i.e., to the extent that the interrelations of its components with each other and with the environment can be specified, the resultant model enables the analyst to monitor social change by means of a stream of feedback information which traces the impact of particular inputs. Given such a model, the task of projection is reduced to prediction.

As an objective for the behavioral scientist, the development and application of ever more inclusive systems models is entirely in keeping with our conventional notions of the goals of science. But for purposes of projection, and to meet the needs for which projections are demanded, the systems approach suffers from two critical weaknesses. The first is at once theoretical and practical — our existing theoretical expositions of social systems are unable to *specify* causal relationships linking particular inputs with particular outputs, except in highly restrictive domains. Furthermore, even a cursory assessment of the available bodies of economic, demographic, and social data suggests a practical constraint on the construction of such models. When this approach is extended into areas of social behavior whose determinants are not adequately "captured" by available statistical indicators, the outcome is an elaborate framework largely devoid of empirical content; a framework whose chief value is to identify our data requirements.[18]

Second, the systems approach may be faulted as a projective instrument because its underlying paradigm of a "value-free" science cannot provide for a normative assessment of the system as a whole. The invention of alternative futures cannot yield such a normative assessment unless values and goals are an integral part of the projection process. As Massenet has pointed out, the underlying task of long-range projection in the area of social behavior involves a shift from a concern with causal principles reflecting the operation of determining factors in the past, toward a concern with "nascent" causes which include the potential effect of our own goals and values as operative elements.[19] To be sure, such exercises are likely to increase in value in proportion to the degree of quantitative precision which can be introduced, but the validity of such projections does not depend upon the adequacy of the data base or the increased sophistication of our understanding of the social system.

Part 3. Social Indicators and Social Forecasting

In his recent work, Fred Polak adopts the term "prognostics" to cover the widest range of approaches and methods designed to help us think about the

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[16] A good summary is provided in Nathan Keyfitz, *Introduction to the Mathematics of Population* (Addison-Wesley, 1968) pp. 397ff. For a broader perspective on the possibilities of simulation, see Guy H. Orcutt, Martin Greenberger, John Korbel, and Alcie Rivlin, *Microanalysis of Socioeconomic Systems* (Harper and Brothers, 1961) and Harold S. Guetzkow (ed.), *Simulation in Social Science: Readings* (Prentice-Hall, 1962). Also helpful is James M. Beshers, *Population Processes in Social Systems* (The Free Press, 1967).

[17] The literature relating to systems analysis grows exponentially. Consult Alfred Blumstein, Murray Kamrass, and Armand B. Weiss, (eds.), *Systems Analysis for Social Problems* (Washington Operations Research Council, 1970); Walter Buckley, *Sociology and Modern Systems Theory* (Prentice-Hall, 1967); Walter Buckley (ed.), *Modern Systems Research for the Behavioral Scientist* (Aldine, 1968); especially the contributions of W. Ross Ashby, Garrett Hardin, and of the editor; Francis F. Martin, *Computer Modeling and Simulation* (John Wiley and Sons, 1968); and Martin Shubik (ed.), *Game Theory and Related Approaches to Social Behavior* (John Wiley and Sons, 1964).

[18] In regard to the inadequacies of our existing social data base, see Eleanor B. Sheldon and Howard E. Freeman, "Notes on Social Indicators: Promises and Potential," *Policy Sciences*, 1: 1 (Spring 1970) pp. 97-111, and Kenneth C. Land, "Social Indicators," published as a chapter in Robert B. Smith (ed.), *Social Science Methods* (The Free Press, 1970) and also to be reprinted in a monograph being prepared by Land on social indicators and mathematical models at the Russell Sage Foundation. For interesting examples of the "state of the art" in regard to social indicators and their use in social forecasting, see Eleanor B. Sheldon and Wilbert E. Moore (eds.), *Indicators of Social Change* (Russell Sage Foundation, 1968); M. Harvey Brenner, *Time Series Analysis of Relationships between Selected Economic and Social Indicators* (U.S. Department of Labor, Manpower Administration, 1971); U.S. Department of Health, Education, and Welfare, *Toward a Social Report* (U.S. Government Printing Office, 1969); and the excellent critique of Otis Dudley Duncan, "Social forecasting — the state of the art," *The Public Interest*, No. 17 (Fall 1969) pp. 88-118.

[19] Michel Massenet, "Methods of forecasting in the social sciences," a paper prepared for the members of the Commission on the Year 2000 of the American Academy of Sciences, chaired by Daniel Bell (n.d.). Compare the insights of Hasan Ozbekhan, "The triumph of technology: 'Can' implies 'ought'," in Stanford Anderson (ed.), *Planning for Diversity and Choice* (M.I.T. Press, 1968) pp. 204-233.

future.[20] Consistent with this usage, a prognostics paradigm may be viewed as a loose and flexible framework designed to orient our utilization of social information away from attempts at prediction toward attempts at invention.

Within a prognostics framework, the information provided by any system of social indicators would be utilized as a descriptive foundation for the development of alternative projections. Such a framework would also allow and require normative evaluation of both emerging trends and of alternative projections. Both exploratory projections, aimed at tracing the probable consequences or implications of postulated sets of initial conditions and governing factors, and normative projections, aimed at describing optimal paths toward the attainment of specified goals, must be rooted in a combination of description and evaluation. A prognostics framework would at least permit such a combination.

The adoption of a prognostic framework would imply a somewhat different set of requirements for the social indicators which would provide that framework with its empirical content. These requirements can best be summarized in terms of the major functions to be performed by social indicators in this kind of framework. First, it is necessary to describe and evaluate the current status, or condition, of the society; a requirement which involves *both* a descriptive, factual accounting and a normative assessment of that account. Second, it is necessary to examine trends through time as reflected in these indicators in order to place them in a projective context; that is, time series of selected indicators must be utilized in the development of forecasts which reveal the likely directions of their current evolution, *ceteris paribus*. Viewed in this context, social indicators would provide advance warnings of emerging strains, imbalances, or crises which might be expected to develop in the absence of appropriate corrective measures. Conversely, such forecasts would also provide evidence of favorable developments which might be disturbed by the introduction of new policies or programs – the "current rig" of a society is not necessarily evil! Third, it is necessary to carry out a systematic exploration of possible alternative courses of action, whereby different sets of postulated goals and priorities might be pursued and their likely consequences explored. In short, these three functions of social indicators in a prognostic framework would be: (1) to tell us where we stand, (2) to tell us where we are headed, and (3) to tell us how we might direct our energies to narrow the gap between where we find ourselves and where we aspire to be in the future.

The criteria which existing and proposed social indicators might be expected to satisfy stem directly from their functions as previously outlined. A fundamental criterion is the ability to provide accurate and reliably comparable measures through time. If the "warning" indicators referred to earlier are included despite their inability to satisfy the above criteria, it is because they function as indications of a need for conventional measures, not as substitutes for such measures. The above criteria should not be viewed as a counsel of perfection, however; any statistical measure can be criticized because it fails to reflect accurately one or another aspect of the phenomenon to which it relates. But even a poor measure, if it can be applied through time reliably, yields far more useful information on emerging trends than a more adequate measure applied at one point in time. Improved measures yielding a short time series are often less useful than deficient ones for which a longer series of observations is available.

In order to enlarge the range of social indicators for which a time series of observations would eventually come into being, it is necessary, first, to carry out a search for existing "base-line" studies to be replicated at stated intervals. Second, it is necessary to initiate such studies in those areas of social life in which such studies have not been carried out satisfactorily.[21] With respect to the normative assessment of the situation which is described by any set of social indicators at a given time, there is a need for indicators which would add further dimensionality to the accounting scheme by supplementing its preponderantly economic or socioeconomic contents. For example, Angus Campbell recommends the development of indicators reflecting changes in (1) levels of aspiration, (2) levels of group attachment and intergroup hostility or tolerance, and (3) levels of alienation, or "anomie."[22] Taken together, such indicators might provide a basis for an independent evaluation of the status of society; independent of its evaluation in terms of its level of material affluence, general prosperity, or "efficiency" in performing particular functions.

It must be stressed, however, that the task of evaluation cannot be accomplished by a juxtaposition of selected indicators, however wide their coverage. Inescapably, evaluation implies a deliberate act of critical judgment for which no statistical series, or operation, can be substituted. The conceptual leap from description to evaluation cannot be made by means of additional description, nor can it be made by imposing some single measure of value, such as the monetary valuations which characterize the calculation of "benefit cost" ratios. The fallacy of attempting to evaluate the performance of a society in terms of any single criterion reflects the deeper fallacy of conceiving of a total society as a "system," with all the dangers implicit in such a metaphor. If, instead, a society be construed as an amorphous envelope containing a variety of systems, each of which functions according to its own operational criteria and goals, the task of evaluation becomes less overwhelming.

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[20] This discussion is drawn primarily from the author's longer essay, "Social Indicators and Social Forecasting," published in Cahiersdu Centre de Recherches Science et Vie (Paris), Sept. 1971. For a comprehensive treatment, see Fred L. Polak, *Prognostics* (Elsevier Publishing Company, 1971). The most extensive treatment of forecasting techniques is still Erich Jantsch, *Technological Forecasting in Perspective* (O.E.C.D., 1967). For applications in the area of social planning, see Erich Jantsch (ed.), *Perspectives of Planning* (O.E.C.D., 1969) and his recent work, *Technological Planning and Social Futures* (Cassel/Associated Business Programs, 1972). For relating insights in the field of educational planning, an excellent reference is Thomas Green (ed.), *Educational Planning in Perspective* (IPC Science and Technology Press, Ltd., 1971).

[21] These are Duncan's basic recommendations. See Otis Dudley Duncan, *Toward Social Reporting: next steps* (Russell Sage Foundation, 1969) p. 9.

[22] Angus Campbell, "Social Accounting in the 1970's," *Michigan Law Review*, vol. 23, no. 1 (Jan. 1971) pp. 2-7. A more extensive treatment is to be found in Angus Campbell and Philip E. Converse (eds.), *The Human Meaning of Social Change* (Russell Sage Foundation – Basic Books, Inc., 1972).

If evaluation is regarded as a "pluralistic" endeavor, it is possible to avoid what Bertram Gross has aptly termed the "new Philistinism" of applying monetary, or some other, units as universal measures of value. A pluralistic approach would seek, instead, to establish norms for evaluation in terms which reflect the performance criteria appropriate to the particular "system" in question. Paul Diesing has provided an insightful analysis which suggests the complexity but feasibility of such an enterprise.[23] Each of the several "systems of rationality" governing the performance of the major sectors of the society must be examined in order to specify appropriate criteria for ascertaining their particular "benefits," "costs," and "efficiency of performance," in terms which reflect the norms of that particular system.[24]

In summary, normative assessment can only be accomplished by considering emergent trends in indicators which reflect the multiplicity of norms governing the manifold functions occurring in a society. At present, it is only the economic sector, with its traditional norms of efficiency in the application of scarce means to alternative ends, which offers the possibility of realistic evaluation of "system performance" in monetary, cost-benefit terms. Even here, difficulties abound.[25] As for the other sectors of society, appropriate criteria for such evaluation are only dimly perceived at best, largely because attention has been almost exclusively focussed on descriptive categories and measurements.

The adoption of a prognostic framework, finally, entails an effort toward the construction of alternative futures, both as heuristic or exploratory exercises and as normative projections aimed at attaining some prescribed goal. Here also, there is need for a type of nonquantitative, "warning" indicator. Every society manifests such emergent possibilities in a bewildering variety of ways, such as the deviant life styles of rebellious youth, the appearance of long-tolerated evils — such as environmental pollution — as moral issues of overwhelming import, and the outpourings of massive "research and development" efforts.

Part IV. **Conclusion**

It is highly likely that the social indicator movement in the United States will develop according to the pronouncements and perceived research needs of its principal exponents. The directions of this development, in the form, admittedly, of "nascent causes," are already apparent. First, Duncan's "pragmatic incrementalism" is bound to strike a responsive chord in the community of social scientists, since it calls for the replication, or initiation, of a variety of methodologically rigorous "base-line" studies dealing with areas of major social concern. All this is well and good, except for the annoying possibility that social relevance and methodological rigor may turn out to be a rare combination.[26]

Second, the theoretical demands of the model builders and systems analysts are unlikely to await the slow improvement in our data base. What is likely to occur instead is the construction of a variety of models designed to reflect the "structured performance" of selected sectors of society — models whose testing may require the imputation of data which have not yet been collected.[27] These models, in turn, may be expected to provide theoretical guidance in identifying functions for which appropriate indicators might be devised and in placing available indicators in a more promising analytical framework. In addition, such models may yield significant payoffs in the form of simulations under experimentally controlled conditions. Such simulations may provide better understanding of the probable consequences of alternative social programs than can be obtained at present by means of conventional pilot studies and, one might add, at far less cost.

Third, the need for program evaluation within some kind of "benefit-cost" framework is equally imperative, at least with regard to governmentally administered programs. This implies continuing efforts to apply conventional indicators, or to develop new indicators, designed to monitor program effectiveness and to provide timely feedback information on the basis of which the given program may be modified, as needed, to ensure fulfilment of program objectives.

In principle, these concurrent efforts could be pursued more efficiently if they could be coordinated by the theoretical prescriptions of a single, all-embracing social system model. However, such a model represents, at best, an ultimate goal rather than a practical base from which to work at present. Meanwhile, the diverse interests and competencies of individual researchers, pressing needs for immediate answers to current questions, and the absence of consensus as to the possibility, or indeed the desirability, of constructing a single general model of society preclude concentration on any single path of development. But despite this apparent diversity, it is necessary to raise the question of the possible loss of content and relevance which may accompany the progressive refinement of social indicators along the lines suggested by the three definitions discussed previously. What is lost by the dismissal of nonstatistical evidence relating to the condition of society? What is lost by the rejection of any explicit concern with normative evaluation and its displacement by purely technical considerations related to model construction? And are these losses, if any, compensated for by the gains which may accrue from strict adherence to conventional standards of scientific research?

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[23] Paul Diesing, *Reason in Society* (University of Illinois Press, 1962). In this study, Diesing distinguishes among five major types of rationality: technical, economic, social, legal, and political. His analysis is highly suggestive in regard to the diversity of criteria whereby the "rationality" of behavior in each of these sectors of society might be judged.

[24] Paul Diesing, "The nature and limitations of economic rationality," *Ethics*, vol. 61, no. 1 (Oct. 1950) pp. 12-26. Also see his "Non-economic decision-making," *Ethics*, vol. 66, no. 1 (Oct. 1955) pp. 18-35.

[25] Consider, for example, Adolph Lowe, "Toward a science of political economics," in Robert L. Heilbroner (ed.), *Economic Means and Social Ends* (Prentice-Hall, Inc., 1969) pp. 1-36, and the critical discussions which follow. Lowe's article here is a summary of his work, *On Economic Knowledge* — Toward a Science of Political Economics (Harper & Row, 1965).

[26] An outstanding example of the kind of study which meets the requisites for replication is Peter M. Blau and Otis Dudley Duncan, *The American Occupational Structure* (Wiley & Sons, Inc., 1967). A replication of this study is underway.

[27] Richard Stone, *Demographic Accounting and Model Building* (O.E.C.D., 1971), provides a good example relating to the educational sector of society. For an appreciation of the crucial problem of evaluating educational systems, see Willis W. Harmon *et al, Alternative Futures and Educational Policy* (Stanford Research Institute, Educational Policy Research Center, Feb. 1970).

Many social scientists would argue that these "losses" are either imaginary or unavoidable. Granting the need to recognize trends in social conditions which are typically manifested, at least initially, in nonstatistical forms, the social scientist responds by seeking to find, or construct, some statistical measure which purports to reflect these manifestations objectively and systematically. Granting the need to evaluate the status of society, the social scientist responds by offering his publics a corpus of objective description and analysis, together with the hope that decision-making will somehow be improved by the inputs of information he is equipped to provide.

But the adequacy, and even the possibility, of a "value-free" posture has long been questioned among social scientists. In its current form, this controversy arises from a growing awareness among physical and social scientists alike that there exists a class of social problems which cannot be solved by technical means.[28] The essential difficulty with such problems – and it is hard to conceive of any social problem which does not belong in this class – is the need to carry out their solution in the context of existing political realities, moral imperatives, and other sociocultural constraints. But it is precisely these factors which are left out of consideration by the dictates of statistical model building.[29] By the same token, the essential problem for the decision-maker is not the lack of information, he is used to dealing with uncertainty, but the absence of a valuational assessment which would enable him to devise an optimal path toward his desired goals, recognizing the constraints and opportunities of his sociocultural milieu.

This implies the need to recognize the classic distinction between understanding of social and of natural phenomena. In the former case, understanding requires the preservation of the internal relation between the concept and its social setting, which implies its valuational or normative significance as well.[30] To abstract their valuational significance from our indicators of social behavior is to destroy their usefulness as guides for further action. Conversely, the preservation of an evaluative perspective implies a continuing regard for all forms of evidence whereby social values may be expressed; whether these are statistical or not.

It is true that social values are themselves influenced by changes in the natural and sociocultural environment, even as these values shape and direct a society's adaptive responses to these changes. It is, therefore, possible to forecast changes in social values which might be expected to result from observed, or postulated, changes in the sphere of technology, or in the natural environment, etc.[31] But the fact that values may, and do, change through time does not alter the fact that both the assessment of the current state of a society and the formulation of policies designed to guide its future development presupposes a normative standpoint. Decision-making is *inherently* meaningless except insofar as it is an expression of particular values. For the decision-maker, these values must operate as "independent" variables, both in his assessment of the current situation and in the decision he arrives at. The purpose of any rational decision is to bridge the gap between one's current situation and some preferred state; but such a gap cannot be perceived, nor a preferred state identified, except in terms of one's values.

If our social indicators continue to be developed in the direction of greater statistical refinement, they will undoubtedly contribute to the development of an improved social accounting system and may even, in time, flesh out the skeletal outlines of a social system model. Progress toward these laudable objectives is assured by the fact that they represent the next logical step in the extension of conventional scientific methods into the social realm. But the underlying paradigm which guides this development is causal; its ruling objective is prediction; and prediction implies control. Surely, in societies which respect the ideals of nondirected growth and expression there is both room and need for a different paradigm; one designed to increase our awareness of the possibilities open to us.

The question of the scientific acceptability of a "normative prognostics" may never be decided; what is evident is that the activities of social scientists, as presently delimited, cannot satisfy the requirements of such an enterprise. On the other hand, if we consider the remarkable transformations which have occurred within science, both in response to its internal dynamics and to social demands, there is reason to expect that a normative prognostics might eventually enjoy some degree of scientific acceptability. Stephen Toulmin suggests as much in the closing passage of his remarkable work:

> Like all great critical activities, Science has not one, but a number of related aims: it must try

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[28] For a highly suggestive description of this "meta-problem," see Garrett Hardin, "The tragedy of the Commons," *Science*, vol. 162 (13 Dec. 1968) pp. 1243-1248, and the further, and more pessimistic, elaboration by Beryl L. Crowe, "The tragedy of the Commons revisited," *Science*, vol. 166 (28 Nov. 1969) pp. 1103-1107. Hardin has included his excellent article in the work he has edited, *Population, Evolution, and Birth Control* (W.H. Freeman & Co., 2nd edition, 1969) pp. 367-381. Even greater pessimism is evident in E.J. Mishan, "Futurism – and the worse that is yet to come," *Encounter*, vol. 36, no. 3 (March 1971) pp. 3-9.

[29] The incorporation of qualitative variables in statistical analysis is nothing new, but their quasi-quantification in the form of "dummy" variables lacks subtlety; our "dummy" variables are well named.

[30] Peter Winch, *The Idea of a Social Science and its Relation to Philosophy* (Routledge & Kegan Paul, 1958). Winch's illustration of this point is as follows (p. 125):

> "An event's character as an act of obedience is *intrinsic* to it in a way which is not true of an event's character as a clap of thunder; and this is in general true of human acts as opposed to natural events. In the case of the latter, although human beings can think of the occurrences in question only in terms of the concepts they do in fact have of them, yet the events themselves have an existence independent of those concepts. . . . But it does not make sense to suppose that human beings might have been issuing commands and obeying them before they came to form the concepts of command and obedience."

[31] In regard to forecasting social values, see Kurt Baier and Nicholas Rescher, *Values and the Future* (The Free Press, 1969).

to satisfy these as far as possible in harmony, and it is entitled to take on fresh aims. . . . Here we see the most serious defect in the predictivist account of science: it gives the false impression that the possibilities are closed.

Once before, in Hellenistic times, scientists came to see their tasks as restricted to mathematical forecasting: what followed was disastrous . . . we can never make less than a three-fold demand of science: its explanatory techniques must be not only (in Copernicus' words) 'consistent with the numerical records'; they must also be acceptable — for the time being, at any rate — as 'absolute' and 'pleasing to the mind.'[32]

[32] Stephen Toulmin, *Foresight and Understanding* (Harper, 1961) p. 115.

HUMANISTIC vs. TECHNOCRATIC METHODS OF FORECASTING

by

Stuart A. Sandow*

Until the people are solved somehow
For the day and the hour,
Until then, one hears
"Yes, but the people. What about the people?"
Sometimes as though the people
Is a child to be pleased and fed.
Sometimes as though the people
Is a hoodlum you have to be tough with.
But, seldom as though the people is a caldrom
And a reservoir of the human reserves
that shape history. – Carl Sandburg

Presumably, men engage in forecasting for reasons beyond the formulation of forecasts themselves. Usually, forecasting absorbs men because it aids their planning. Men plan strategies. These strategies are the activities they are prepared to pursue in an effort to reach a goal. Goals are future events towards which some one, or some group, is prepared to work.

Different men pursue different goals. Often they are at cross purposes. Goals are often beneficial to some at the direct disbenefit of others.

Most strategies that are enacted carry within them the roots of their own failure. It is the reason that informs the strategies of men that causes the failure, but men believe in their reasons.

Men, we know, both reason and believe. For example, while we as men can agree there was a beginning to life on this earth, that agreement is based on belief. But the "why" of the beginning and the "where" of the beginning and the "when" and "how" of it are matters of reason. And the reasons of men are things about which we need not, and often do not, agree.

How do men reason? Why do they believe? These are the questions that must be addressed if we are to see the problems at the heart of a comparison between humanistic versus technocratic methods of forecasting, and their relationship to education in the United States.

To explore how men reason, we must be concerned with the nature of knowledge: how we get it, hold it, and our understanding of it. We must be concerned with relationships that exist between knowledge claims and time. We must be concerned with the nature of human deliberation; what information or facts will we bring to bear and how different is the intellectual weight we give to wishes, hopes, and fears for the future, balanced against knowledge we have from the past and immediate present.

We must be concerned with language itself, the constraints it carries, the effect of tense, and the problems of prototypic technical languages on our ability to participate in and share our ideas.

And of belief? We must ask after our metaphors, informing paradigms, mindsets, visions and dreams. We must explore how we wonder, muse, deliberate and, ultimately, hope.

We must understand our perspectives and what informs them. We must understand the character of our language and the voice we give to our ideas and processes for inquiry. We must understand how we have come to name things.

I have found it useful to set up contrasts to explore ideas. By sharing a few of those contrasts, we may intuit, or discover, the fundamental differences between the humanistic and the technocratic approaches to forecasting and planning, and, again, their relationship to schools.

Let me begin with the key words "Humanistic" and "Technocratic." Humanistic refers to a philosophy that asserts the dignity and worth of man and his capacity for self realization through reason. Technocratic refers to a philosophy of governance that promotes the management of society by technical experts.

The humanistic approach is one that asserts that we can come, by reason, to know what is good for us to do. The technocratic view is that few human beings not specially trained, and in possession of expert knowledge, are in any position to make decisions about what is "good" and that it is best left to people who "know" what is happening; that the public need only believe in the good offices of the technically expert.

The one view argues that to be reasonable is to reason. The other view argues that to be reasonable is to believe.

The technocrat argues that his work is value free. Treating the phenomena of society as an artifact, something that, though complex, can be held constant while he examines it and makes forecasts of its future. The humanist, on the other hand, asserts that his deliberations are value laden and reflect his beliefs and that other people holding equally valid perceptions and values may be at cross purposes. He chooses instead to

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*_EDITOR'S NOTE:_ The author received his doctorate in communications, 1970, from Syracuse University. Dr. Sandow, now Associate Director of the Educational Policy Research Center at Syracuse, joined the Center staff in 1969 to modify and design methodologies useful to planners and policy deliberation groups. His initial work with the Center produced two simulation exercises to teach the processes of systematic deliberation to planners for the U.S. State Department, and the Office of Education. This work fundamentally influenced the preparation of his doctoral thesis: *The Pedagogical Structure of Methods for Thinking About the Future.* Currently, Dr. Sandow is working on two books, one to be titled *The Autobiography of Knowledge*. The second is, *"That's Not What I Meant, That's Not What I Meant At All."*

inquire after society as if it were a group of friendly actors who may feel differently about things as they move *through* time. He chooses not to try and hold society constant, but to examine it in time as it changes.

The technicist strives for consensus of opinion among experts about what will be. The humanist seeks out the array of dissensus and tries to accommodate the several needs of the many diverse groups. His concern is not with what will be, but what must also be.

For the technicist time is filled with chunks-of-now. Each chunk is basically static and comprised of a set of complexly interwoven stable events. The humanist sees a never-ending dynamic with a warp and flow all its own. The interactions occurring can be sensed and accounted for, but that *time* must not be thought of unnaturally as *still* for some period.

Society is a dynamic, multi-dimensional concept. It moves through time and discrete actions occur at given moments in time. When plans are imposed on a society at a moment in time, each individual is more or less prepared to accept or reject the plan. We refer to this two-dimensional truth as the time continuum, and by examining its members we gain a sense of *which* individuals are, at any moment, prepared for a change.

It is useful to the planner to think of the world he lives in as a theater with a stage. He may wish to modify the phenomena he sees on the stage, because at the moment they don't appeal to him. But the planner must watch the stage with one eye on his watch. He must see that while *actions* occur at a moment in time, people are *living* through a continuum of time. Any proposal a planner might conjure for what he momentarily sees on the stage must be directed at serving a society not yet visible, an act whose curtain is not yet raised.

The planner must help write the next act, without imposing himself on the one now playing. To prepare an act for theater he must have a good sense of where the players have been, how they came to be where they are, and, finally, where they hope to go. If his plan does not account for all that, his actors won't act, the curtain will ring down on his little piece of theater and the lights will go out. When the actors are in the dark, they may simply replay the last act, or refuse to be directed again.

The planner, then, who tries to modify some aspect of "now" will fail. Similarly, his proposals for tomorrow must include a knowledge of where the world has been and where its citizens, as actors each, in turn, wish it to go and why.

So the dichotomy then is between seeing time as moments, or time as continuum.

The technicist wants to know. The humanist wants to wonder, deliberate, and hope.

The technicist seeks to reduce ambiguous realities to simplify his plan. The humanist recognizes the high level of ambiguity in social planning and tries to respect it.

The technicist sees the future as necessarily linked to the past. The humanist sets out to find sufficient ways of getting to the future that may have no precedent in the past.

The technicist seeks answers about the future while the humanist seeks out questions and responses. The technicist asserts he can know as his legitimizing stance, and the humanist says he can only reason and wonder.

While incomplete, I hope the lines are drawn sufficiently well to let us ask, So What?

To address that question, we have to look at our social system and see where the differing rhetorical forces are at play. From that sort of an inquiry we can examine, in fact, forecast the most likely direction of things to come in any field.

Since we are here concerned with the administration of education, I focused on the schools of this nation. I observe a matured system that is now putting 80 plus percent of all people who turn 18 years old through 12 years of encounter with schooling.

I observe a federal education apparatus some 25 years old still pursuing what on the surface appears a legitimate mandate, a continuing assessment of how well we're doing quantitatively and qualitatively in preparing citizens for participation in a democracy.

I see amassed a collection of tabulated data about the schools without any attention paid to training the administrator to make use of that data in his dealings with students in schools. I see the disaggregation of complex, developmentally-inspiring knowledge into discrete units of inquiry. I see the development from that of colleges without campuses. Parallel to these value-free observations, I must lay out the value-laden ones.

I believe there are four profound and fundamental disbenefits to a 12-year compulsory and sequential experience with schooling as we practice it in the United States.

The goal for education generally speaking is to create and propagate a deliberative, democratic peoples. In our case, we have created a society unique in the world, filled with "educated" individuals who are totally unconfident about their ability to participate in deliberations about what is to be valued and how.

1. *The disbenefits include a deliberative illiteracy*, an extremely short time perspective, a very low tolerance for ambiguity, and a blind faith in expertise.

*A deliberative illiteracy: An ignorance about the *meaning* of events. A price is paid for not knowing the vocabulary to discuss ideas with those who purport to know, in part resulting in a high level of anxiety and a lack of confidence to participate in deliberations on value related questions.

*An extremely short time perspective: An ignorance about the *place* of events in the time continuum to inform assessments about events. A general inability to read the times and understand them.

*A very low tolerance for ambiguity: A rigorous demand for answers, panaceas, truths, surety about the future. A desire for direction from above. A general unwillingness to deal with integratively complex material unless it promises to lead ultimately, and in short order, to action-linked answers, a demand for necessary rather than sufficient directions.

*A blind faith in expertise, in part a consequence of not knowing the vocabulary of experts.

2. *The disbenefits are related*, for when taken together they amount to a democratic people's gross incompetence to deal with questions of values. We are under great strains to do so — deal with values — but aren't competent to do so. (The danger, of course, is that by default we'll lose our right to do so.)

3. *The disbenefits are causally linked* to identifiable phenomena related to Western society historically and the 20th century specifically. They are disbenefits which do not reach crisis level until a large number of apparently *unrelated phenomena* have reached their several different developmental stages in the present.

Topically these phenomena include developments in:

Religion
Economics
Education (compulsory)
Explorations with fundamental abstractions
- Causality
- Space
- Time
- Governance
- Media-technology
- Language homogeneity
- History

Let me digress for a moment on the time-linked role religion plays in the phenomena for an example of our forgetfulness.

Until the last quarter of the Eighteenth Century (1770-1800), the church carried out two quite specific functions, both of interest here. They were the catalytic agent for the perpetuation of a Christian doctrine and the primary arbitrator of what discoveries and explorations being carried on were worthy of perpetuation as "knowledge." This brokerage role was historic.

Those roles were irretrievably shattered in the late 1700's primarily as a result of the ". . . patience, industry and originality of those men who . . . created a new and vastly extended time-scale, anchored in the rock strata and fossils of the earth's crust." It was through the work of the geologists in this period of time that men were compelled to live with "uncertainties as profound, and dilemmas as agonizing, as those provoked earlier by Copernicus' reforms in astronomy." Even the geologists, at first, had no intention of denying the story of the creation, or the time frame of 6000 years, that the story implied.

But there was no denying the profound historical and philosophical conflicts implicit in this work. In any event, the crucial battle between scriptural chronology, based on human tradition and the biblical record, and the natural chronology based on "the testimony-of-things," was fought out over the history of the earth.

The geologists won with their "testimony-of-things." As a result, in the past two hundred years, the perspective opened to man about the dimension of his past has been expanded from the scriptural 6000 years to the geological 2 billion, 150 million years. The implications of this expanded, and expanding, time perspective are profound. Yet little thought has been given to what it has meant to us, as people, to be so rudely "caught up" all in 200 years. Even those 200 years are diminished to nothing by the expanded history of time.

As is often the case in wars, the litigants of a contest-of-belief need not, and often are not, the beneficiaries.

It may be recalled that our nation during this same period was at war. It, too, was a contest-of-belief. And, as we shaped a governance structure and articulated a constitution, the freedom we fought for would not and could not be denied in that undertaking. Freedom without power to the free was untenable and our founding fathers made sure that we, as a people, would remain free.

It may be recalled that many of the earliest immigrants to this nation came to escape religious oppression. That concern was also expressed, and accounted for, in our constitution. We would separate for all time the church and the state, and the state would wield power. Knowledge is power, and the state claimed it as its own.

For the past 200 years in this prototypic society, the church has not been able to carry out one of its two historic functions: the arbitrator and assessor of new knowledge. It had lost its credibility and was shaken to its foundation, at the very moment we were creating a new nation. We "happened to be in the right place at the right time."

The United States has never recovered from its place in time.

The truth of that statement is only beginning to be visible today. It is only now becoming clear that a fundamental disbenefit is attributable to the decisions of our forefathers. This society has gone 180 degrees away from any effort to evaluate, value, or assess the meaning of knowledge, or any need to locate knowledge in perspective, to give it a proper weight, or place, in the continuum of time. Somewhere between then and now, the church sacrificed along with its role as the transmitter of knowledge, another, unmaligned and unappropriated role of assisting society in its need to value, weigh, and give meaning to the place and value of the information presented.

The digression is not intended to provoke you to a view that the church should reassert its role as the purveyor and assessor of knowledge. Rather, that there is a profound need to help our public develop deliberative skills to value, hold in perspective, and properly weigh their knowledge, such that we may have a society of literate peoples, confident of their limited knowledge, and willing to trust themselves to debate our common emerging future.

As time is spent in deliberations of the future, there emerges a heightened clarity about how to describe the reality of the present in historical perspective. That clarity is an aspect of literacy. It involves a developing competence in discovering and articulating the questions essential to systematic deliberation. A benefit of such a heightened literacy is a reduction of anxiety about "where we are," for instance, through a reduction of

vagueness and pinpointing of ambiguities. Understanding what the ambiguities are precedes any attempt to tolerate or otherwise deal with them. Such a heightened literacy also includes seeing current problems in an historical perspective. Getting clear on the problem and seeing it in an historical perspective lessens the tendency to throw one's hands up in confusion and despair.

What must be observed is that our education system does not foster reflection or deliberation and wonder about knowledge -- discovered or transferred. A contex for knowledge and framework for deliberation is missing. The question to be raised then is simply this: Is there any aspect of our system of schooling that fosters the skills of wonder, deliberation, or hope? The effect of these negative influences on society's ability to deal effectively with the problems of the present or plan for our future is monumental. The cause, I believe, is in part the inadequacy of the dissemination system we have created to supply us with information -- schools. Observe further that schools teach us the dimensions of our ignorance by teaching us the names for things. Another digression may demonstrate the claim.

Several months ago I had occasion to be with a 12th grade human relations class. On average, the students were among the "better" in the school and chose electives of this type to fill their schedule. I asked each student to clear his desk and take out two sheets of paper. On the top of one I asked them to write, "Things I know," on the other, "Things I know I don't know." I asked them to fill out both sheets in ten minutes. I had no preference concerning which they addressed themselves to first.

After ten minutes I collected the papers. Out of twenty-eight students, twenty-seven lists of "Things I know" were of things learned outside of school. "How to bicycle, drive, eat. . . ."The list of "Things I know I don't know" were primarily things learned in school. "I know I don't know physics, geography, English. . . ."

Our teaching strategies compel the student to recognize that what they are learning is an assemblage of ideas for which no integrative or deliberative time is necessary, or expected. The question to be addressed is, have we fulfilled the goal of an educated society so necessary to the operation of a democracy if that society, educated, is quite sure about the dimensions of its ignorance and increasingly dependent on experts -- men who assert they know?

There are currently two metaphors afloat in this society. We are at once a "knowledge society" and an "ignorant society." The incompatability of these metaphors is only apparent.

The appearance of success -- an educated society -- may instead be proof of the most dismal failure of our social experiement. A society that lacks the confidence to participate in deliberation about our common future, brought to that point by a 12-year mandatory confrontation with the dimensions of its ignorance, is unable to perpetrate a vital and dynamic democracy.

There are many questions in need of careful articulation and address that emerge:

What are the components of a curriculum that stresses human deliberation?
What is the age at which a child is capable of dealing with the study of contested belief?
What are the teaching strategies that test for belief and understanding?
What changes would there be on the testing process and materials for it?
What effect on the teacher-student relationship?
What effect on society to be so educated?
How would it differ?
What transitional problems would exist between generations?
What legal action is necessary to initiate?
How could the problem be introduced to public debate?
How could the teacher training programs be modified?

Throughout, the underlying assumption is that we must see time -- past, present, and future -- as an array of sufficient causal relationships. To study and examine the times, an individual must consider his examination as merely sufficient. When priorities are specified and goals pursued, the future becomes linked to the present.

When futurists sell publics techniques that induce consensus, or conformity to an opinion, those who disagree with the consensus find the foundation of all their responses about the future weak and undermined. Consensus attempts to induce closure. Too early closure compels us to operate as if what we do were necessary rather than merely sufficient, inevitable, rather than a matter of choice.

Only sustained divergence allows a more thorough examination of plans to exist, yet divergence becomes more difficult to sustain as our play at futures grows formalized. Convergence and consensus methods, so popular with the technicist, reach closure but eliminate alternative options; more open methods must be adopted. The real future will be necessary. We do it violence to base our speculations on an insufficient examination of alternative futures, and to train our young to know rather than to wonder, deliberate, and ultimately to hope.

In sum, if the responsibility of education over the next century were perceived to be the development of citizens with a high tolerance for ambiguity (an understanding and respect for divergent opinions and beliefs), a confidence to operate with limited knowledge (an ability to query and debate assertions of "future-fact"), and a greater time perspective within which to examine the problems and issues of the day (a precondition for reasonable debate), how might it be done and at what cost to society as we know it? I believe these questions are desperately in need of address and that we must begin to address them in a systematic way now. Why now?

It is a fact that we use arbitrary dates in the continuum of time as watersheds. They allow us to stop certain things and start others; new year's resolutions, birthdays, patriotic holidays, election years all serve the function well. We consciously decide to continue what we aren't pleased with until we can experience some external unrelated moment and then, as if it were the root of our choice, we change direction. We did not celebrate our first hundred years of Constitutional government -- we were at war with ourselves about being ourselves. Many of the goals we set for ourselves after that moment -- unification, education,

nationalization — have been attained, and we don't know how to celebrate our victory. Instead, we act as if we lost.

We have emerging a new Centennial, one that seems to be fortuitously located in time as if by chance. It, too, is a moment for redirection, and we must use it wisely to appraise our successes and describe new goals. The time for great expectations is here; the natural end to a century of great dreams fulfilled.

We stand at the edge of history, and if we are to engineer a good world to live out our lives in, we must inform our actions with a perspective greater than that of the visible tracts we see stretching behind us only to the horizon.

A RESPONSE TO FORECASTING METHODOLOGIES AS TREATED BY DENIS F. JOHNSTON AND STUART A. SANDOW

by
Robert H. Beck

Cleidomancy

Most of us are much more like Prometheus than his brother Epimetheus; that is, we look forward rather than backwards. Quite a few of the ancient Greeks believed in *cleidomancy*, which meant having a key – *cleido* – to the future, or literally being able to see into the future. It was in this sense that the Greeks thought of prophecy. Moderns are not equally optimistic; we will settle for forecasting and have a good deal of trouble with prognosis. If we are not as hopeful as the Greeks, who thought of a prophet as a wise man, a *mantis*, at least we are not as pessimistic as those who invented Cassandra, a prophet fated to enjoy the power of cleidomancy but never to be believed. Men as Denis F. Johnston, or as those who work for a living forecasting weather, search for reliable methods of forecasting and the even more taxing art of assessing alternative projections.

It is more of a trial to add evaluation, which, of course, is normative, to description. Here I think the schools become directly involved once again. To put it bluntly, from the earliest experiences in school, students frequently must be practiced in such exercises as manufacturing probabilities from data, becoming familiar with the common logical fallacies, including what A.N. Whitehead called "the fallacy of misplaced concreteness," and the methods of straight thinking, analysis and interaction analysis, exemplified by the input/output matrix Johnston describes, and the idea of experimentation. Semantic exercise and the philosophy of science all are wrapped up in my prescription. And I mean it seriously. Without it, the humanistic responsibilities of citizens in a democracy are, as Stuart A. Sandow quickly would point out, will-o-the-wisps.

Mention of humanistic responsibilities is the occasion for me to think of Delphic probes, or, at any rate, of Delphi and what Delphic might have meant once-upon-a-time.

Johnston discusses the Delphic probe and it is unnecessary for me to rehearse his remarks; they are clear and precise. What I wish to do is remind you of Delphi's reputation for the Greeks of at least the fifth century before Christ, and, doubtless, earlier. The probe is properly named for Delphi, but the process of moderns is not that of the Greeks. Delphic prophecy was cryptic, leaving a good deal to the imagination of suppliants. For example, the Athenians, fearful of Persian power, asked the priestess of Apollo at Delphi what they should do. "Athens' strength lies behind wooden walls," came the answer. It was finally decided that this meant that the salvation of the city lay with increasing the number of its ships. The Persians were beaten at the great sea battle of Salamis and the prophecy had been correctly interpreted. The Greeks were fond of solving riddles and doubtless would have worked crossword puzzles had they had them.

I am afraid that Johnston would not be satisfied with the original way the Delphic probe was handled. There was none of the contemporary circling around until, by successive approximation, one arrived at – truth – no, consensus. This process of "consensual validation" was not for the Greeks. They wanted a key to the future, a vision of what was to be.

Little wonder, the most celebrated acts of prophecy were those at Delphi and in Apollo's temple there. The temple at Delphi was Apollo's chief temple and he was the chief prophet, the patron Saint of prophets, to use a Renaissance way of speaking.

We are lesser men than the old Greeks. No longer do the Olympic games honor the Olympian gods and unite all nations – after all, the Greek city-states were nations under the strong and stern moral law of the most powerful of all: Zeus. But I have strayed from the subject. I said we are lesser men, *seemingly* more humble than the Greeks. Whereas they held the *mantis* to be a seer, we describe a terrible insect as a Praying Mantis. Again I have strayed. The key word is "seemingly." We *seem* more humble. But over the front and rear doors of Apollo's temple at Delphi were two gnomic sayings all Greek schoolboys learned by heart. One was *mêdan agan*, "nothing to excess" – not too much wealth, nor power, nor status. The other was *gnothi sauton* – "know yourself," that is, realize that you are mortal and bound by the moral law that limits or, better, restrains each man.

That is pretty humbling advice. Only those dedicated to the service of Apollo were wise men, and if they defaulted, as Cassandra did, they were severely punished.

No one is punished in our Delphic probe, even if the conclusion is presumptuous.

But enough of that. What I shall speak of next is the role function of the expert.

The role function of the expert

What is the role function of the expert? Before attempting to answer that question, allow me to describe the expert in a democracy as no more – and no less – than a highly trained and, sometimes a highly paid, helot. He or she is a slave or, at most, a hireling. This might be a bit unfair. I really do not mean to equate a modern helot with the lowest of the low in ancient Sparta. But I do not have to worry. Although we probably do not have Michael Young's meritocracy, where the highly-tutored marry the rich – thereby arriving at Aristotle's social desideratum of "the rich, the wise and the well-born" – our experts, the technocrats, as Sandow dubs them, are respected.

I am trying to guard against the notion that the experts have a mystery, almost as sacrosanct as the mysteries of Eleusis. We are familiar with the development of the medieval guild which exercised both quality control and control over entry into the job market. It is the latter which has survived and we are all too familiar with "gobbledegook," the jargon of the expert, who coins terms with no more conscience than any other counterfeiter.

At his or her best, the expert has knowledge which, when appropriate that one have it, includes the ability to forecast and prognosticate. His schooling should have included continuous exercise in oral and written com-

munication so that he can talk and write without being crippled or specially protected by the arcane. After all, no expert has the power and influence of the old-time Egyptian priest, who could predict the rise of the Nile and shrouded his knowledge in mystery that protected his power, status, and wealth.

Our best protection against this misuse of knowledge is to train both potential producers and consumers of knowledge. I think Sandow would agree that schools — colleges and universities included — have not done well in exercising students in the practice of analysis that would be demanded by forecasting. Johnston and Sandow would not have to be concerned if students grew to be the types of people who, in fact, are capable of responsibility for the control of expert opinions. The challenge can be illustrated in terms of what Johnston writes of as "the problem of allocating responsibility for the society's collective costs and benefits." Cost-benefit analysis is of little import if Johnston's reminder is not taken seriously. Using cost-benefit language, one cost of being cavalier is treating social programs as though they were no more than alternative manufacturing processes. That may not be a sufficiently strong analogy. After all, manufacturing processes are weighed for the potential effects on profits. What I am trying to communicate is that a casual review of the cost-benefit type is less demanding. The profit motive is strong; for social indicator forecasting to be equally powerful there would have to be as much motive. I think that is what Johnston is getting at in his *caveat* against ignoring "the problem of allocating responsibility for the society's collective costs and benefits."

The finger points at the schools. If a significant portion of the highly schooled in our society proves to be uncritical of this allocation, the schools cannot avoid the charge of having been irrelevant, at least to a degree, in their social and behavior science courses.

This is a harsh charge and needs to be tempered with an admission that it is most difficult to make the sort of value judgments expected of these social and behavioral science courses. I have been prompted to recall this by Johnston's discussion of valuation implicit in his analysis of social values and social indicators.

In a moment, I should like to confront Sandow's distinction between the humanistic and technocratic but I feel that Johnston's analysis has priority. What Johnston says about the uses social indicators can have in a prognostic framework persuades me. He is so utterly free of the mechanistic thinking that assumes evaluation among social programs can be made in linear fashion simply by approaching a limit — in this case evaluation would be that limit — through selected indicators. "Inescapably," Johnston adds, "evaluation implies a deliberate act of critical judgment for which no statistical series or operation can be substituted." The statistical series may be compounded of monetary units, or something else may constitute those units, but, in any case, one is mired in what Johnston, following Bertram Gross, calls the "new Philistinism."

Johnston writes of this new Philistinism when assaulting the idea that society is a system. "If, instead," he argues, "a society be construed as an amorphous envelope containing a variety of systems, each of which functions according to its own operational criteria and goals, the task of evaluation becomes less overwhelming." This is the manner in which Johnston arrives at what I think is a position of guarded optimism. He holds it perfectly possible to be rational about a multiplicity of functions, each of which asks that the norms used to measure performance be appropriate. What these may be will require more theoretical and experimental work, but nothing in the nature of things bars the way. Even to conjecture that "social relevance and methodological rigor may turn out to be a rare combination," does not mean that the rarity will exist *in perpetuo*. I believe the frequency of mutual occurrence increases when graduates of our schools and colleges have internalized, or turned into intellectual habit, the traits of rationality already noted.

Nor do I believe that we have stumbled on a dualism between the rational exercise of the model builder, wedded to theory, and the more hard-nosed, pragmatically minded experimentalist. The days are almost over when the attraction of the blackboard and the laboratory were all but mutually exclusive. The two cultures within science, empirical and theoretical, are destined to become just about as extinct as the seventeenth century dualism of Continental, or Cartesian rationalism, and British empiricism. And the next step will be a closing of the ranks of a scientist made whole, but given to facts, and those who are styled humanists and are given to values, norms, or the "political realities, moral imperatives" mentioned by Johnston. This harmonization may come slowly but it will come, if for no other reason than the inadequacy of oversimplification demonstrated by exercises based on essentially monocausal explanations.

The intelligence of men will push them towards an ideal of managing the future with a continuous feedback of what has come from present policy based on careful scientific, moral, and politically sensitive planning. This management does not mean that there must be one Grand Design. Evidences that this is so need not be rehashed here. The major constraint now is whether time will be given mankind to demonstrate this rationality. A consensus on certain values, and not only those which may be thought ethical imperatives for survival, make me a good deal less anxious than the menacing shadow of that sword of Damocles. We are learning political *détente* among nations, cooperation in market economies, harmonization of aspects of culture that were nationally isolated. For a cosmopolite, these are stirring. Nor should they be thought shelters of relativism; relativism is not the product of cosmopolitanism. Toleration is the first spawn and succeeding toleration is the realization that there is a cultural richness to be had in the interaction of differences. Competition need not mean disastrous conflict; there need not be *either* sameness *or* relativism. The either-or distinction is no more attractive than any other fallacy that might be classed with Aristotle's "undistributed middle."

I think that we now can meet Sandow's division between humanistic and technocratic head-on.

Humanism and/or technocracy

I wish to demur a bit from Sandow's distinction. In the first place, technocracy can be defined in such a way that it has the appearance of elitism; a definition that the name allows in its stating that rule shall be by the technically expert. But in its origin, technocracy was

thought to be a rule that could extend to most men. All that would be needed, thought such a man as Condorcet, is adequate amounts and kinds of public education. Technocracy was an heir to the French Enlightenment and was intimately associated with the idea that men were perfectible. This ambition was not centered on exercising young men and women in the arts of reasoning but, instead, giving them an encyclopedic knowledge. Diderot's *Encyclopedia* (1751-1765) symbolized this belief. Nevertheless knowledge of what was presumed to be fact was held up as the *philosophes'* answer to clerical dogmatism and the assumed obscurantism of the Scholastics.

This posture was struck with passion. When one reads Auguste Comte's *Cours de Philosophie Positive,* written over the course of years (1830-1842), it is not a cold document that one peruses. At least Comte would have been surprised to have it so classified. In his estimation, the *Cours* was the essence of Enlightenment thought, the expression of the positive stage to which men had arrived after passing through the intellectual purgatory of the religious and, then, metaphysical stages. This positivism, as the well-known but later "manifesto" of the Positivistic "Vienna Circle," was a passionate affirmation of men's freedom from the bondage of superstition, ignorance, or dogma. It was a declaration of Prometheus unbound.

The historian in me would label this sample of 18th century French thought humanism just as much as technocracy. At least such a man as Voltaire thought that it was both humanistic and technocratic, or, to use a less controversial and better-known term, anti-scientific. Man was at the cynosure of attention. Individual men had full responsibility for their choices. A man might be infinitely small in the universe, only an insect creeping on a "heap of dirt," as Voltaire illustrates in his *Micromégas,* but he is on his own. This man can throw away the old equipment of final causes, original sin, or redemption, and "mercy mild." Guides he may have but they are men. It was a spirit voiced later by Walt Whitman. "If I build any altars, they will be to men and women."

To find an opposite mood, anti-humanistic *and* anti-scientific, it would not do to turn to the writing of theologians. Churchmen were eager to show that reason and faith could be reconciled. No, the other side of the coin would be a rejection of optimism. Humanism is optimistic, even Existential humanism with its talk of death. After all, the point of the Existentialist preoccupation with life's terminus is to move men to make every moment of their waking lives count. The assumption is that this strenuousness, this commitment, matters.

It is skepticism that is anti-humanistic *and* anti-scientific or anti-technocratic, not a belief in technocracy or any other belief, any alternative *affirmation.* For such a prophet of gloom one would have to look to the Greeks, to such a poet as Mimnermos of Kolophon, who lived mid-seventh century B.C. Allow me to read but two stanzas, two but typical:

> Though one were lovely, when his prime is past
> Not even his sons will honour him at last.
> (A.R. Burn, *The Lyric Age of Greece.* London: Edward Arnold, 1960, p. 173.)

For me, the spirit of humanism is that Everyman, or almost all men, can come to know and, through knowledge, manage the future. No matter that men disagree about the goals; they can learn to cooperate and be tolerant, perhaps even come to consensus. At any rate they are not subject to "blind fate," which was the phrase so often used by the Greeks. Homer, to reach back of Mimnermos, gave the thought "winged words." In the final book of the *Iliad*, Achilles tries to comfort the aged Priam, so many of whose sons, even "mighty Hector," he has killed. We are in the hands of the Fates, is what he says. But the words are more metaphorical. "There is not," Homer has Achilles say, "any advantage to be won from grim lamentation.//Such is the way the gods spun life for unfortunate mortals,//that we live in unhappiness, but the gods themselves have no sorrows."

A most meaningful verse follows: "There are two urns that stand on the door-sill of Zeus. They are unlike//for the gifts they bestow: an urn of evils, an urn of blessings.//If Zeus who delights in thunder mingles these and bestows them//on man, he shifts, and moves now in evil, again in good fortune.//But when Zeus bestows from the urn of sorrows, he makes a failure//of man, and the evil hunger drives him over the shining// earth, and he wanders respected neither of gods nor mortals." (XXIV: 523-533)

If this fatalism is not the skepticism that I think the other side from humanism, a French philosopher, Pierre Bayle (1647-1706), will do. Bayle was as deeply pessimistic as the next generation's philosophers of the Enlightenment were deeply optimistic. Joseph de Maistre, himself certainly no optimist, described Bayle as "the father of modern incredulity," because Bayle took a gloomy view of humanity, lacking faith in that goodness of human nature which was to be a characteristic dogma of the "age of illumination."

To the extent that this has been a digression apologies are in order. My excuse is that we should bear in mind that it would be false to Enlightenment hope for the education of mankind if we permitted people in general to abrogate in favor of an enlightened minority. This cult of the expert, if I may use that phrase, relegates most of us to Aldous Huxley's class of Deltas or, at the most, Gammas, while but a few are expert and the Alphas or Beta-pluses. If such a split is allowed to develop, schooling, collegiate included, must share in the responsibility. It is not all the schools. The media would have much for which to answer, and so would home and church. My premise is that, though few may be top flight, most of us can understand enough to ask penetrating questions of our political leaders, cooperate in the establishment, and share in, the review of social programs. As is plain enough, the expert is our servant, that highly trained helot to whom I referred earlier.

For fear of straying, the argument returns to Sandow's distinction between technocracy and humanism. This time, Sandow sees them polar because the humanist is taken up with values while the technocrat feels his scientific inquiry is factual and value-free.

This is one more dualism that might be regarded as mischievous. There are some *soi disant* humanists who think they have a corner on values. There are some scientists or technocrats who commit the sin of pride in claiming their investigations factual. But — and Sandow is quite right — when one looks to goals, values inevitably play their part. Even if the future is perceived

as *futures*, as alternative choices, one must choose and choice involves values. Put the matter another, but equally conventional, way. Elections among alternative futures, or goals, entail if-then disjunctions. There is no necessity about most if's. They are not factuals and, therefore, do not have mirror image counter-factuals. They *are* value-ridden, though the *then*-propositions are matters-of-fact.

When alternative social programs ask for financing in a world of relatively scarce resources, allocation comes to include values – even if no more than the choice politicians make with their ears to the ground or fingers in the wind.

Acting as though there really are two cultures is unrealistic and, as most such acts, costly in dollars and to our social wisdom.

Moving away from all this, I wish that I were able to say something about what Sandow writes of as the time-sense in which humanists and technocrats make their forecasts. I only can say that once again the distinction between fluidity and rigidity, between more dynamic – if humanistic – or more static and preoccupied with the "now," if technocratic, makes me uneasy. After all, it was the scientific statistician who drew attention to the "fact" that factual statements are made in a world of probability and are, as a consequence, inferences. It is the technocrat who is given to the conditional in his tenses. When I read modern humanists, or those who style themselves that, some sound quite dogmatic. Rarely do they write in the conditional or think in if-then disjunctions. They know the if's, are quite axiomatic or dogmatic, which is much the same thing. Induction is much more apt to find a home in science than in the literary humanities these days. But the two can ride in tandem, and I give you the little, and none too recent, lecture of Sir William Osler, on being inaugurated as President of the British Humanist Society and already famous as an educator of physicians, a man who would introduce clinical internship to The Johns Hopkins University medical school. His little book is titled *The Old Humanism and the New Science.*

Sandow is very persuasive in his deference to a sense of time. But is the humanist more apt to be looking backwards, an historian remembering the "lessons of the past," or forward-looking? The choice is between the Epimethean and the Promethean. As Aeschylus describes Prometheus, he is the patron of technology and, *if Prometheus is humbled*, he can serve mankind well. I think there is a moral in that for us.

For the rest I applaud Sandow. What democrat can take exception to his desires for formal education? And I would include in this an obligation on the school's part to sustain a student's self-confidence. But in this, care needs be taken. The least effective support is to be warm, accepting, to pat on the head, to approve. All that is fine; we need more of it. But unless it is coupled with ability to learn, to solve problems, to test projections, we may find that we have done no more than give birth to a windy self-assurance, an arrogance of ignorance, which sounds as though it ought to be the complement of a "pride of lions."

REACTION COMMENTS TO THE JOHNSTON AND SANDOW PAPERS

by
Luther P. Gerlach

I. Introduction

Perhaps, to use some of the classy new phrases provided by Sandow, I am a "prototypical" person suffering the "disbenefits" of ambiguity. Maybe this is because of my past exposure to an "experience with schooling" which has made me "unconfident about my ability to participate in deliberations about what is to be valued and how." But at any rate, I don't know if I admire or disadmire the papers of Sandow and Johnston. I am glad that this conference is for experts and specialists who can understand Sandow's elegant explanation of why ordinary people are not properly educated to participate in the democratic process. Ordinary people, victimized by what Sandow calls "a deliberative illiteracy," might not understand either Sandow's smoothly flowing phrases or Johnston's scholarly, if sometimes rambling, treatise.

Certainly, I am impressed by Johnston's capable and detached survey of various approaches to forecasting. In its attention to every detail and use of documentation it balances out Sandow's inspired disregard of weighty example and cumbersome research findings. Together, the two papers combine to deal with three basic and rather well-trodden problems:

1. One is the problem of reliability and accuracy in forecasting and planning. Do we have the tools, the concepts, the models, and the approaches to enable forecasters to gauge the shape of the future sufficiently to meet various public policy goals?
2. Another problem deals with the utilization of forecasts and plans. If the experts do become accurate, reliable, and effective, what happens then to the democratic process? Do the experts – the technocrats – tell everyone what to do and do people follow, believing that the experts really know what they are doing?
3. Yet another problem concerns the ability of the general public to participate in the process by which their future is forecast, planned, and achieved. Even if the "specialists" seek to involve the public, or if consumer groups seek to mobilize the public to participate, do "ordinary people" know enough, care enough to play a significant role in the futuring process?

Let us consider these problems, extrapolating from the information provided by Johnston and Sandow.

II. Modes and Approaches

Johnston presents us with a useful and detailed summary of various modes of planning and forecasting and explains not only some major capabilities of each mode but significant limitations of each. It is not surprising that many members of the seminar were pleased to hear him so ably expound the limitations. There is a rising – or is it a persistent – trend in the USA to suspect the professional forecaster and planner,

and to be pleased at the ways in which the complexities and existing patterns of real human life confound the super seers.

On the other hand, people also seem ambivalent about this failure of forecasting, and some express dismay at the ways in which humans seem to blunder along instead of improving social science and using its planning power. Thus, those at this seminar might take comfort from Johnston's detailed analysis of the state of the forecasting art, for it implies that not only are scholars wiser in understanding its defects and more humble in its use, but also that they are able to improve its capabilities.

Forecasters are dealing with the complexities of a social and ecological system at any point in time, and with the process of social and environmental change. It is not surprising that the forecasters should have considerable trouble when one considers how little scholars really know about these matters, and how different are the various paradigms which profess to describe and explain society in stability and change. One difficulty clearly is that of social measurement, as Johnston explains. Scholars can ignore, or gravely distort, large areas of life in their attempts to count and measure, or their refusal to deal with that which they cannot bring under such control.

I am now involved with a task force which is attempting to develop an Institute for the Analysis of Public Choices. One of its stated objectives is to find better ways to integrate "hard and soft data" in order to improve understanding of social process and help people understand likely short and long range consequences of actions. Presumably, this will be just one of many attempts to integrate the measurable and the not-so-measurable. We will have to see if this can ever be accomplished except on the intuitive level.

Most models of the process of social change conceptualize the process as essentially continuous, incremental, lineal. Anthropologists, for example, characteristically seek to explain how a people will reject new patterns which do not fit into their ongoing culture, and how they will modify other new patterns so that they do blend into the old syncretistically. But in recent years some thinkers have suggested that the USA is facing change which is no longer incremental, but systemic and revolutionary; for example, this type of paradigm change is discussed in my forthcoming book *Lifeway Leap: The Dynamics of Change in America*. While it is not certain that the USA is approaching this "Great Divide," and will change fundamentally, it certainly is important that forecasters consider this possibility and tool up to deal with it.

The concept that society is a system of complexly interrelated parts has long been important in social science thinking. This has led to some quite mechanistic analysis, and it is probably this type of positivistic organicism which Johnston regards as fallacious, just as the computer-based operations research which derived from such modeling was misleading and, in the case of Viet Nam, dangerous. But when Johnston speaks of replacing this fallacious model with a better one, in which society is seen as "an envelope containing a variety of systems, each of which functions according to its own operational criteria and goals," he really is just describing another systems model. He might equally discuss how social systems interweave with their environments in a larger ecosystem, or how one social system interweaves with neighboring systems, again to form a larger whole. The task of the evaluator is to focus on that slice of the system, that subsystem, which is pertinent to his problem. This task is then like that of the biologist, who examines a drop of water as a system in one aspect of his work, a tidepool in another, and as an ocean in yet another. In any event, social scientists are moving ahead in their attempts to describe and understand the workings of complex systems, and this will influence the forecaster. What is more important is the increasing use of systemic thinking by all manner of people involved in all manner of enterprise.

People everywhere are beginning to realize that since in real life "everything is hitched to everything else," it then follows that "you can't just change one thing." Americans have for so long approached problems with the powerful focus and concentration derived from tunnel vision. This is at the root of scientific method. As one seminar participant remarked, Americans used to look at problems and say "don't just stand there, do something." They isolated what they considered was the core of the problem, the cause of the difficulty, and sought to "solve it." Now they are learning that such a "solution" just creates new problems elsewhere or later in the system. So now they look on at problems, consider the great complexities of the situation, worry about the multiple consequences of any action and they say "don't do something, just stand there." This truly is a fundamental change, and it is one which the forecaster must comprehend.

Anthropologists have long looked at societies as systems, often as systems interacting with a biophysical environment to comprise an ecosystem. They characteristically warned colonial and economic development officials that proposed "helpful" economic, technological, or other changes proposed for various "tribal societies" would lead to waves of uncontrolled and often undesirable changes throughout the tribe. Or they explained how proposed desirable changes in one aspect of tribal life were likely to be blocked by other aspects not adequately considered in the administration's plan or forecast. They tended to respect the ongoing, or "traditional" cultures, which they studied and to find much of value in them. Even though they often agreed that the people whom they studied might profit by the addition of new technology, new medical practice, new economic opportunities, they characteristically were reluctant to propose drastic change. Indeed, since they realized that "you can't change just one thing" in the societies they studied, and since they were reluctant to take responsibility for planning sweeping, but controlled, change, they characteristically advised, or implied, "don't change anything."

For various reasons, including the unwillingness of anthropologists to promulgate vast programs of change, anthropologists do not receive much recognition for their pioneering work in systemic thinking. It is probably significant that the recent work of technologist Jay Forrester of MIT has had far more impact on the way Americans are looking at society and change. Jay Forrester and his students, and devotees also, explain, with crusading zeal, that since society is a system of interrelated parts, you "cannot change just one thing." Changing only parts of the system in haphazard fashion

is counterproductive. Systemic factors and interactions upset the programs of those who do not think systemically. But they feel that in its present course, the USA, and indeed the world ecosystem, is heading towards catastrophe. Hence, they argue, it is necessary to "change everything" and to do so in a highly planned, scientific, and controlled fashion; using the computer in order to construct the best system models. In short, they seem to say that we cannot any longer fumble around with haphazard attempts at forecasting and planning. They agree that past attempts have been defective, partly because of the complexity of the systems involved and the inability of people to understand the situation. But they seem to promise to remedy this. One can only wonder what form their attempts might take if, for example, they combine forces with utopianist psychologists, such as B.F. Skinner, to help assure that ordinary people will do what these new systems wizards know is best.

III. The Danger to Democracy

This brings us to the threat implied by this promise of vastly improved capabilities of systemic analysis, forecasting, planning, and management. Even if the possible new breed of planners achieves great breakthroughs in accuracy, reliability, and efficiency, can democracy and liberty and the creative spirit survive in the face of such a technocratic mastery? And, as is more likely, if such technocrats overreach the limits of their own capabilities in their desire to lead us into their vision of a better future, what is to protect us from becoming locked into a grand design which fails? We are now protected by diversity, variation, redundancy, duplication, overlap, and all of those other characteristics of "muddling along"; characteristics which are often regarded as limitations, but which we describe as capabilities which enable Americans to "Fumble Freely into the Future."

It is probably an awareness of this technocratic "threat" which inspired Sandow to write his paper, titled "Humanistic versus Technocratic Methods of Forecasting." Quite rightly, as Sandow explained during the discussion of his paper, he imparts his own definition to the terms Technocratic and Humanistic. It is thus pointless to argue with such an heuristic approach. Since Sandow never really tells us how he would impart, "humanistic" sounds so much better than "technocratic." Sandow obviously stands on the side of the angels when he puts down technocracy and elevates humanism. But he never really explains the operational differences between the two approaches. He never really tells us how the "humanistic" approach is going to give us both a capability of navigating more wisely into the uncharted regions of the future and a capability of assuring that individual freedom and creativity is encouraged.

IV. An Educated Public

This implies that the key to making the humanistic approach work is to relate to an educated public which can "reason," which is not dismayed by ambiguity, which can think of long range as well as short range goals, and which is not likely to give over its precious powers of thinking things through to "experts." Sandow then bemoans the fact that ordinary people have not been adequately educated and thus cannot really reason, cannot really tolerate ambiguity, cannot think of the long term as well as the "now," and break themselves from a "blind faith in expertise." He does not blame people for this, which may be somewhat comforting, but instead blames the educational system, which may give educational administrators a significant challenge. But it seems appropriate to ask him how he really knows that people suffer from all of these "disbenefits." He may be merely restating old mythologies about "what people really know and what people really want." The evidence which I have suggests that people no longer have much faith in expertise, that they *can* tolerate ambiguity and uncertainty. Indeed, it may be that it is the "experts" who are most dismayed by uncertainty and ambiguity and who wish to structure the world so that it conforms to their models. People also seem quite able to reason, but the problem is that their conclusions do not always conform to those of all of the "experts." The most that we can say is that it is reasonable that an expert will think that people are not reasoning when they do not reason as he does. But what proof is there that this is a consequence of "deliberative illiteracy?"

Sandow seems to imply that the defects which he senses are inherent in our present educational system and somehow become especial liabilities at this time in history. Thus, he is in tune with those other analysts who also sense, or perceive, that this particular period is of especial importance and that something major is happening in all aspects of our social-cultural system: religion, economics, education, etc. But all that Sandow does is claim that these defects, or disbenefits, are reaching "crisis levels" because "a large number of apparently *unrelated phenomena* have reached their several different developmental stages in the present." I hope that Sandow is not suggesting that only he understands that these aspects are indeed "related." Many observers have explained in detail how these variables interact. This is part of the systemic revolution mentioned earlier.

Perhaps Sandow has just entered it. If so, he might think that it is enough to enlighten his audience by suggesting that these phenomena do interweave in a larger fabric. But I simply do not understand what he means by "reached their several different developmental stages in the present." I suppose that I am, indeed, just suffering some of the educational "disbenefits" he mentions. I hope that Sandow is successful in improving the quality of education, so that, in the future, people will be able to understand such words of wisdom.

THE JOHNSTON AND SANDOW PAPERS

by
Richard H. Hall

I would like to comment first on Dr. Sandow's paper. I was frankly disturbed by it. This reaction was not based on my slight bias toward the technocratic side of his equation, but rather his apparent non-humanistic stance. In rejecting technocracy, Sandow seems to be throwing out the knowledge generated by generations of researchers. Some of this knowledge is good and some is bad to be sure. The good knowledge – that which has been verified over time and which is of use to the variety

of interests of man – is certainly part of a set of ideas which should lead to the tolerance of ambiguity.

One of the most thrilling things about science, broadly defined, as I view it is the fact that each new finding, while perhaps fitting into an existing theory, also opens up new and ambiguous questions. It is this lack of certainty which is exciting and, I believe, at the forefront of most scientists' minds. Perhaps an example from some research I am conducting will make this point clear and bring into clearer focus why I find Sandow's comments disturbing in their content, but not intent.

We are conducting research on organizations which deal with young people. Research on organizations has assumed, until quite recently, that one best way to organize could be found. Recent research has indicated that this is not the case and that there appear to be multiple optimal organizational modes, depending on what the organization is doing. Optimality here is based around the idea that organizations are fairly certain about what it is they are doing and that performance criteria are pretty clear. In our research we are concerned with performance – from the organizations' and youths' points of view. Our organizational data reveals that each of the organizations does not have *a* major goal, but rather six or eight things which it wishes to accomplish. While our data has not yet been fully analyzed, it is clear that the organizational characteristics associated with good performance on Goal 1 are not the same as those associated with good performance on Goal 2, and so on down the line. What this means is that organizations cannot be equally successful on all goals with just one manner of organizing – a highly ambiguous state. Quite obviously, they then arrange these goals in some sort of hierarchy and muddle through.

My concern is not with these findings, but rather with the fact that this has emerged out of organizational theory and will hopefully help modify it in the future. It will also make it more ambiguous.

If we assume that those who are involved in "technocratic" forecasting are similarly involved with the state of their discipline, then much of the awful certainty which Sandow seems to ascribe to them cannot be accepted. This is not meant to imply that there are not those who march down the road, led only by their voluminous statistics which have been gathered on trivial subjects, such as the number of students enrolled or the number of career development seminars attended. My impression is that this type doesn't get into decision making positions anyway.

Sandow sees the humanist as one who reasons and wonders. To me the educated person reasons, wonders, and then tries to find out about what it is that interests him. He seeks answers and may find *them*, but the emphasis is on the plural, rather than the singular.

I agree with Sandow that schools are a mess, including our own. Is the answer to pit the humanist against the technicist? Hardly. Taking either stance exclusively is a form of high level ignorance.

These comments are obviously affected by my experience as a sociologist. We look for, and once in a while find, regularities in human life. There is much more that we don't know about than that which we do. What we do know is affected or even disproved as events develop. Sociology is an insufficient basis for forecasting, as are all other disciplines as we know them. At the same time, if we want to forecast the likely population pressures to be experienced at the local, or national, level in the year 2000, we want as much data from previous experience as possible as part of our equation. I would also then like to build in options which might affect my forecast based on changes in human values, catastrophies, legal and political developments, changes in marital patterns and so on. These are not easily quantified, but can be entered into our forecasting equation with some degree of precision. Since I would like to be alive at the year 2000, and want to enjoy it, I want to know what is happening around me. If a forecast of overpopulation is made, to use a simple example, politicians, the media, and whatever else comes to mind, can be brought to bear on the problem and, it seems, can even have some impact on population growth. It appears, for example, that at least parts of Colorado might stop their growth. This urge to stop is based at least partially on forecasts made by technicists.

Johnston's paper is more difficult to criticize. For the most part, it is a straightforward description of the state of the art and issues in the forecasting business. In general, I wish Johnston had indicated the importance of the question of values in forecasting. Forecasts, or projections, are done for someone or some organization and there are clearly important value implications here. A projection of the need for teachers, for example, should contain some notion of teachers for whom and of what, both of which questions have tremendous value implications. I believe that we must make the assumption of conflicting interests in our society, so that any projection which shows something gaining, should show something else losing. While the resources which might be part of what is being gained or lost might not be just a fixed amount, there is certainly not enough of anything around to guarantee that an improvement or change for some group does not involve a loss for another.

Johnston does tackle the value issue in his section on social indicators and does a good job in sorting out what some of the issues are here. The whole discussion of social indicators is sound. It presents a clear statement of where the field is at present. It might have been useful to bring in some of the current work being done on social indicators through the National Science Foundation, since some potentially innovative and important kinds of things appear to be in the wind there.

I wish Johnston had made more of a plea for social indicators. My impression is that part of the state of our educational establishment, or any other part of the society, can be traced to an overuse of economic indicators and strict legal interpretation. Decision makers look somewhere for information and use what is available. Perhaps even modest, though accurate, indicators of the sort Johnston discusses would be a step toward a more humane society. We certainly don't use enough of them now.

TWO GENERAL SYSTEMS MODELS OF THE FUTURE

by
Jack N. Shuman

Dr. Sandow and Dr. Johnston share the common, but extremely incisive, attribute of conceptualizing society as being a non-linear multi-dimensional, oscillating, and self-organizing process. Moreover, both demonstrate their capacity of applying General Systems Theory to human action systems. In this theory, a human action system is defined as a goal-seeking, value-based system, possessing a multiplicity of interacting subsystems in a complex, non-linear arrangement. General Systems Theory affords us a means for developing a proper combination of ethnical, technological, axiological, quantitative, and qualitative concepts for understanding increasingly complex and heterogeneous problems. In other words, Sandow and Johnston are not using a discipline in the conventional sense of the word. Rather, they have achieved a state of mind which seeks comprehensiveness, synergism, coordination, relevancy, and organization.

I was particulary impressed with Sandow's paper in the following respects.

1. The paper, while limited to education, is an excellent commentary on the present state-of-affairs. Sandow is an articulate and astute observer of the "social scene." He reminds me somewhat of Arthur Koestler and George Orwell.
2. Sandow is neither concerned with large scale systems design, nor what is referred to as "social engineering," even if he uses the term. Instead, at least it is my impression that he sees greater possibilities for social change and reform through cultural design as it is practiced in China and Israel. I might add, parenthetically, from my own value base I prefer the Israeli approach.
3. Sandow understands the true meaning of social science as "situational modeling." That is, we must apply our information and knowledge base to unique situations in circumstance and time. These ideas are derived from my heroes in social science, most notably Dithey, Weber, and Schumpeter. I am citing Schumpeter particularly, since he is one of the few economists I would regard as civilized.

I also believe that Sandow's discussion on the urgent need for role identification in planning can be expanded into an article, if not a full-length book. In policy-oriented alternative scenarios, the roles of the analyst and the decision-maker must be more clearly delineated than they are at present. In the Department of Health, Education, and Welfare, at least, there is a large amount of "cognitive egocentrism" on the part of many analysts. The decision-makers understand far more what they are about. It is not that the analysts regard themselves as being the Secretary of HEW. Nothing as obvious as that. Rather, they want to visualize themselves as being counselors or super-objective types. In both cases, analysts are not forthcoming which can be used by decision-makers.

I also think that Sandow can also elaborate his analysis on social disbenefits. For example, the National Science Foundation has developed a program whose goals are to promote the wider use of science and technology in State and local government. This program has a budget of approximately one million dollars. Its purposes are laudable, except for the critical fact that few if any problems confronting State and local governments can be solved through science and technology. Yet, as a reasonable guess this one million dollars has a catalytic effect of at least $25-50 million, or a negative multiplier effect of 25 or 50 to one. Thus, we have developed the concept of the negative budget.

Additionally, I am pleased that Sandow reorganizes the severe language constraints which only serve to fragment reality. We must face up to the fact that as the *original* Club of Rome Proposal, *The Predicament of Mankind*, observes, this fragmentation has created a new problem, whose solution is clearly beyond some of the concepts we customarily employ – the "metaproblem." Allow me also to point out at this time that the original Club of Rome Proposal has nothing in common with that well-known study in automated romanticism, *The Limits to Growth.* Jay Forrester and Dennis Meadows share the distinction of having made Fascism computer-compatible.

Finally, one major disbenefit of non-humanistic technocratic planning is the doctrine of *ceteris paribus*, other things being equal. Eventually, all planning in a sense becomes economic, since it is concerned with the effective allocation and utilization of resources, human, financial, and material. However, the economists, particularly the Keynesians and neo-Keynesians, by relying on other things being equal, have been unable to relate macroeconomic behavior to microeconomic behavior. An interesting paper in my view would be one that would examine the influence, if any, that *ceteris paribus* has had on the other social sciences.

My major objection to Sandow's paper is his creation of a dichotomy between humanistic and technocratic forecasting where none should exist. I am not quarreling with his description of the technicists. Unfortunately, these types abound in our society and they can be dangerous. I might add, do not place undue blame on the Federal government for promoting technicism. After all, these individuals are only products of our educational system.

For better or worse, we are all technicists of sorts. I define technology as the purposeful development and organization of knowledge. The "hardware" so commonly associated with technology is only an artifact of the process.

All forecasts are technological, simply because they are based on data, information, and knowledge; essentially of six types: behavioral (anthropological, psychological and sociological), economic, historical, humanistic, political, and technical (basic and applied science, and engineering technology). We must distinguish between good and bad technological forecasts. Good forecasts not only encompass, but continually search out new additions to the knowledge base. Bad forecasts are limited and usually are purely economic or technical.

To these forecasts one must also add information concerning possible, or probable, power concentra-

tions. Who is going to know what and how will they act on what they know. It would appear to be feasible, in theory at least, to ascertain conveyences between the developing knowledge base and emerging power patterns.

The final product of this process can never be "objective" in the narrow sense of the term. This is because any forecast to be useful must have incorporated within it, as Secretary Richardson has pointed out, the balance, but often intuitive, judgements of political leaders. Ultimately, what is developed is a process of "building" coherent futures, rather than deriving specific scenarios.

Humanism in forecasting is a value; it refers to goals, not methods for their attainment. A humanist technocrat may be a visionary in an academic setting who can postulate long-range but achievable goals. In government, a humanist is one who, through creative imagineering, relates opportunities to needs and problems. Both rely on technology. A humanistic forecaster describes only what he wishes a situation to be, not how it can be achieved.

I would also like to give a brief but spirited defense to the "technicists." They have a critical role to perform in set, specific, and structured problems. As an example, a humanistic-technological forecast might, and would probably, conclude that a part of the overall scenario in education is that school systems have inadequate telecommunications systems. Who would you want to develop and install these systems? A visionary or a limited specialist who understands the current state-of-the-art in his field, as well as its probable development in the next 10 to 15 years?

I do not want to spend too much time on Sandow's discussion of forecasting methodologies. In addition to FHAR and PERT I would also recommend the use of Critical Path Means (CPM). This technique affords the opportunity of working backward from preestablished goals. However, let me give you two *caveats* on methodologies and techniques. First, that is all they are. They are only a small part of the forecasting process. Certainly they are poor surrogates for intelligence, reason, critical thinking, skepticism, and a sense of humor.

Second, one must be aware of the limitations of professional futurists as a collected assemblage and, relatedly, exercise extreme caution in dealing with them. In terms of their quality, insights, and even honesty, they are presently far too mixed a group to suit me personally. They are far too often vague and nebulous generalizers. Relatedly, many of their proposals, at least some of those that I have seen, contain elements of chicanery rather than analysis. For our futures studies in DHEW, we have instead obtained better results by relying on individuals within discipline, problem, or substantive areas who are capable of projecting out their thinking for 10-20 years.

One can adopt two views of Johnston's paper. First, it is rambling and disorganized. Second, Johnston deliberately and imaginatively takes a large global, or synoptic, view of a problem. Personally, I opt for the second alternative.

There is little that I would add to Johnston's descriptions of the use of outlook statements, or the relative strengths and weaknesses of alternative projection methodologies. Any comments I might have would not be elaborative, but only superfluous.

However, I would take issue with Johnston on three points he raises in his paper.

1. Regarding his reference to asymptotic limits in trend extrapolations, I would contend that any discussion of asymptotes is purely philosophical and speculative. At any rate, the determination of asymptotic limits is a specifications problem and, hence, involves values from an historical perspective. I question whether we have at any time reached an asymptote. This state would require universal agreement by the concerned participants, as to where the asymptote would occur and, furthermore, a complete accord to take no action. In other words, the existence of an asymptote would imply the absence in history of policy planning or any other form of intervention strategy.

   As an example, for about 10 years, Federal expenditures for research and development tended to rise between 3-5 times average annual increases in GNP for this period. If these expenditures had been allowed to continue at this rate, Gross National Expenditures on Research and Development (GNERD) would have exceeded GNP at about the end of the century. The recent history of Federal R&D expenditures clearly indicates that an intervention strategy did take place, although we might quarrel as to the merits of some respects of this strategy.

2. I also believe that Johnston minimizes the extremely complex statistical and informational difficulties in developing social indicators. To begin with, it has been my experience that most statisticians are incapable of thinking in normative terms. Within DHEW for example, many of our statistical groups possess no capability in preparing long-range forecasts. Where they do, we are often never really sure whether they are dealing in probabilities or projections.

   Similarly, what types of information should be included in social indicators? A large part of the existing category of social indicators are thus immediately excluded from the category of social indicators. These statistics are records of public expenditures in social programs in the quantity of inputs of one kind or another used in socioeconomic purposes.

   It is not possible to say whether or not things have improved when governmental expenditures are a social program, or the quantity of some particular input used increased. As an illustration, the DHEW Program Output Tables for Fiscal Year 1972 show that, in Project Head Start, funds were available for 192,000 children to participate in the Head Start lunch program. Furthermore, it was in fact estimated that 192,000 children would participate. However, these tables contain no measure that would enable us to determine how, if at all, these children benefited from this program, except that they were fed.

If Johnston plans to revise this paper, I would suggest that he amplify his analysis concerning the "necessary and sufficient" criteria for social indicators.

Regarding the information systems design for social indicators, I believe that Johnston might want to introduce the concepts of ephemeralization, fluidity, and modularism, especially if social indicators are related to any sort of sane national growth policy. These terms are somewhat different. However, taken together they mean that we must attempt to lend social structures greater flexibility and stability by making their sub-structures less permanent.

3. Johnston does not mention the disbenefits of social indicators. Most importantly, the bureaucracy is hierarchical. Yet we know from "Forrester's loop," that information flows in non-hierarchical fashion. Thus, an organization's perception of information will likely be erroneous.

   Additionally, a non-linear consequence of social indicators might be a radical restructuring of government to respond to social indicators on a contingency basis. We cannot predict what sort of institutional structures will emerge from this process. Conversely, social indicators may actually destroy needed continuity.

In conclusion, I would commend an article by Max Ways in the April 1971 issue of *Fortune*, "Why We Do Not Make Better Public Policies." The gist of this article, paraphrasing and quoting from Jacob Burkhardt and Daniel Patrick Moynihan, "we need to be great complexifiers, rather than great simplifiers." Society is becoming more complex and heterogeneous, but without an accompanying conceptual ability of those individuals who would predict, or plan, the course of its development.

IMAGING ALTERNATIVE FUTURE SCHOOL ORGANIZATIONS: COMPUTER-BASED FORECASTING

by

Earl C. Joseph*

As modern technology advances along its evolutionary course, it increases the synergistic relationship between humans and nature's resources by allowing us to do more with less. This symbiosis could allow all of society to obtain very desirable futures; that is, computer-based forecasts are showing us that we will have the technological means to achieve qualitative futures for everyone but that we may not have the social, cultural, political, educational, nor the institutional mind sets to allow this to happen. Thus, we are rushing toward the "dooms" projected in the doomsday literature.

Education could change this condition, pushing us on trajectories toward desirable futures for everyone. This paper, therefore, will not stress computer-based forecasting for projecting student profile trends, enrollment trends, future physical plant utilization, curriculum evaluation, and the like, but rather it will make a case for educational futurology.

The most important reason for studying the future is that by so doing the obtainment of undesirable futures for society are minimizable and desirable futures are maximizable. Its study makes visible many of the possible alternatives available to society and, by so doing, expands our freedoms. It is increasingly becoming evident that the serious study of the future is, and must be, an important, and perhaps the most important, part of our education process at all levels. The science of futurology, the study of the future, has now developed to the point of being, in its own right, a recognized discipline. By its very nature, however, it is interdisciplinary.

The past — the decisions made, the efforts expended, the experience gained, and the knowledge accumulated — affects the future. Decisions made, or unmade, today dictate the future to a considerable extent. The future does not and cannot change events of the past. Awareness of the future, however, affects what we do in the present. We cannot redo the past, but we can shape the future. When the future arrives, the time for society to decide what to do about it is long past, for by that time our control over the future has been used up. Thus, to control the future, we must do so before the future is upon us. We must plan it and set the forces in motion to bring it about ahead of time. When the future arrives, we must be deciding the future which follows.

Knowing that we can forecast future alternatives, and that our actions growingly shape the future, brings to society a new responsibility. This responsibility is to choose, plan, design, and work toward a more desirable future for all of society! The burden implied by this responsibility is frightening to contemplate. And thus, it is no wonder that few individuals and institutions are as yet willing to take this burden as their responsibility. Yet, we have now reached the point in time when it is everyone's new role in society. Indeed, as Alvin Toffler puts it, "The Future is a Way of Life." Needed now is considerable knowledge about future possibilities, the alternatives, for the purpose of planning our efforts today and for releasing us from the shackles of the past.

From systematic studies of the future we can learn much about the many alternatives available to society for determining that growing part of the future which mankind can shape and control. By selecting from the numerous possible alternatives identified from futures research, society can set goals leading to a considerably more desirable future than that part of history that exists today.

A major problem facing the attainment of a desirable future is its seeming irrelevance in the face of current tumultuous events. The future thus becomes a secondary concern curiously detached from the central concerns of society. For too many, the activity of seeking and shaping better futures seems almost an impertinent triviality relative to the growing chaos and crisis which constantly surround us in each era. Although this estrangement of the future from the present is not new, recently acquired technological powers of mankind have jeopardized the continued survival of society in the future. Past trends are the antecedents of the future. The extrapolation of current trends leads to many prophecies of doom. Thus, the deepening cleavage between the past and the future looms as a major societal concern; foretelling revolutionary social change to put us on paths away from the predicted doom. The vital activity of seeking more utopian futures urgently presses society to transcend past and present norms.

The search for alternative identities of the future amid the technological, political, and social revolutions of our age is the theme of the science of futurology. Its cumulative purpose is to suggest alternative possible dimensions and tenors for the future, encompassing ways to look at, invent, and shape the future. Futures research seeks to bring utopian desirable futures closer

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*EDITOR'S NOTE: The author is a Staff Scientist with SPERRY UNIVAC. He has managed and performed the systems design, logic design, programming, and applications of a number of computers. He researches the future and advises SPERRY UNIVAC management at all levels on the technology, design, impact, application, and management of future computers and society.

He holds three computer patents and has co-authored five books and has published over fifty papers. He is the past president of the MINNESOTA FUTURISTS, a chapter of the World Future Society, and a member of the American Association for the Advancement of Science.

by providing information about the possible alternatives for steering society toward shaping current plans, decisions, and actions. This paper does not pretend to present comprehensive guidelines for a broad new program of cultural and social change. The purpose is considerably less ambitious. Its purpose is rather to outline some concerns and to suggest some possible uses of computer-based forecasting.

To repeat, then, futurology seeks knowledge about the future. It is an interdisciplinary branch of science for the study of the future. Looming on the distant horizon of time are many futures to invent and speculate upon, to provide pre-historical data for studies of desirable futures. The only limitation is our collective imaginations and our ability to pre-test scenarios of the future. Computer simulations of images of future school organizations offer a powerful tool for assisting in their forecasting.

The past can be analyzed from the facts as crystallized in the recorded history of society. The future is similarly analyzable from the data gained from speculative scenarios of alternative futures based on extrapolations of current trends.[1] In so doing, the futurist reads from such speculations the signs leading to the future for the purpose of affecting the present, as is exemplified by the computer-based forecasting studies and simulations by Dennis Meadows and Jay Forrester. Thus, if futurology is to be valued by society, in whatever role, it is axiomatic that futurology must be an instrument of change for achieving desirable human values. Thus, the major task for the futurist is to cause change, to cause society to take steps away from the problems of the present; steps toward bringing society closer to future utopias. Today, we are faced with a myriad of social problems. Futurists, in growing numbers, predict the expectation of many more for humankind in the future. But, what is a social problem? An excellent definition has been proposed by Neil H. Jacoby. A social problem, he holds, is the gap between public expectations and present social conditions (realities).[2]

To avoid violent social revolutions, the politician's task is to keep such gaps within tolerable limits through programs which ease present social conditions. To stimulate social progress towards desirable futures, the futurist's task is to widen the gap by raising public expectations through speculative predictions of desirable future alternatives.

There are dangers in communicating desirable futures. Utopian futures, once communicated, can quickly and desirably become societal goals as has been pointed out by Daniel P. Moynihan in the following:

> "The difficulty with national goals is that they too quickly become standards by which to judge not the future but the present. In a sense, they institutionalize the creation of discontent. The setting of future goals, no matter how distant, drains legitimacy from present conditions. Once it is established and agreed upon that the future will have to be very different from the present, it becomes absurd to be content with the present. The past is annihilated. . . ."[3]

Today, we are primarily preoccupied with images of trends towards negative futures leading society to many disasters. Certainly, such expectations can dramatically turn society from such pending dooms, e.g., the "green revolution," current concerns for ecology, pollution, etc.

Conversely, speculative scenarios of desirable futures can provide direction for our turns from dystopias toward desirable goals. Incentives resulting from the driving force of communicated utopias can for society effectively pull the distant future into the "now" era of the plannable near future.

Will our current age be recorded by a future historian as the "Technological Dark Age?" One could cite many reasons for such an eventuality: Society's current misuse of technology, bringing with it ever increasing problems. Our overemphasis on war technology. So much rapid technology advance amidst so little technology available to most of the people in the world. Thus, little wonder why technology is being blamed for so many of society's current ills. Yet, the placing of the blame on technology ends up often misdirected. For example, at the turn of our century horses were a prime mode of transportation in the inner city. On a typical day in 1900, in New York City, 2½ million pounds of manure were deposited on the streets together with 60,000 gallons of urine. Further, the fatality rate due to this mode of transportation was ten times higher than it is now.[4] And yet, the alternative of going back to such a past transportation mode, using horses rather than automobiles, is obviously not desirable for the future; it would be far more non-humanistic and environmentally degrading.

A more viable alternative is to move forward, with new technology that provides enhancements and reduces the problems that society is currently experiencing. Through research of future alternatives, society can with technology seed future opportunities and stave off the problems forecasted.

In the past, as a consequence of new or widespread technological intrusions, new life styles emerged. These new ways of living caused new societal outlooks which, in turn, brought value changes to society. Today, most agree that this sequence of events triggered by technology, bringing about unplanned social value changes, can no longer be tolerated. We are now realizing that the first step is to identify the value changes desirable for the future. Once such goals for society are selected, we can then determine the technology needed to change our life styles and outlooks to bring about the desirable societal values. Thus, a real purpose of utopian scenarios about possible futures is to make visible desirable future societal goals and value systems which can be used to identify the technological and social inventions required for their achievement. Figure 1 illustrates the impact of technological intrusions on people and points to a possible future redirection for future educational change. It illustrates the major role that work plays

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[1] See for further elaboration Herman Kahn and Anthony J. Weiner, *The Year 2000* (N.Y.: Macmillan, 1967) and Richard Kostelanetz, *Social Speculations*, (N.Y.: Morrow, 1971).

[2] Neil H. Jacoby, "What is a Social Problem," *The Center Magazine*, Vol. IV, No. 4, July/August 1971.

[3] National Goals Research Staff Report, "Toward Balanced Growth: Quantity With Quality," Government Printing Office, July 1970.

[4] *Newsweek*, March 6, 1972, p. 69.

FIGURE 1: CHANGE THROUGH THE AGES OF HUMANKIND: INDICATORS FOR EDUCATIONAL CHANGE

ACTIVITIES PER AVERAGE PERSON'S LIFE EXPECTANCY

ACTIVITY	TIME SPENT (%)			
	PRIMITIVE MAN	AGRICULTURAL MAN	INDUSTRIAL MAN	POST-INDUSTRIAL MAN YEAR 20XX
DISCRETIONARY (SOCIAL INTELLECTUAL, AND LEISURE) TIME	30	30	(50) Pointer of Needed Educational Change?	50
WORKING-EARNING A LIVELIHOOD	35	50	(10)	5
FORMAL EDUCATION	0	5	(5)	10
SLEEPING & EATING	35	35	35	35
EXPECTED AVERAGE LIFE SPAN (YEARS)	18	35*	70**	150***

SHOULD EDUCATION IN THE FUTURE CONTINUE TO BE PRIMARILY DIRECTED TOWARD WORK ORIENTATION OR TOWARD LEISURE AND SOCIALIZATION (GETTING ALONG WITH OTHERS) ACTIVITIES?

*Average life span doubled over previous period primarily due to the availability of better nutrition obtained from agrotechnology.

**Average life span doubled primarily resulting from medical technology which helped humans to live beyond the infant stage.

***Will we allow technology to again double our average expected life span?

throughout our expected life span. Since education today, and in the past, is directed toward preparing us for work, it points to the forces now in motion for changing education's purpose toward preparing students for discretionary time activities.

Change is the essence of the future. Change has many dimensions, some are:

- More *alternatives*, variety, and options
- Increasing *frequency* and *acceleration*
- Increasing *scale* and *range* (technologically and socially)
- Expanding *awareness* of problems, opportunities, and desirables
- Expanding *impact* of/on mankind and the nature of what we do
- Widening *gaps*
- Increasing need for knowledge about the future.

The future is an integral aspect of life which has largely been ignored by society. Until recently, few schools offered courses of study for learning about the future. Thus, most of mankind's knowledge is about the past, *yet* all of mankind's decisions and actions are about the future. This undesirable state of affairs in our educational system is rapidly changing.

To contemplate the societal impact and expectation from widespread technology usage and cybernetization during this and the next decades boggles the mind. Through such rapidly advancing technology, human society is at the threshold of being liberated from:

- Work – labor as we know it today – The age of leisure
- Want – food and material things – The age of abundance
- Environment degradation – pollution – The age of environmental enhancement (rather than "saving").[5]

But, will society allow this liberation to come about? Today, we have a "mind set" preventing such liberation. We perversely look on the dark side of technology and thus end up mirroring past problems onto the future. In so doing, our past hinders us from achieving a different society. However, there is a bright side. Our current concern about technology is putting

[5] For further discussion of this point, the following two articles should be consulted. Earl C. Joseph, "Computers: Trends Toward The Future," PROCEEDINGS OF IFIP CONGRESS 68, Edinburgh, Scotland, North-Holland, Amsterdam, 1968 and Earl C. Joseph, "Towards The Fifth Generation . . .," *Science Journal*, Vol. 6, No. 10, October 1970, IPC Business Press Ltd., London.

society on a track to tame technology and its use for achieving more qualitative futures. Thus, society's rush to gain freedom from want, to gain a higher quality of life, and to solve serious social problems now manifests itself as an acceleration toward more technology, and especially the cybernation of society, such as automating away work. Thus, the computer looms as a major instrument of change, bringing new life styles and values to society.

Do efforts by society to achieve a higher quality of life – in any terms: more peace and understanding, a cleaner environment, more material things, more leisure, more happiness – foretell for the future the continual rush towards more technology usage? Most trend research indicates that this is the trajectory for the future along which society is moving, but with a major difference from the past; namely, to identify humanistic technology for society. That is, major trends are emerging from depressing non-humanistic technology and for expanded use of desirable technology.

Forecasting future possibilities reduces the certainties of the past and increases the certainties and desirability of the future. Speculations of alternative futures can give society the ability to anticipate possible future problems far enough in advance to develop the social and technological solutions before they emerge as serious threats. That is, society can set the wheels in motion to "program" out anticipated problems *before* they occur rather than spend its efforts "bandaiding" the resulting symptoms of problems *after* they occur, as we have been so prone to do in the past. But more importantly, futures research provides an early warning system for alerting society to emerging future opportunities. A growing major part of the future is both forecastable and shapable by society, by humans together with the tools of technology. Many alternative future options are identifiable. Once visualized, the limits and opportunities point society away from futures to avoid and toward reachable desirable futures. Obviously, the total future is neither predictable nor shapable. However, for that part which is controllable by humans, society now has the chance to capitalize on the benefits offered by the tools of futurology, such as computer-based forecasting.

The ability to foresee future alternatives and to be able by deliberation to choose amongst them offers a new freedom for society. In fact, when one looks to a past age, or even to today, in terms of the "futures" (alternatives) available to that age, the question arises: Have we opted for the right freedom? That is, unless we make visible the possible alternatives for the future, our choices for shaping the future are seriously limited, since our choices for the future can be selected only from those alternatives of which we are aware. Such a limitation is tantamount to limiting our freedom. Thus, futurology is opening the door to expanded freedoms for the future by giving us a wider set of future alternatives for deliberation and choice.

Our image of the future is the most likely future to be unfolded. Thus, current visions of future possibilities crystallize quickly into plans and actions which in turn invent the future. The present futures movement, not much more than a decade old, has brought to society a vast array of methodologies for forecasting, planning, and controlling the future.

To rely upon one forecasting technique results in biased forecasts. In practice, many methods must be applied, and results combined, in order to arrive at a more composite view of realistically possible futures. The process rapidly becomes complex, usually requiring the assistance of a computer. Basically, each forecasting technique provides only partial insight to the future. The following is a listing of the more frequently used common methods in computer-based forecasting:

- **Trend Extrapolation** – Plots of the *past* with their discovered curves are extrapolated into the future. Trend extrapolations provide images of possible futures based on data from the past giving an indication of:
  - Evolving trends
  - Future bearing trends
  - Minimum and maximum bounds of expectation
  - The most likely near future (and possibly the least likely far future).
- **Delphic Probes** – Experts are polled and repolled to obtain a consensus of *intuitive* estimates of the future. Delphic predictions are particularly useful for estimating or identifying:
  - Alternative futures (other than those the trends indicate)
  - Time scale of future events
  - Which path evolving multifold changes will take
  - Expected breakthroughs (e.g., social or technological inventions)
  - Future problems, needs, and desires.
- **Scenarios** – Scenario forecasting involves writing a story or description about a future, usually a description of how to get from here (today) to there (the future). Scenarios are especially useful for *communicating:*
  - Speculative alternative futures, innovative and imaginative utopias
  - Investigations of future alternatives, trade-off studies of alternatives
  - Investigations of future consequences of current technological and social policies.
- **Cross-Impact Matrices** – Matrices which break down the complex future into many independently decidable components, allowing each component, or each alternative future, to be compared separately (decided intuitively) against each of the others. Results are recombinable to obtain estimates about the future. When comparisons are done Delphically, such matrices are especially useful for:
  - Delineating priorities and establishing *goals* for the future
  - Determining most probable futures, attaching probabilities of occurrence to forecasts
  - Determining desirable future parameters, e.g., when designing a new system.
- **Relevance Trees** – "Road maps" of alternative pathways for reaching the future goals are useful in identifying and predicting:
  - Key decisions in the pathways to the future

- How to reach a desirable future, or to avoid an undesirable future
- The sequence of events in the path to the future
- Relevance of multiple projections and future decisions.

- **Simulation – Models** simulating the future are designed and used, usually computer "gaming," to predict future probables. Such models are useful for:
  - Determining what might happen ahead of time
  - Testing alternative futures, trade-off analysis
  - Questioneering, asking and testing the important "what if . . ." type questions, to test possible decision outcome before deciding
  - Forcing a detailed description of a future in order to construct its model
  - Management planning, implementing forecasting *systems*.

Besides the requirement to apply a variety of forecasting methodologies, the futurist must also consider a variety of types of *alternative futures*. To obtain a comprehensive view of the future for the purpose of forecasting or planning, the futurist usually considers:

- Trends
  - Base line futures
- Alternatives
  - Optimistic (utopian) futures
  - Pessimistic (negative) futures
  - Most likely futures
  - Planned futures.

Base line futures are future expectations obtained from linear extrapolations of dominant current trends. They are often envelope curves; an envelope of multiple trends. Base line futures are the future usually referred to in statements such as, "If current trends continue, then . . ." or "If current trends are not changed, then . . .". Trend extrapolations of growth situations are "most likely" futures only for the short range and obviously become "least likely" for the long term, since unlimited growth, either positive or negative, clearly becomes impossible if extrapolated far enough.

Optimistic futures are alternative possible futures predicted either from extrapolations pointing toward desirable futures or from normative speculations. Normative speculations, as used in forecasting, refer to invented (created) possible futures: utopian goals or norms. Because some optimistic futures are non-linear, they have no visible antecedent future-bearing trends indicating their possibility. Communicated optimistic futures which create enough desire for the utopia they outline can, and do, bring such futures considerably closer than trend forecasting predicts. In so doing, they create a non-linear situation to the forecaster and society alike. For the forecaster, their forecastability is tantamount to their invention! Thus, it becomes unlikely that they will be forecastable any earlier than they are invented. However, any technique which aids in their forecastability will also be a tool for such inventions. Optimistic futures can also be identifications of trends or normative solutions to current problems. When a forecaster sees that society has at hand a solution to a serious current problem, the forecasted future is the one minus, or reduction of, the problem. Optimistic futures are sometimes the upper bound of expectation.

Pessimistic futures are alternative possible futures envisioned from either extrapolated trends leading towards societal undesirables or "doomsday" speculations foretelling possible disasters. The latter can also be non-linear speculations. Pessimistic futures often are forecasts, or assessments, of consequences of current actions and/or undesirable side effects of problem solving; e.g., technology. Pessimistic futures can also be the lower bound of expectation.

The trends explored in both optimistic and pessimistic futures are not necessarily the predominate trends but can be barely visible emerging trends; i.e., indicators of possible major future trends. To make such trends visible, non-linear forecasting techniques are often required.

Most likely futures (predictions) are combinations of base line, optimistic, and pessimistic futures. They are usually based on judgments of expected societal reactions to opportunities, optimistic futures, and problems; pessimistic futures. Such judgments are high tempered by the prioritization of current realities and concerns based on present knowledge, plans, and actions. To make meaningful judgments, many non-linearities must be considered.

All of these types of futures become "early warning" communications for planning the future. They are also especially useful for controlling the future. The value of ongoing decisions and actions can be measured against such projections to assist in obtaining a more desirable future.

Planned futures are simply the alternatives that materialize into plans and actions which bring about the future obtained.

Today, through futurology, society is in a transition from an age of "blind (destiny) progress" toward an age of "responsible progress."

Through futures research society is obtaining the tools needed to responsibly see, choose, plan, and shape desirable futures. Our responsibility, for ourselves and the future, is to choose desirable goals. Through the establishment of desirable future goals we can then identify the technology and societal changes necessary for brining about the future we are willing to live in.

The future is our most precious resource. The implications of what the "future" is now showing us, its desirable possibilities, its shapability, its possible problems, its alternatives, loom as a major social concern. The systematic exploration of the future thus becomes society's and education's most necessary effort.

Why predict the future? There are many reasons: The future is more important than the past; the past has already happened. Forecasting can "invent" the future, to find the alternatives, to show what could be, to indicate present and past trends, to prevent adding new problems for the future to solve, to be ready for the future when it arrives, to build towards it, to educate about the future and for it, to set priorities for the future, to determine what to do. We can bring the

desirable future closer or put off the undesirable future simply by how much effort and money we spend to bring about the future. We know that much of the future is controlled by today's decisions. We will live in the future for the rest of our lives.

The tools now available for forecasting the future and its many alternatives bridge the gap between the known past and the heretofore unknowable future. Of course, such tools do not give humans the ability to know the future precisely nor in its entirety. But, such tools do allow society to learn considerable about the future alternatives to aid in human decision-making processes going on in all sectors of society. As was stated earlier, forecasting abilities and knowledge about the future is expanding and is now lapping over into the domain of strongly affecting human behavior.

Philosophers agree that we can learn about society through viewing with our senses present and past events. But what about a future society which cannot be viewed since it has not yet happened. The futurist solves this problem by developing *possible* and *alternative* future scenarios, coupled with the knowledge of probable trends and changes. These scenarios of the future are then analyzed, correlated, and simulated from many viewpoints, opportunities, side effects, desirables, hazards. From such an analysis, intelligent decisions can then be made to direct and lead society along one path or another. Of course, in so doing, the futurist becomes a shaper of the future; an inventor of the future through the changes that society enacts to prevent or encourage a specific goal to be moved away from or toward.

Thus, the role of the futurist in society is to induce change. In this role the futurist communicates the trends leading society toward the future and future alternative possibilities for the future. The future possibilities we drastically need are utopian in nature for the purpose of creating a desire in society to move toward better futures. Today, all too often, the typical trends highlighted by futurists tend to be those that indicate society is moving toward an undesirable future, a disaster point in the future.

In conclusion, the decade of the sixties saw the art of forecasting the future blossom into respectability and develop into a science. Now the time has come to face the challenge of using this newly formed science of futurology for setting the goals which will take all of us toward a desirable set of alternative futures. As John McHale has written in *The Future of the Future*, ahead can lie a world desirable by everyone, if we are bold enough to choose the goals and set the priorities for its invention. Of all the challenges facing society none loom larger than that of deciding the future for humankind. This newfound ability and knowledge that we can control the future brings with it the responsibility to choose the future. Before a choice is possible, the alternatives must be known.

PART III

"Futurology in Planning"

Paper By: Jack A. Culbertson
Executive Director
University Council for
Educational Administration

Reaction Panel: Richard C. Lonsdale
Professor
Educational Administration
New York University

Donald J. Willower
Professor of Education
The Pennsylvania State
University

Paper By: Honorable Walter F. Mondale
United States Senator
The State of Minnesota

ALTERNATIVE STRATEGIES OF PROGRAM ADAPTATION WITHIN THE FUTURE TIME FRAME OF THE SEVENTIES

by
Jack A. Culbertson*

The term "future time frame" is not a new concept within UCEA. The organization's accomplishments during the last decade, for example, were forecast to a considerable degree by the 1964-69 and 1969-74 UCEA Five-Year Plans. However, futurology, which has become a visible movement transcending individual scholars, poses issues to UCEA within a new context. Positions taken on the issues will be determined largely by one's acceptance or rejection of two assumptions inherent in futurology. The first assumption is that generalizations about the future can be developed that meet canons of scholarship. The second is that data, concepts, and generalizations developed by futurologists can be useful to planners and others who make future-oriented decisions. Since both of these assumptions underlie content presented in this paper, they deserve brief elaboration at this point.

Study of the Future: Is it Feasible and Useful?

First, let me suggest with regard to the assumption that the future can be studied in scholarly ways that there is a greater similarity in studying the future and the present than is generally accepted. Scientific study of phenomena within a present time frame, for example, is concerned with descriptions, explanations, *and* predictions. The same general goals are pursued by those developing generalizations about the future. It is also evident that in disciplined and systematic inquiry, scholars make explicit the assumptions upon which findings and generalizations are based or from which they are derived. This tenet is essential to future, present, and even past-oriented inquiry as is the tenet that sound generalizations in any time frame cannot be developed without effective modes of inquiry, well designed data gathering activities, and means for evidential test. Finally, in my judgment, the difficulties involved in achieving valid generalizations about the future, especially those of an explanatory or predictive nature, tend to be overemphasized at the same time that the substantial difficulties involved in achieving similar generalizations related to the present and the past tend to be underemphasized.

There are those who argue that the validity of generalizations within present or past time frames can be tested against facts achieved through scholarly research and that future-oriented generalizations cannot. This argument can be questioned, however. The validity of generalizations about the future can be tested by facts within a future time frame. To take a simple example, the accuracy of school enrollment projections for 1980 made in 1972 can be tested in 1980. Further, if scholars carefully state the assumptions on which such projections are based, these assumptions can be tested over time and if there are errors in assumptions, these will tend to be revealed *before* 1980.

Since it is possible to study the accuracy of a given forecast, it is also possible to assess the accuracy of a set or family of forecasts. Such assessments have focused both upon approaches to forecasting and accuracy of results. Jantsch, for example, has summarized the results of past studies on the accuracy of forecasts.[1] Robert Ayres has identified and illustrated six potential pitfalls from earlier forecasts associated with the process of technological forecasting.[2] Studies such as those conducted by Ayres and Jantsch suggest that forecasting is moving beyond the simple projection of opinion to systematic and data-based inquiry which can meet canons of scholarship. It is clear, however, that the validity of substantive generalizations about the future can be tested evidentially only in a future time frame. Furthermore, to limit the criteria used to assess future-oriented research to those used to assess research in present or past time frames is an unreasonable procedure.

Can data, concepts, and generalizations developed by futurologists aid those making future-oriented decisions? The evidence supports a positive answer. It should be made clear, however, that the value of scholarship by futurologists, as Jantsch has emphasized, lies not so much in the precise accuracy of forecasts as in contributions made to planning strategies.[3] Future-oriented studies, in other words, can provide planners with needed data to think about prospective conditions and events and to establish directions transcending those inherent in the *status quo*. Since effective leadership in organizations is inevitably concerned with a quest for vision, study of data and generalizations developed through future-oriented studies can help define and clarify desired directions. To be sure, there are risks which scholarship cannot eliminate in using future-oriented data and concepts to develop strategies and objectives. This is true because such data and concepts, as already noted, can only be tested in a future time frame. However, in an incessantly changing society, there are undoubtedly greater risks in proceeding with-

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**EDITOR'S NOTE:* The author is Executive Director of the University Council for Educational Administration, a post which he has held since 1959. He is the author and editor of varied books and articles and he has facilitated efforts in this and other countries to improve preparatory programs in educational administration. His more recent writings center upon educational planning and educational futures.

[1] Erich Jantsch. "Accuracy of Technological Forecasting." in *Technological Forecasting in Perspective*. Paris: Organization for Economic Cooperation Development, 1969, pp. 99-108.

[2] Robert Ayres. *On Technological Forecasting*. Capitol Report HI-484-EP, January 10, 1966. Harmon Institute, Harmon on Hudson, New York.

[3] *op. cit.*, p. 99.

out formulating future-oriented objectives and strategies. It also seems reasonable to believe that it is less risky to use future-oriented studies than it is to make decisions in the absence of such studies. This is particularly true if the assumptions underlying future projections are made explicit. Decision makers can use explicitly stated assumptions and generalizations about the future to understand the limits of organizational strategies and decisions. Such assumptions can also provide bases for feedback and for needed adaptation when, and if, error does become evident. Thus, it does seem reasonable to conclude that future-oriented studies can help planners and decision makers who are concerned with defining strategies to achieve objectives transcending the *status quo*.

Growth in National Training Capability: 1940-80

Having offered reasons in support of two assumptions basic to futurology, I would now like to turn more directly to my subject. The choice of a specific focus for this paper, I might note, was not easy. Initially, I was tempted to project in synoptic and long-range terms alternative societal futures and some implications for "alternative future school organizations." However, after assessing a dozen different alternatives, I chose to focus upon a more circumscribed topic within a more limited time frame. Through the use of trend analysis, I want to project and examine relationships between what appears to be a rapidly growing national training capability, on the one hand, and diminishing training demands for traditionally defined populations of educational administrators on the other. From such an analysis of relationships, certain problems within the future time frame of the seventies will be identified. A case will be made that the universities comprising UCEA should lead in innovative efforts to create new training demands during the current decade. Finally, I will delineate a range of alternatives designed to achieve adaptations in preparatory programs and to be responsive to new and emergent training demands. Thus, the paper will be centrally concerned with UCEA's mission of improving the preparation of educational leaders.

Data on actual and projected growth in the numbers of institutions involved in preparing educational administrators, and the number of programs offered by institutions, were used to depict and analyze national training capability. The time chosen for study was the 1940-80 period. Masters, Specialist, Ed.D. and Ph.D. programs were included in the study. Analyses were based upon information obtained from questionnaires sent in the summer of 1972 to training institutions in the United States and other countries. Each institution was asked to provide data on the number of programs it offered and to indicate when the programs were initiated. Data were also sought on programs eliminated, if any, and the time period(s) when they were eliminated. (See Appendix 1) Finally, data were obtained on plans institutions had to add or eliminate programs for the 1972-74 biennium.

With the assistance of state certification officers in the fifty states, the National Council for the Accreditation of Teacher Education, Plenary Session Representatives in universities comprising UCEA, and university personnel in other countries, three hundred and eighty institutions were identified as offering programs in educational administration during 1972. Three hundred and sixty-two of these institutions were in the United States and 18 were in other nations. Three hundred and eleven of the 380 institutions responded to the questionnaire. All of the 69 not responding were non-UCEA institutions. Nine of the respondents indicated that they did not have programs but offered courses in educational administration. Analysis in this paper is limited to data obtained from the 284 training institutions in the United States with preparatory programs in 1972 and the two Canadian universities in UCEA: the University of Alberta, and the Ontario Institute for Studies in Education.

Numbers and groupings of programs in responding institutions differed to a considerable degree. One hundred and eighteen institutions, for example, offered doctoral programs. Twenty of these offered the Ph.D. only; 42 the Ed.D. only; and 56 both Ph.D. and Ed.D. programs. Two hundred and sixty-one of the respondents had Masters programs and 161 had Specialist programs. Table I presents numbers and groupings of programs in more detail.

Chart 1 depicts growth in the numbers of newly established training institutions entering the field of administrator preparation during the 1940-70 period and projects further growth during the 1970's.[4] In 1940, there were 109 institutions from among those responding engaged in preparation. Using the data presented in Chart 1, and drawing upon information on institutions that did not respond, we can conclude that the number of institutions actually engaged in preparing educational administrators approximately tripled during the 1940-70 period. The rate of growth was especially marked in the fifties and to a lesser degree in the sixties. While the fifties saw the greatest growth in the number of institutions initiating preparatory programs for the first time, the sixties, as data presented hereafter indicate, saw the greatest actual growth in numbers of Masters, Specialist, Ed.D. and Ph.D. programs.

Data not presented in Chart 1 indicate that, during the 1940-70 period, nine UCEA universities initiated programs of administrator preparation while 147 non-member institutions established new programs. More specifically, four of the UCEA universities entered the field in the forties, two in the fifties, and three in the sixties. For non-member institutions responding, the number was 36 in the forties, 65 in the fifties, and 46 in the sixties.

During the seventies, a continuing growth in the number of institutions engaged in preparation is projected. Several assumptions underlie this and other projections elaborated hereafter. No major change or "system break" in the administration of schools or in agencies responsible for preparing administrators is projected. The projected increase in training institutions for the seventies assumes that the nation will experience continuing and relatively healthy economic growth. Also assumed is that state governing bodies responsible for higher education decisions and organizations engaged in the accrediting of institutions will not be able to limit sharply the trend toward continuing expansion in programs. Another assumption, however, is that there will be a growing awareness on the part of policy makers

[4] Appreciation is expressed to Margaret Tossey for her assistance in classifying and presenting the data in the various tables and charts included herein.

Table I
DISTRIBUTION AND NUMBERS OF PREPARATORY PROGRAMS AMONG 295 INSTITUTIONS (1971-72)

Program Offerings	Numbers of Programs
Masters only	98
Masters & Specialist	56
Masters, Specialist & Ed. D.	33
Masters, Specialist & Ph. D.	12
Masters, Specialist, Ed. D., & Ph. D.	38
Masters & Ed. D.	7
Masters & Ph. D.	6
Masters, Ed. D. & Ph. D.	11
Specialist only	14
Specialist & Ed. D.	2
Specialist & Ph. D.	1
Specialist, Ed. D. & Ph. D.	5
Ed. D. & Ph. D.	2
Ph. D. only	1
No advanced degrees	9
Total	295

Chart 1
ACTUAL AND PROJECTED GROWTH IN THE NUMBER OF NEWLY ESTABLISHED TRAINING INSTITUTIONS: 1940-80

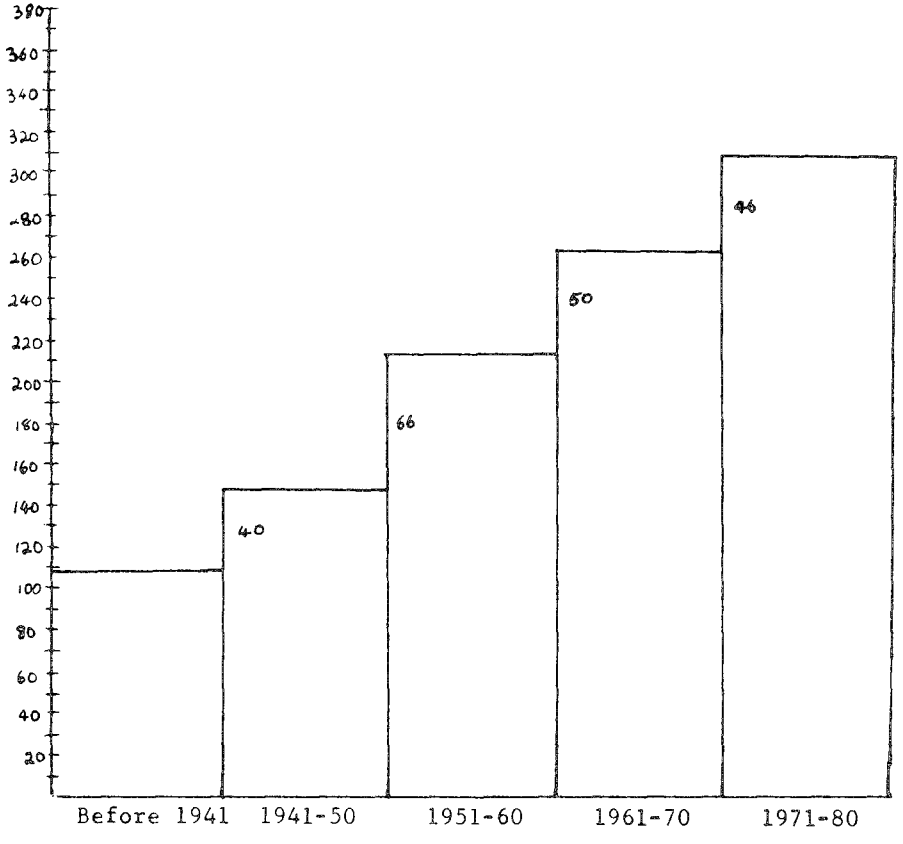


Chart 3
ACTUAL AND PROJECTED GROWTH IN SPECIALIST PROGRAMS: 1940-80

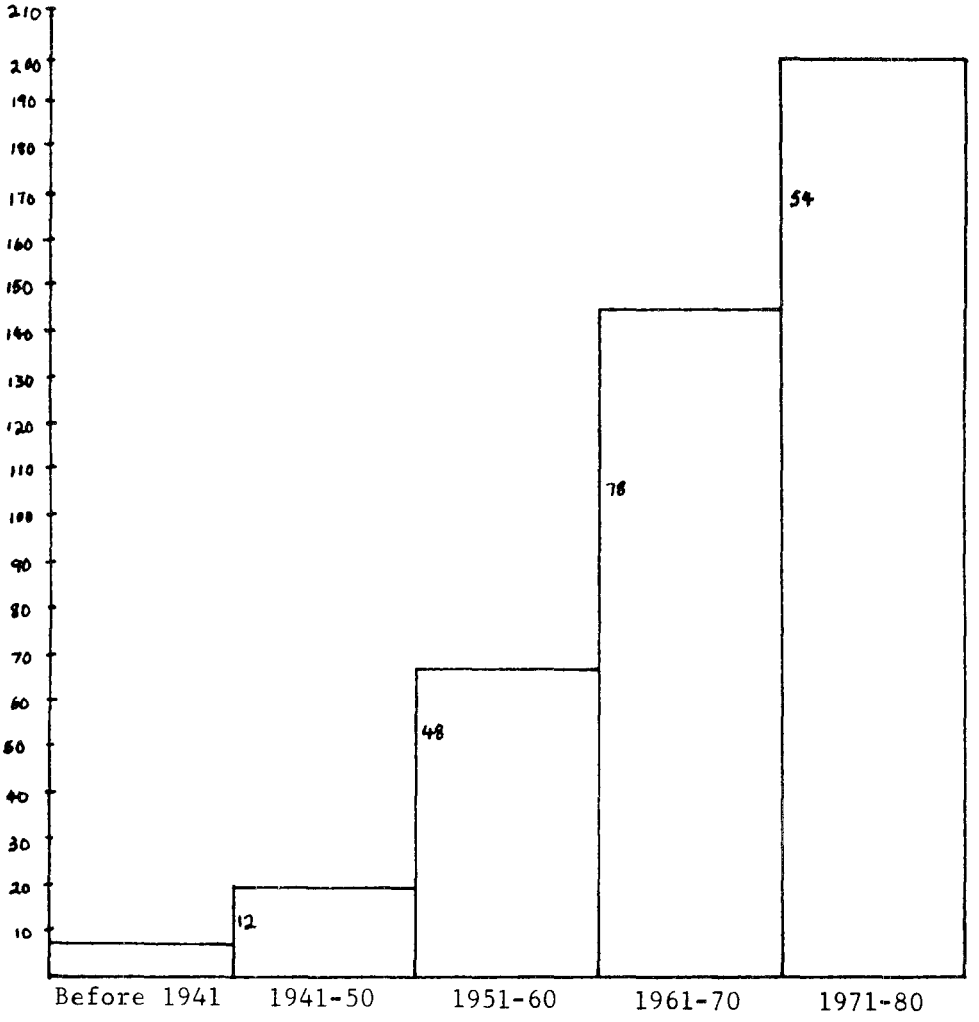
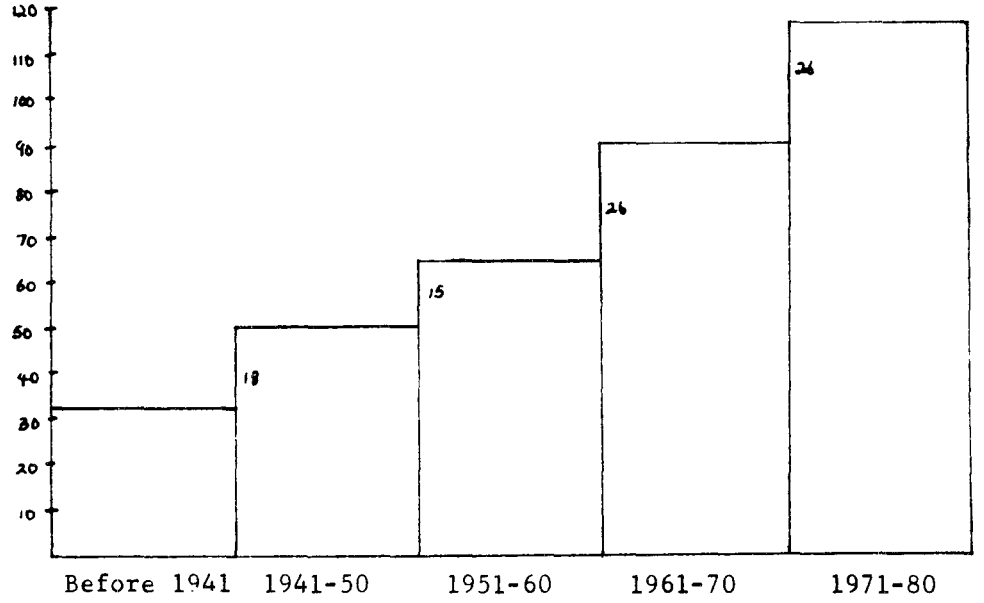


Chart 4
ACTUAL AND PROJECTED GROWTH IN ED.D. PROGRAMS: 1940-80



and higher education administrators during the seventies of the changing facts and conditions affecting the supply and demand for trained administrators. This awareness should bring about a slowing in the growth rate of institutions entering the field of administrator preparation during the 1975-80 period.

It should also be made explicit that depictions of trends for the 1940-70 period, unless indicated otherwise, are based upon data obtained from responding institutions only. Therefore, they reflect general trends rather than precise depictions of the full scope of trends. Thus, the overall quantity of growth during the 1940-70 period was considerably greater than that reflected in Chart 1.[5]

Projections of continued expansion in programs during the seventies are also based upon key facts. it is significant, for example, that 13 of the responding institutions preparing educational administrators in 1972 were not among those preparing educational administrators in 1970. If this rate of growth were to hold for the seventies, 65 new institutions would enter the field of administrator preparation during the decade. However, as already noted, projections assume that the growth rate for the 1975-80 period will be less than that for 1970-72. Nevertheless, a growth rate is projected for the seventies similar to that of the sixties. It is assumed that about two-thirds of the expansion will be reflected in new Masters programs.

Growth in Masters, Specialist, Ed.D., and Ph.D. Programs

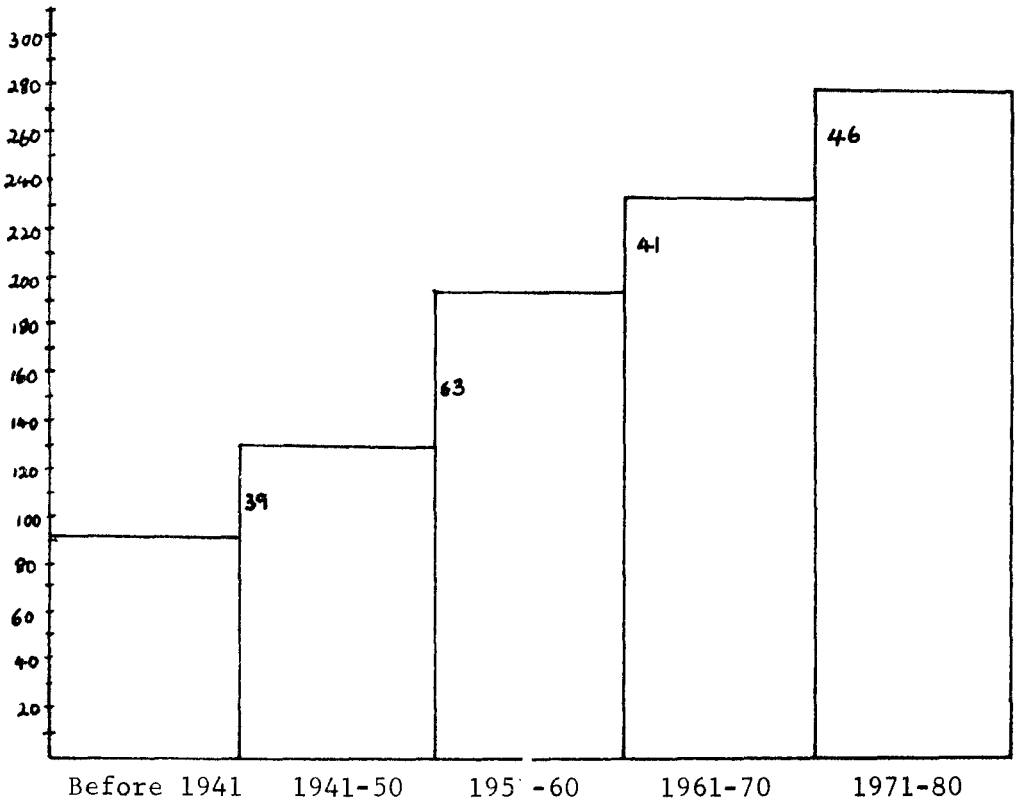
National training capability and growth can be examined in relation to each of the four programs offered by institutions. Chart 2 presents data on growth in Masters programs during the 1940-70 period and projects further growth for the decade of the seventies.

Data in Chart 2 suggests that the most substantial growth in Masters programs took place in the 1950's. Thus, growth in the 1960's was only 63 per cent of the 1950 rate. Several explanations can be offered for the slower expansion of Masters programs during the 1960's. First, in several states the Masters degree was instituted through new state regulations as a standard for the training of teachers. In these states, Masters programs in educational administration, at least for newly prepared teachers, were in effect eliminated. This helps to explain why ten institutions did away with their Masters programs in the sixties. Secondly, there was a very substantial growth in the number of Specialist programs in the 1960's, stimulated in large part by the American Association of School Administrators' – AASA – vote in the early sixties requiring its new members to have two years of graduate work in educational administration. This resolution, which was translated into accreditation standards, influenced substantially the marked expansion in Specialist programs. A major result of this expansion was that many personnel preparing for administrative posts were channeled into Specialist instead of Masters programs.

Chart 2 also projects a continued increase in the Masters programs during the 1970's. This projection is supported by the fact that seventeen new Masters

[5] Similar limitations underlie trends and projections in Charts 2 through 5.

Chart 2
ACTUAL AND PROJECTED GROWTH IN MASTER'S PROGRAMS: 1940-80



programs in educational administration came into being during the 1970-72 period. These new programs were intitiated largely by institutions becoming involved in administrator training for the first time. Their emergence is related to the general growth of colleges of education and their continuing tendency to expand from undergraduate to graduate efforts. In this regard, it is significant that, as the demand for newly prepared teachers has diminished in recent years, there is evidence that some institutions are looking for training options in other areas, including educational administration. Additional reasons can be offered for the projected and continued increase in Masters programs during the seventies. First, personnel in some state education organizations for administrators, state education agencies, and other organizations have played leading roles in a few states recently in cutting back two-year program requirements.[6] As a result, a few institutions are in the process of reactivating Masters Degree plus arrangements, especially for principals. Second, there seems to be a growing belief by some that Masters programs are less constrained than doctoral programs when it comes to providing opportunities for the preparation of more practice-oriented principals and other administrators. This thinking could well direct more attention to Masters programs. Finally, in a period of financial squeeze, Masters programs can be expanded with less expense and therefore encounter less resistance than doctoral or even Specialist programs.

Chart 3 presents data on the growth of Specialist programs during the 1940-70 period and projects continued growth for the seventies. This type of program grew more rapidly than any other during the 1940-70 period. Thus, there were more than twenty times as many of these programs in 1970 as there were in 1940. The big growth, especially in the 1960's, was influenced by the two-year training requirements which were adopted in various states and which stemmed, in turn, from the AASA vote on membership noted earlier. Growth was also enhanced by the fact that in a number of states the two-year program requirement, which was designed initially for superintendents, was expanded to encompass principals.

There is reason to believe that growth in Specialist programs will continue to be strong in the 1970's but not as marked as in the sixties. The projection is based in part on the fact that 13 new Specialist programs came into being between 1970 and 1972 and 23 new ones were projected for implementation by institutions during the 1972-74 period. Some of the same factors, already identified to explain the projected growth in Masters programs, will also be operating to bring about expansion in Specialist programs as; for example, the institutional press to expand and to add more advanced programs and the fact that Specialist programs can be initiated more easily and less expensively than doctoral programs. Assuming that AASA eliminates its standard of two years of graduate preparation required for membership, there will likely be a negative impact on the growth of Specialist programs. However, a counter influence will likely be a continued trend toward five-year requirements for teacher preparation.

Chart 4 depicts the growth of Ed.D. programs during the period 1940-70 and projects further growth for these programs to 1980. It will be noted that the Ed.D. program in educational administration has had a steady growth and that their number more than tripled between 1940 and 1970. The decade of the 1960's reflected the greatest growth, with 24 new Ed.D. programs. This growth was influenced by the same factors that created substantial expansion of doctoral programs and degrees awarded in the university community generally.[7]

Substantial growth in Ed.D. programs is projected for the 1970's. The projection is based upon the fact that during 1970-72, seven new Ed.D. programs in educational administration came into being. Further, 10 respondents indicated their institutions were planning to implement Ed.D. programs during the 1972-74 biennium. If the rate of growth for the Ed.D. programs for 1975-80 should be the same as for 1970-74, the number of new Ed.D. programs emerging in the seventies would be almost double that of the 1960's. However, as already noted, it is assumed that state boards of education, state legislators, and leaders in institutions of higher education themselves will hold back on the rate of growth as they become more aware of supply and demand variables. Therefore, a rate of growth only slightly higher than that of the 1960's is projected for the 1970's.

Chart 5 depicts the expansion of the Ph.D. program during the period 1940-70 and projects a further increase in these programs during the seventies. It will be noted that the overall growth rate of Ph.D. programs has been slower than for other programs. The number of Ph.D. programs added during the 1940-70 period, for example, was smaller than the number of programs already in existence in 1940, a feature not present in the growth patterns of other programs. At the same time, growth accelerated in each decade, and the rate increased significantly in the 1960's. The relatively slower growth of the Ph.D. program was undoubtedly associated with the fact that the Ed.D., in theory at least, is designed to prepare professional practitioners. In addition, the Ph.D. degree is more under the control of the larger university than is the Ed.D. degree. This latter condition tends to make it more difficult to add new Ph.D. than Ed.D. programs.

Further growth in Ph.D. programs is expected during the 1970's. Projections are based upon the fact that four new Ph.D. programs in educational administration came into being in 1970-72 and seven new programs were projected for implementation by institutions for the biennium 1972-74. If the growth rate for the 1974-80 period were similar to the 1970-74 period, the expansion in Ph.D. programs during the seventies would be greater than that in the sixties. The projection does assume that even with the "hold-the-line" financial and other pressures in higher education, there will be strong counter-pressures for growth in Ph.D. programs. This will be especially true in a number of the 40 institutions that now have Ed.D. programs but have not yet acquired Ph.D. programs. Thus, 15 new Ph.D. programs in educational administration are projected for the seventies.

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[6] These efforts are taking place at a time when AASA is reviewing its current membership requirements with an eye toward possible elimination of the requirement passed in the early sixties.

[7] The growth in numbers of doctoral degrees awarded in education during the 1960's was similar to that for the average of other graduate fields in universities. See Neville Robertson and Jack Sistler. *The Doctorate in Education*. Bloomington, Indiana: Phi Delta Kappa, 1971, p. 10.

Chart 5
ACTUAL AND PROJECTED GROWTH IN PH.D. PROGRAMS: 1940-80

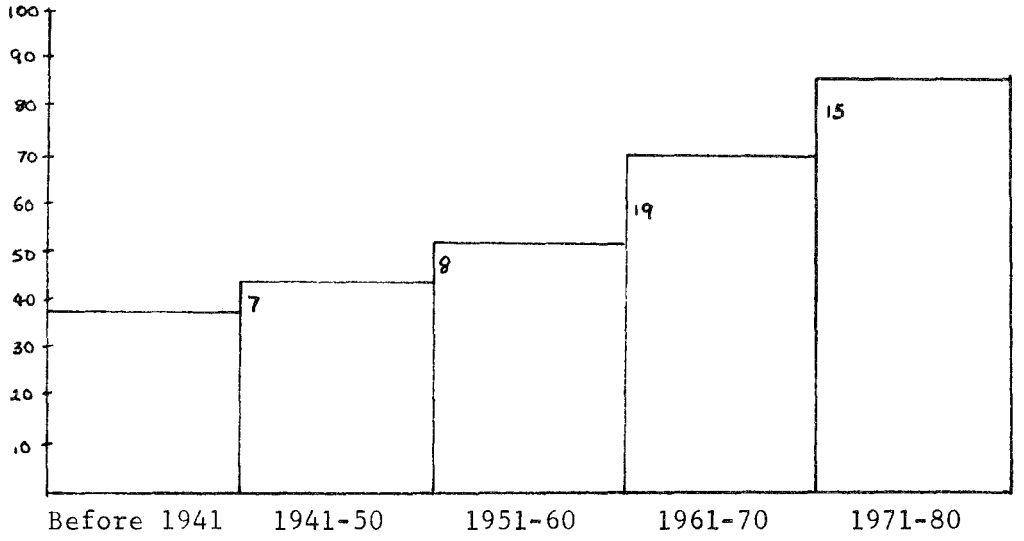

Table II
ACTUAL AND PROJECTED GROWTH OF ALL PROGRAMS IN UCEA AND NON-UCEA INSTITUTIONS

		Before 1941	1941-50	1951-60	1961-70	1971-80	Total
Masters	UCEA	45	4	2	3	3	57
	Non-UCEA	56	35	61	38	39	229
Specialist	UCEA	4	6	24	12	2	48
	Non-UCEA	3	6	24	66	52	151
Ed.D.	UCEA	24	13	7	6	4	54
	Non-UCEA	8	5	8	20	23	64
Ph.D.	UCEA	29	5	4	6	4	48
	Non-UCEA	8	2	4	13	12	39
Total		177	76	134	164	139	690

Table II presents in summary form growth patterns for all four types of programs for both UCEA and non-UCEA institutions. Clearly, there has been a remarkable growth in programs for preparing educational administrators. Given the data on the likely diminishing demand for traditionally defined pools of trained administrators as described later, the continued and substantial growth in programs likely to take place during the seventies is even more remarkable.

The differing rates of growth within UCEA and non-UCEA institutions for the 1940-70 period are noteworthy. The data indicate, as would be expected, that a very large portion of the growth in programs during the last three decades took place in non-member institutions. The projected expansion in programs offered by institutions in the seventies will certainly take place almost entirely in institutions outside UCEA. The major trend within UCEA will likely be for a few universities with Ed.D.'s to add Ph.D.'s and vice versa. New institutions entering the field of administrator preparation, as already noted, will also be non-member institutions. The evidence suggests that there will be a continuing press on the part of institutions concentrating on teacher training to enter into administrator preparation through the Masters and/or Specialist programs.

Other Measures of National Training Capability

There are other measures of growth in national training capability beyond that of expansion in the number of institutions and programs for preparing educational administrators. One of these is growth in the number of candidates graduating from preparatory programs. Although data related to this measure are limited, a few studies are available which can be used to examine growth. Thus, studies of the number of graduates with doctorate degrees in educational administration show that 651 were awarded degrees in 1965 and 1401 in 1970.[8] This represented a 71 per cent increase for the five-year period. During the same period, the number of Ph.D. programs increased by approximately 12 per cent and the number of Ed.D. programs by approximately 23 per cent.

Data are not available on the increase in numbers of students in educational administration who graduated from Specialists programs. However, the number of Masters degrees awarded in 1965 was 6508. In 1970, the number was 8946.[9] This represented an increase of approximately 37 per cent in the five-year period. Eight new Masters programs came into being during the 1965-70 period which represented an increase of eight per cent in these programs. Thus, available evidence clearly shows that the number of students graduating from programs in educational administration increased a great deal more rapidly during the last half of the sixties than did the number of preparatory programs, even though the latter showed relatively sharp increases.

There is also evidence that institutions of higher education employed more than their share of the rapidly growing numbers of doctorates produced in education during the 1960's. During the period 1961-63, for example, those receiving doctorates in education who accepted posts in institutions of higher education represented 15.8 per cent of the total population of graduates. In 1970, on the other hand, the percentage of those receiving doctorates in education and entering posts of higher education had increased to 20.8 per cent.[10] While data are not available on the specific percentages entering departments of educational administration, it can be assumed that these departments received their share. It is significant, in this regard, that one-fifth of all doctorates produced in colleges of education in the sixties were in educational administration and this area produced almost twice as many as did counseling and guidance, the second largest producing field.[11]

Whether one looks at the growth rates of institutions engaged in training, the numbers of preparatory programs offered, the number of students graduating from these programs, or expansion in the size of faculties, the conclusion is the same: There has been a substantial quantitative increase in national training capability related to administrative personnel. This condition precipitates a counter question; namely, what has been happening to the demand-supply side of the equation as related to newly prepared administrative personnel?

Some Measures of Supply and Demand

National data bearing upon the demand for, and supply of, trained administrative personnel are difficult to find. However, data that are available suggest that the number of trained administrative personnel needed to fill newly created or vacated posts in the public schools during the seventies will decrease at a time when substantial growth in the national training capability has already taken place and continues to develop.

One measure of demand is reflected in national trends in the numbers of administrative positions in schools. The largest number of these positions is represented in the principalship. Numbers for this position also seem to be a better overall measure of demand-trends than do superintendency positions, which have undergone relative decreases, or central office positions which have undergone relative increases for several decades. Chart 6 sheds light on growth in the numbers of principals and vice-principals during the period 1940-70 and projects a contrasting pattern for the 1970's. Data are limited to principalships in the public schools, since comparable data on private school principalships for the 30-year period are not available.[12] The projection of numbers of principalship positions during the 1970's is related to school enrollment projections for the decade. All projectionists agree that K-12 school enrollment will decline in the seventies.

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[8] See *Earned Degrees Conferred: 1964-65.* Washington: United States Office of Education, 1967, pp. 99-101; also see *Earned Degrees Conferred: 1969-70.* Washington: United States Office of Education, 1970, pp. 205-8.

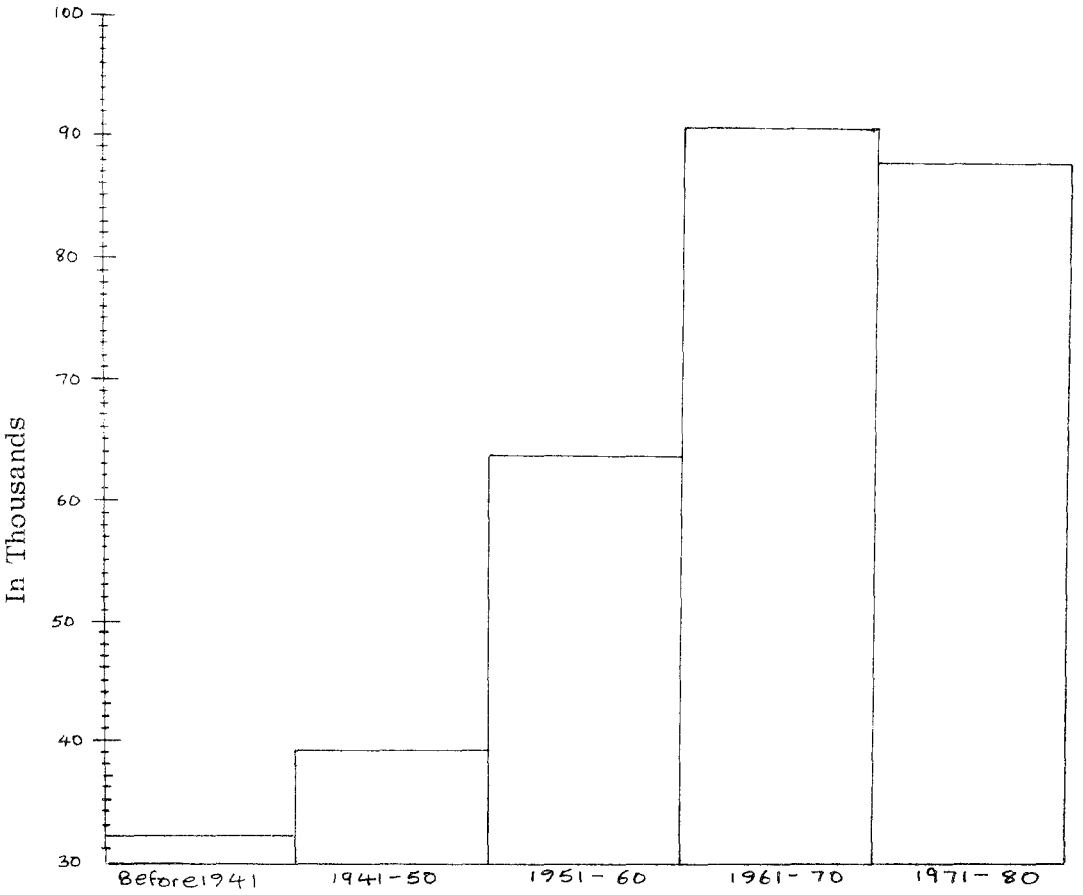
[9] *Ibid.*, same pages.

[10] The original data on which these generalizations are based were obtained from the National Academy of Sciences. For their organization and presentation see Donald Mitchell and Anne Hawley. *Leadership in Public Education Study.* Washington: Academy for Educational Development, 1972, p. 34.

[11] See Robertson and Sistler, *op. cit.*, p. 23.

[12] Appreciation is expressed to Vance Grant of the National Center for the Study of Educational Statistics, United States Office of Education, who provided data on trends in principalship positions.

Chart 6
ACTUAL AND PROJECTED GROWTH IN THE NUMBER OF PRINCIPALSHIP POSITIONS: 1940-80



However, there is some disagreement on the estimated rate of decline. Projections of the rate of decline vary at least from approximately two to six per cent.[13] Projections in Chart 6 assume a five per cent decline in the number of principalship positions in the seventies. The majority of this decline will be at the elementary level.

The data in Chart 6 suggest at least two pertinent observations. First, given a tripling in the number of principalship posts during the period 1940-1970, we can conclude that the demand for newly prepared principals increased substantially during this period. The rate of growth in principalship positions during the 1940-70 period matched the rate of growth in numbers of institutions engaged in preparation. Given comparable growth rates for principalship positions and training institutions, the rapid expansion in the latter during the last three decades becomes more comprehensible. In addition, it should also be recognized that regional laboratories, research and development centers, and other institutions which came into being during the 1960's created new demands for trained personnel as did the growing staffing requirements of state education agencies and the United States Office of Education. However, evidence already presented clearly indicates that the growth in the numbers graduating from programs was much more rapid than the growth in principalship positions.

The second observation bears upon the projection in numbers of principals for the seventies. Specifically, the extension of trends in new programs now underway shows a continuing increase in national training capability during the 1970's at a time when the demand for principals to fill newly created positions will diminish. If one accepts the number of principalship positions as a reasonable measure of demand, and if one also accepts projected increases in the number of new programs and institutions as reasonable, the conclusion cannot be escaped that there will be a substantial discrepancy between national training capability and traditionally defined training demands during the 1970's.

Since the number graduating from preparatory programs grew even more rapidly than did the number of programs, a question is raised about the supply of personnel already trained and certificated for school administration. While studies of this question are limited, those that are available show marked discrepancies between the number of people certified for administrative posts and the openings available in most states. A recent study by Mitchell and Howley, for example, showed that 21 out of 37 states reported that

[13] The National Center for the Study of Educational Statistics projects a decline of approximately two per cent in public school enrollment during the seventies. Wolfe and Kidd project a decline of six per cent. See Dael Wolfe and Charles Kidd. "The Future Market for Ph.D's" *Science*, Vol. 173, August, 1971, p. 787.

they had an oversupply of personnel.[14] Five of these states had a "great many more people than openings." In the State of New York, for example, there were 203 job openings for school principals in 1969-70 but more than 15,000 certified personnel for these posts. Even if one accepts the view that many of the individuals certified are not now motivated to enter posts of educational administration or, even if they are, would not likely be considered seriously, the discrepancy between the supply of certified personnel and the number of vacant positions in New York and other states is indeed marked.

Insofar as I am aware, there are no systematic studies of recent supply-demand relationships related to the professorship of educational administration. However, there is evidence that the demand for those entering professorship posts in educational administration during the last three years has been sharply reduced, especially in the larger and more established institutions. The flow of those with new doctorates in recent years, for example, seems to be more into posts created by new or recently developed programs in contrast to long established programs and institutions toward which much of the flow in the sixties was directed.

Those graduating from doctoral programs are not only facing tightened conditions associated with the financial squeeze, which have caused some established institutions of higher education to ban the creation of new positions and not to fill positions being vacated through retirement or mobility, graduates are also faced with such conditions as the following: Regional laboratories and R and D Centers are no longer expanding and some have been eliminated; state education agencies and the United States Office of Education, after their period of expansion in the 1960's, are recruiting many fewer doctorates; some school systems have experienced cutbacks in central office personnel and have established "hold-the-line" staffing policies as finance problems have become more critical.

In sum, then, there was a marked expansion during the 1940-70 period in national training capability in educational administration as measured by growth in the numbers of institutions, programs, and graduates. There was also marked growth in demand for newly prepared administrators as measured by the numbers of principalship posts during each of the last three decades. However, given current and projected conditions on these measures, there will be during the seventies a substantial discrepancy between national training capability and the demand for newly prepared and traditionally defined populations of administrators. This discrepancy becomes even more marked when available data on the supply of certified administrators are examined and when current conditions surrounding the market for researchers, developers, and administrators are carefully examined.

The discrepancy between training capability and training demand poses an unprecedented challenge to institutions preparing educational administrators. Innovation and adaptation will be required to meet this challenge. Some assumptions related to the challenge and some strategies for responding to it will now be delineated.

[14] *op. cit.*, p. 35.

The Challenge of the Seventies: Some Guiding Assumptions

Given the discrepancy between training capability and demands as outlined earlier, what are the implications within the future time frame of the seventies for UCEA centrally, and what are the implications for its member universities? From a national point of view, there are important issues concerning the relationships between UCEA and non-UCEA universities. These and other national issues will need to be defined and dealt with during the next two years as a UCEA plan for 1974-79 is evolved. However, in this paper, I want to concentrate upon implications largely within the context of training and from the perspective of decision-making by member universities in UCEA. The main purpose will be to define a number of potential strategies in program adaptation for those concerned with the discrepancy described heretofore. Before these strategies are elaborated, however, some underlying assumptions need to be articulated.

Assumption 1. The approximately 300 U.S. training institutions outside UCEA will continue to prepare a larger number of principals and other administrative personnel than those within UCEA. Most Masters and two-year programs are in non-member institutions. These programs are now, and will likely continue to be, the large suppliers of principals and other educational administrators throughout the 1970's. It is also significant that it is in Masters and two-year programs that a substantial majority of the large current surplus of certificated administrators has been prepared.

Assumption 2. Given the growing discrepancy between national training capability and demand for newly prepared personnel, the competition among training institutions for resources, students, and recognition will increase during the 1970's. Even if one assumes healthy economic growth and reasonable financial support for institutions of higher education, the competition for resources will intensify. This condition is already very evident with regard to private institutions engaged in preparation. It will likely become increasingly apparent within the context of state supported institutions. Since there will undoubtedly be relatively fewer candidates for preparation for principalship and superintendency posts, and since resources allocated to programs are often related to the number of enrollees, competition in recruitment unquestionably will grow. Intensified competition, then, will be a natural response to the discrepancy between expanding national training capability and diminishing demand.

Assumption 3. Institutions engaged in preparation during the 1970's will be operating in an environment of greater risk than in preceding decades. Growing competition and the need for institutional adaptation inevitably creates risks in any arena and, as already implied, institutions of higher education concerned with administrator preparation will not be able to escape these conditions during the 1970's. Risk will be enhanced by the likelihood that the environment for institutions of higher education will be less supportive financially than in previous decades. Because the leading universities of UCEA are more visible than emergent institutions, and more susceptible to stronger expectations from the educational and larger community, they face special challenges. However, it seems reasonable to assume that

schools and other institutions will continue to place value on effective research, development, and preparation. Moreover, it is assumed that the field of higher education and associated agencies have the capacity to adapt and respond to new needs.

Assumption 4. Institutions that thrive in the 1970's will lead in creating new, or in expanding underdeveloped, "markets" for well prepared administrators. Given the over production of certified personnel in administration, and the continuing growth of training capability nationally, adaptation in preparatory programs will be necessary. In order to flourish, institutions will need to achieve innovations designed to address unmet training needs more effectively or to create and serve new training demands. Adaptation will involve greater differentiation in preparatory programs and more attention to recruitment and placement. Institutions failing to adapt will incur risks that stem from growing obsolescence.

Assumption 5. During the 1970's, UCEA universities will be offered unique opportunities for leadership and program adaptation. The evidence would suggest that leadership in administrator preparation during the seventies, as in the past, will likely come largely from major universities such as those in UCEA. In theory, one can argue that new institutions have greater opportunities for innovation. Studies of practice in schools of education, however, show that emerging programs in newly created institutions generally have not demonstrated a capacity for major innovation. In the Robertson and Sistler study of new and existing doctoral programs in education during the 1960's, they concluded that new doctoral programs were less venturesome than those already in existence.[15] Most emergent institutions do not have up-to-date and comprehensive information about preparation to draw upon during the stage of program design. Those who systematically gather information apparently tend to take their cues from leading existing programs. In the words of Robertson and Sistler:[16]

> "..., it may well be that the need for recognition and acceptance places new institutions in a less favorable position with the result that imitation of established practices is given greater priority in the formative years than the setting up of new and experimental programs."

Assumption 6. Whatever adaptation leadership achieves in preparatory programs will necessarily be within a context of existing constraints. It is unwise to expect change in established preparatory programs of a totally encompassing nature. Past developments and current commitments of personnel will need to be understood and strategies of adaptation in established programs will need to respect ongoing efforts. New thrusts may very well arise alongside of ongoing efforts or with some adaptations in them. This poses a special challenge to universities where there are frequently long established traditions of preparation. Programs initiated in institutions entering the field of administrator preparation for the first time will also not escape major constraints. Because of the tendency for existing rather than new staff to take on responsibility for implementing programs in these institutions, innovative effort will be constrained.

Assumption 7. New designs in preparatory programs in the seventies will need to achieve greater differentiation in preparation for those planning to pursue different functions or assume different posts. In the sixties much attention was directed toward defining the commonalities in various species of administration generally and in educational administration specifically. Scholars agreed that content and experience in programs for principals, superintendents, and various central office administrators, should be considerably more alike than different.[17] In the seventies more attention will likely be addressed to differentiated aspects of preparation. Two assumptions support this generalization. First, the growing emphasis upon competence will require institutions to address functions that are special to given positions as well as those that are more generalized. Second, there will be a greater need to give major attention to placement and this will require more explicit differentiation in preparation as special training demands are created.

Some Suggested Strategies of Program Adaptation

Earlier it was noted that data about the future can be used to project strategies of adaptation. What, then, are some strategies which can be considered by those in training institutions interested in designing new programs during the seventies? A number will now be outlined for consideration. In one sense the strategies projected can be viewed as "alternative futures."

The strategies will be discussed principally within the context of school system leadership. The purpose of the discussion will be to illustrate a range of adaptation strategies in outline form rather than to be comprehensive either in number or treatment.

Alternative One. The reallocation of proportionately more resources into the continuing education of school administrators and proportionately less into resident preservice programs. From what has already been said, it will be evident that the number of educational administrators already on the job exceeds by many times the number needed to enter newly created or vacated posts in the 1970's. In 1969-70, for example, there were approximately 91,000 public school principals and vice-principals. Most of these and other practicing administrators face quite different situations than were present when they were prepared. More, the relative amounts of resources most universities currently allocate to continuing education tend to be small. Some institutions, then, could well direct relatively more resources into the continuing education of educational administrators.

A major purpose of continuing education could be that of providing administrators the concepts and tools that will enable them and their staffs to image and implement future school organizations. Various options could be considered with regard to this purpose and the continuing education strategy. One option would involve personnel redeployment. Currently, most all professors of educational administration are assigned responsi-

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[15] *op. cit.*, p. 67.

[16] *Ibid.*, p. 67.

[17] See Van Miller. *Common and Specialized Learnings for Educational Administrators: A Position Paper*. Columbus, Ohio: University Council for Educational Administration, 1963.

bilities associated with resident on-campus programs. This option would require changed responsibilities for current staff or different assignments for new staff. New responsibilities might involve full-time assignments to help personnel in school systems identify the continuing education needs of educational administrators within a future time frame and to develop learning experiences designed to meet these needs. A few institutions are already pursuing this strategy.

A second option would be to study innovations developed by professors of educational administration bearing upon continuing education and to select approaches judged promising for adoption and testing. For example, there is currently a growing interest in the externship program developed by Michigan State University. Professors in several institutions are beginning to use the method to meet continuing education needs in their area.

Still a third strategy would be that of identifying and studying technology used to transmit content for the continuing education of professional personnel in fields outside of education and to select and use the more promising ones in educational administration. The medical field, for example, has developed a number of different ways for using closed-circuit television and other communication devices for providing continuing education to physicians. It would seem reasonable to believe that a careful study of such technology might provide ideas for those interested in the continuing education of school leaders.

Alternative Two. Achieving a higher quality of preparation and meeting competition by cutting back on the number of students recruited and prepared in existing programs. This strategy could be appropriate for those in institutions where financial support is not directly related to numbers of students. Those implementing this strategy could assume that a higher quality of preparation might be achieved with half as many students as are now enrolled. Put differently, the same size staffs devoting twice as much faculty time and related resources to half as many students would improve quality substantially. This option might also involve a substantially greater proportion of time allocated to the recruitment of personnel entering programs. There is a growing recognition, in other words, that the discrepancy between the time devoted to recruitment and to preparation is too great and that relatively more time needs to be devoted to recruitment.

Alternative Three. The radical redesign of selected programs for preparing administrative personnel to enter already existing posts. There would seem to be little point in recruiting and preparing additional personnel in ways similar to thousands who are already certified for principalship and superintendency posts. Thus, an objective might be to design programs which would have different rationales, and differently defined recruitment, content, and instructional processes than those reflected in programs in which large numbers of certified personnel have already been prepared. Jack Thomas has set forth some ideas bearing upon this strategy in his outline of different models designed to prepare educational administrators.[18] These, which he labeled the instructional leader model, the management model, the political model, and the information technology model, were derived from different and even competing concepts of the administrator role. Systematically designed programs by different universities could produce quite different personnel than those prepared in the more eclectic type programs. Studies of the results in differing models could lead to advancements in the general field of administrator preparation and performance.

Another undeveloped area of preparation pertains to the various assistant or associate superintendency positions in school systems. New and differentiated programs for those in charge of business management, personnel administration, special services, and school communication are illustrative of potential areas in which institutions could develop unique programs. New approaches to the training of personnel for positions such as those just noted could result in greater differentiation in learning experiences for selected groups of administrators. Important outputs of this approach could be personnel prepared in specially designed programs and new models of preparation of import for the field generally.

Still another option relates to the theme of this seminar, "Imaging Alternative Future School Organizations." Programs could be designed to teach prospective leaders to be more effective in their quest for educational and societal vision, to provide them skills in projecting strategies designed to translate vision into action, and to offer them the concepts and tools necessary to be more productive in the future. Planning and futurology, as themes for program design, offers, in other words, substantially different foci for preparation than that received by the thousands of personnel already certified for administrative posts.

Alternative Four. The design and implementation of programs to prepare personnel for posts or functions not yet widely prevalent. To employ this strategy, an institution would not be so much oriented toward supplying specially prepared personnel for widely prevalent positions. Rather, the objective would be to prepare personnel for positions that have been established in a limited number of leading school systems and that are likely to be diffused to other systems. Currently, for example, there are limited numbers of continuing education directors in school systems. A case can be made that these positions will grow and that they will become more critically important in the future. Thus, two or three universities, accepting this assumption, could make a commitment to prepare a dozen specialists each year, thereby supplying school systems with newly prepared talent to direct continuing education programs. Examples of other types of functions emergent but not yet widespread would be those associated with educational planning and research.

Alternative Five. The design and implementation of programs to prepare personnel for posts or functions not yet prevalent. It is possible to conceive functions, or a set of functions, not yet being performed in school systems and for which there are no positions or personnel being prepared. For example, it is evident that problems of school finance and support will present major challenges to school systems during the 1970's and beyond. What types of new functions might be performed in school systems related to this problem area? For example, would it be possible to conceive and

[18] Jack E. Thomas. "An Exploration of the Demand for Specialists in Educational Administration." *Educational Administration Quarterly,* Vol. VIII, No. 2, Spring, 1972.

prepare economic analysts who might be employed by large school systems to perform functions similar to those performed in the private sector? Or would it be possible, to take another example, to prepare a team of personnel who would perform differing but interrelated functions associated with finance and who might be placed as teams in large school systems? Thus, an institution might seek to prepare teams consisting of an economic analyst, an operations researcher, a specialist in attaining external support, a business manager, and so forth. If such teams could be placed as groups in large school systems, they should constitute a greater "critical mass" and have more impact than would separately prepared and placed individuals.

Alternative Six. Recruiting personnel with unique backgrounds and preparing them to meet special needs in American education. An illustration in this area would be the preparation of minority group personnel to meet special educational needs. A number of UCEA universities, for example, are currently developing or carrying out programs designed to involve and serve the American Indian. Clearly, there is a major need in this area and there is much work yet to be done in recruiting and preparing members from other minority groups such as Black, Chicano, and Puerto Rican leaders.

It is also evident that the numbers of women in top leadership posts in education are very limited. In universities, less than two percent of professors of educational administration are women. Thus, some universities could place major emphasis upon preparing women to enter posts of educational leadership to meet important national needs.

Alternative Seven. A cooperative effort involving a number of interested UCEA universities in which each university would develop a defined specialization in preparatory programs and the central unit of UCEA and associated universities would evolve supportive systems of recruitment and placement. Such a strategy might involve as many as a dozen institutions which would seek cooperatively to create new but different markets related to preparation. Each might define a specialization unique to its institution designed to meet important needs that are not generally being met. Strategies presented in this paper could be one starting point for determining specializations. After choices of specialization were made, and each had defined a unique effort, participating institutions might provide assistance to one another in recruitment and in facilitating the entry of candidates into preparatory programs from different locales and backgrounds. They, in cooperation with the central unit of UCEA, might also provide assistance to one another in placing personnel in different regions of the country after their preparation. In cooperation with associated school systems, approaches to studying emergent new demands for training might be developed and ways for achieving adaptation in preparatory programs on a continuing basis might be devised. While there would be risk in this orientation, it is evident that the risk could be reduced substantially through inter-institutional cooperation.

[19] See Chapter Three. "The Business-Education Interface" in Jack Culbertson, *et al., Preparing Educational Leaders for the Seventies.* Columbus, Ohio: University Council for Educational Administration, 1969, pp. 30-55.

[20] Erwin Miklos. *Training-in-Common for Educational, Public, and Business Administrators.* Columbus, Ohio: University Council for Educational Administration, 1972.

Alternative Eight. The design and implementation of programs to prepare personnel for posts in multiple and diverse organizations; e.g., government, business, and education. The signs abound that there is growing interaction between leaders in the public and private sector and between and among leaders in the public sector.[19] In addition, there have been some efforts made in recent years to prepare leaders for business, government, and educational organizations in the same program.[20] Thus, still another strategy is that of designing programs to prepare leaders for multiple organizations in the same program. Institutions might choose to limit their efforts to prepare selected leaders in public organizations; e.g., superintendents, mayors, hospital administrators, and so forth, or to encompass leadership in both the public and private sector. Variations on this strategy would require the creation of special alliances with appropriate departments or schools in the larger university by leaders in departments of educational administration.

Alternative Nine. The design and implementation of programs to prepare educational leaders for non-school settings. The strategies elaborated to this point have been illustrated almost entirely within the public school contexts. Clearly, there are many opportunities for expanding markets or creating new ones in other contexts. The same strategies already elaborated could be applied, for example, to higher education administration. Even though the recent growth in numbers of institutions involved in preparing higher education administrators has been marked, enrollments and numbers of administrators needed in the seventies will grow substantially in contrast to the drop in numbers of newly prepared administrators needed in public schools. The replacement of an estimated 500 professors of educational administration who will be retiring in the 1970's is another area of preparation that deserves consideration and most of the strategies elaborated above could be used to explore potential training emphases bearing upon the professorship. There are of course many other needs which could be addressed including the following: preparing leaders for alternative schools, preparing interested citizens at the local or state level to exercise more effective leadership in education, working with national organizations; e.g., American Association of University Women, to define and meet learning needs associated with education, preparing directors of continuing education for education-related organizations (state and national administrator associations), preparing personnel for educational leadership in developing nations, and so forth.

Alternative Ten. The allocation of proportionately greater resources into research and development activities designed to undergird training. Institutions adopting this strategy might view their general objective as that of creating greater amounts of conceptual capital for use in preparatory programs generally. Individuals on staffs would concentrate not so much on either continuing or resident preparation as they would on research or developmental endeavors supportive of training. One orientation could, for example, be toward discipline-based research. Such research might focus upon such areas as the politics of education or the economics of education. Another possible thrust might be oriented toward idea development. In this orientation, professors would seek to generate policy alternatives related to significant problems facing educators and citizens at the

state, local, or national level. The *Serrano vs. Priest* and related cases, for example, could provide scholars opportunities to generate a range of alternatives which could be considered by policy makers in responding to problems associated with equality of opportunity.

Still another option would be to assign or recruit personnel to develop useful products. Thus, some institutions could devote efforts to translating existing and up-to-date content on educational administration into materials that would facilitate the continuing education of school administrators. Much of the content available on educational administration is now organized and presented in a more generalized than applied fashion. The effective synthesis of ideas and information related to administrator problems or functions could help advance the continuing education of administrators locally, regionally, and nationally. If effective, there could be, in other words, an important multiplier effect in this strategy.

The ten alternatives illustrated above suggest the wide range of strategies which UCEA universities can use to achieve effective program adaptation in the seventies. Clearly, these strategies offer institutions varied opportunities either for expanding existing and underdeveloped markets for trained personnel or for creating new demands for well prepared personnel through innovative program designs. The potential for leadership in UCEA universities is great. In responding to the problem of over-production and over-capacity, unique and unprecedented opportunities for institutional renewal will be provided. Even more important, institutions through effective self-renewal should be able to meet the needs of society and of educational institutions for new kinds of leadership.

General Summary

In this paper, the method of trend analysis was used to depict past and projected growth in national training capability in educational administration and to assess relationships between capability and training demand. The past time frame was the 1940-1970 period, the future time frame was the seventies. The data revealed that there was a marked growth in preparatory programs for the 1940-70 period, that continuing and substantial growth is a reasonable projection for the seventies. However, the continuing growth in training capability in the seventies contrasts with projected diminishing training demands, at least for such large administrator populations as the principalship.

Given the projected imbalance between training capability and demand, the thesis was advanced that institutions of higher education will need to create new markets for trained personnel during the seventies, that the universities in UCEA will need to take the lead in the creation of new markets and, given their visibility and past accomplishments, special expectations will continue to face them in the seventies. Ten strategies of adaptation were elaborated for institutions interested in responding to existing or emerging needs for well prepared personnel and for effective institutional adaptation.

SOME IMPLICATIONS AND CHALLENGES DERIVED FROM CULBERTSON'S FORECAST OF AN OVERPRODUCTION IN THE 70'S OF OUR NATIONAL TRAINING CAPABILITY IN EDUCATIONAL ADMINISTRATION

by
Richard C. Lonsdale

Following a speaker who has delivered a major paper at a conference, the "reactor" to that paper has at least two possible tasks. One may be to extend, embellish, or even revise the remarks of the presenter. The danger is that of seeming to say, "This is what you should have said." A second, and one I see as more functional to a conference, is to analyze the implications of the remarks and suggest some of the challenges growing out of the paper. In this second task the reactor is an intermediary, or effector, whose objective is to help an audience join issue with the presenter.

After all, the one advantage of the reactor is not any presumed greater ability to see these implications and challenges than that of the audience, but simply his greater amount of time to ponder the paper — presuming that he has had an opportunity to study the paper ahead of time — and to raise questions that will provoke and guide discussion.

As a basis for the rest of these observations, I am willing to accept Culbertson's forecast of an overproduction during the 70's by our national training capability in educational administration.

Given this predicted overproduction of educational administrators, abetted by the continuing increase in the number of institutions providing programs of training, it would seem reasonable to predict that the law of the marketplace will operate and that the middle, or latter part, of the decade of the 70's will see some programs in educational administration falling by the wayside. Indeed, I would say that this result is to be hoped for. On the other hand, it is to be hoped that Darwin's theory will apply and that it will be the fittest of existing programs that survive.

Survival criteria

Culbertson has done us a service in proposing eight alternatives; strategies which he suggests may be thought of as "alternative futures." Certainly, to be one of the surviving institutional programs, a university ought to realize one or more of Culbertson's alternatives over the rest of this decade.

Another, more detailed and extensive list of "survival criteria" was published in 1971 in *Educational Futurism 1985* (Berkeley, California: McCutchan, 1971), the report of the 1985 Committee of the National Conference of Professors of Educational Administration. Professor Walter G. Hack of The Ohio State University and his committee were bold enough to propose "that only graduate programs in educational administration meeting these criteria deserve to survive until 1985." Their seventy criteria were gathered under the headings of purposes, organization, program, faculty, students, alumni, facilities, and funds.

Means of expiring

If it is safe to predict that some programs in educational administration may, and ought to, pass out of existence during the current decade, then it is fair to suggest several means by which such expiration might occur. One is by suicide, after making an institutional self-study and then deciding to quit the race. One public institution in New York State has already decided to do this. A second means is by sentence of death from the profession, if there is a sufficiently tough accreditation process executed by the voluntary professional accrediting bodies, or by the regulatory action of strong state education departments. A third means is by starvation, where the demand for services of the unfit institutions dries up as a result of the operation of the marketplace in our free enterprise system of higher education. But I am pessimistic about the starvation method. Students are too unwilling, or unable, to assess differential program quality in a marketplace where their criteria for selecting an institution in which to pursue a program in educational administration are too often irrelevant to the quality of the program. Students' criteria for selecting a program are so frequently ease of geographic accessibility, lower comparative tuition cost, or easier requirements.

I might as well admit that I am not very hopeful about the success of any of these means for bringing about the "honorable discharge" of surplus programs of educational administration. Rather than sloughing off excess weak programs, I expect we are going to have to work harder than ever to improve the strong ones. To this end I should like to draw a number of implications from Culbertson's paper.

What Are Specific Implications of Culbertson's Assumptions and Alternative Programs?

For UCEA

1. Can we provide the resources to keep UCEA strong and effective so that UCEA may assist its member institutions to remain among the fittest programs that will survive? In the decade of the 70's, when competition among institutions will increase and when resources are likely to be scarcer, will member institutions continue to allocate their own scarce institutional resources to the membership fee, and other costs of membership, required for institutional participation in UCEA?
2. Should UCEA continue its present membership criteria which have given it to date a total membership representing only about one-seventh of all the institutions preparing educational administrators?
3. Can UCEA improve its program of services to institutions that help them to undertake, or to continue, institutional program development?
4. Can UCEA help the profession to evaluate differential quality of institutional programs in educational administration? In this process, can the profession be helped to recognize the superior quality, in general, of the programs in UCEA member institutions? Appropriate infor-

mation pieces, such as a handbook, might contribute to this latter purpose.

For universities

5. Will our universities recognize the urgency of a new concerted effort at program development? In the history of program development among departments of educational administration, 1955-65 was the period for introducing a new emphasis upon organizational theory and other bodies of theory derived from the social and behavioral sciences. It was a period when educational administration was catching up with other fields. The period 1965-70 was a consolidation phase. Culbertson's paper implies that 1971-80 should be a period for the development of "extended programs of the present" and "programs of the future," to adapt some current UCEA terminology.
6. Are we willing to become departments of *educational* administration, at last, rather than departments of *school* administration, in the sense that Michael Marien argues when he speaks of the education complex as an emerging macro-system?
7. Can we do a better job of conceptualizing and institutionalizing the process of program development? To accomplish this, we need good case studies of program development experiences, such as those at the State University of New York at Buffalo and at the Ontario Institute for the Study of Education. We need more efforts at comprehensive program development, more akin to the "root method" of Lindvall than to the usual "branch method" of change. We need to experiment with organizational development procedures applied to our own programs of educational administration. In that process we could put to use some of the findings of the research on organizational climates of departments of educational administration being conducted by Carl Steinhoff and Lloyd Bishop of New York University.
8. Can we expand or modify the structure of overt social rewards for faculty members by designating contributions to program development as a kind of professional productivity to be honored among the bases for salary increments, promotions, and the granting of tenure?
9. Can the fittest of our programs develop a clearer image of quality within the profession, and within our respective service areas, in order to attract at least the better students?
10. Can we accept genuine institutional cooperation that will include surrendering some of our institutional sovereignty?
11. Can our institutions generate sufficient income to support their work from activities other than traditional, formal programs of course-credit instruction?

For individual professors

12. Can we as individual professors develop or demonstrate the ability to conceive, and carry out, new programs in educational administration that will be "relevant" to the actual future that will emerge — one might say "survive" or "be fulfilled" — out of all our projected "alternative futures?" Do we have the imagination, the daring, and the learning capability for ourselves and for our students? Can we feel secure in living with new models of programs that may not be campus-oriented?
13. Can we further develop specialization emphases within our professorial ranks in order to fill the roles of researchers, developers, disseminators, and appliers? Especially important among these at the present time, I feel, is the role of developer.
14. Can we work toward the development of more "tripod professors" who have one leg in their institution where they contribute to strengthening it, a second leg in the "field" where they work as disseminators and appliers and as receivers of new input from practitioners, and the third leg in the mainstream of the development of the profession as such? In their recent survey of the professorship in educational administration, Roald Campbell and Jack Newell identified the familiar "local" and "cosmopolitan" professors, along with a third "field-oriented" professor. They also found some examples of this fourth professorial model in our field, which I am labeling the "tripod professor." If not all at one time in any one year, the three models can be seen illustrated in the individual university careers in one period or another of a small number of professors of educational administration. I would predict that the incidence of this model will increase.

Conclusion

The main issue, therefore, that I draw from Jack Culbertson's paper is this one: It is what I call the Darwinian issue. Shall the fittest programs in educational administration among our universities survive to give leadership to the macro-system of education in order better to help educational administrators meet the challenges of whatever future amalgam emerges from all of our "alternative futures?"

PROPHECY AND PROGRAMS IN EDUCATIONAL ADMINISTRATION

by
Donald J. Willower

Institutions cope in a variety of ways with change, ordinarily through mechanisms geared to the maintenance or restoration of stability. Severe environmental turbulence, or crisis, is almost sure to activate such coping mechanisms. Planning, if effective, can reduce pressures for reactive coping. However, planning based upon relatively systematic explorations of alternative futures is more widely applauded than practiced.

Culbertson's paper is an explicitly circumscribed treatment of future training needs and capacities in educational administration. Essentially, it reports trends in school administrator supply-demand and foresees a substantial oversupply. Further, it suggests a number of adaptive responses available to preparatory agencies.

The analysis of trends is direct and clear-cut. The time span is short and the mechanics of the projection are uncomplicated. However, such straightline projections assume that conditions which affect outcomes will remain relatively fixed. The impact of events such as legislation and court interpretations, new technologies, war, and social upheavals is not incorporated in these analyses; nor is the clash of trends. For a different style of thought, recall the Hegelian dialectic and its later materialistic expression by Marx. The notions of thesis, antithesis, and synthesis represent a framework foreign to that of trend review and, in spite of the limitations of dialectical analysis, serve to underscore the ease with which we lock ourselves into familiar perspectives.

To create warranted images of the future is a formidable undertaking. Carl Hempel, in an essay on the function of general laws in history, pointed out that abstract propositions on cause and effect are essential to knowledge about the past, a consideration that foreshadows the potential complexity of preparing adequate future history.

A Nabokovian composition, in which a character ponders the fate and circumstances of a speck of dirt ten, twenty and fifty years ago and hence, evokes the novelist in search of a futurist but also suggests, in a symbolic way, the gossamer quality of the connection between prophecy and reality. Thus, it is one thing to embrace the lucid injunction to plan ahead, another to believe that such planning can be done with solid assurance. Caution is all the more appropriate when the focus shifts from likely futures to desired ones, and to the problem of navigating the labyrinth that separates present from more desirable states.

The search for desirable futures implies questions of valuation and ultimately of feasibility. The Culbertson paper does not deal directly with competing values, but different underlying values appear to be implicit in the various institutional responses to oversupply that he discusses.

The valuation aspect of futurology, the sketching of desired futures, recalls the exercise of examining the implications of competing philosophical systems for areas like education, government, or the economy. While such exercises commonly have been futile because of man's inability to shape his destiny in the face of complex contrary forces, at least basic ethical preferences are made explicit. If futurism is to have an ideological component, as seems inescapable, then the values associated with alternative futures, as well as the preferences and predispositions of the analyst, should be made manifest.

In spite of the general points made concerning future history, the Culbertson essay appears limited enough in scope and time so that the trend analysis has utility as an input to planning by universities preparing educational administrators. However, short ranges prophecy about supply and demand is a simpler matter to deal with than that of the responses of preparatory institutions to a changing environment that features threatening shifts in the supply-demand ratio. In this connection, it seems that Culbertson is presenting a number of possible strategies that institutions could employ in an adaptive sense. He is not making predictions so much as suggesting alternative futures.

Several of the strategies involve one or another kind of institutional specialization. One suggests reductions in quantity and an emphasis on quality but in an intra-institutional context, another proposes inter-institutional specialization and cooperation, an activity that UCEA is in a good position to facilitate. Although Culbertson's trend analysis furnishes grounds for advocacy of a reduction in the number of institutions having programs in educational administration, such an alternative is not advanced. Perhaps this is realistic, since organizations are adept, even creative, when it comes to survival. Moreover, the politics of survival produce an abundance of apprehension and Machiavellian exertions, but this kind of a problem is endemic to planning that disturbs interests served by present arrangements. In any case, it should be plain that survival and excellence are not the same thing.

Eventually, analyses of alternative futures should give way to analyses of desirable futures. This requires explication of criteria of desirability and exploration of the questions of desirability for what purposes and populations. Yet, such efforts will not be fruitful if they fail to lead to reflective choices that make a difference. Here, it seems, we face a major societal shortcoming: the lack of social structures that can function as ready mechanisms for the making and implementing of rational choices. Even if ominous futures are foreseen or, in contrast, the capabilities exist to chart courses to better circumstances, regnant social and political decision structures ordinarily are geared to less reasoned, more expedient, shorter range concerns and often serve as channels for the expression of the views of potent but narrow interests.

The matter of decision structures also lies at the heart of the potential conflict between planning and freedom. The argument that planning can confer freedom by reducing undesired and hampering effects is sound but, nevertheless, planning is a means and not an end. It can be employed to degrade and destroy as well as to enhance and create. A high priority should be given to futures planning which is devoted to social structures that could make planning itself both more effective and just.

Returning again to educational administration, it seems that this bounded, but significant, field offers opportunities to those involved and affected to attempt intervention that aims to influence the future rather than to be carried blindly along on unknown tides. Whether one believes that Culbertson's alternatives represent adequate and useful responses is beside the point. In fact, there may be more suitable institutional responses. Culbertson's work over time has had a most constructive impact on educational administration. In the present context, it suggests the signal utility of an imaginative concern for the future. Moreover, UCEA as an agency with considerable influence in educational administration, offers a vehicle with the potential to win at least some modest victories for rational planning.

Furthermore, futurology itself can contribute in a special way to such ends. Here, I would like to speculate about a latent function of developments, or movements, like futurology. The idea of looking ahead, of forecasting and of seeking to influence future events is a very old one. However, the futures movement, with its special terminology and newly formed societies, functions to legitimate and revitalize an old and perhaps faltering idea. It allows us to ignore that we have ignored a fundamental kind of activity. The old can be rediscovered as if it were exicting and new. The same kind of latent function has been served in education by the behavioral objectives and assessment movements, both of which have dressed old ideas in new clothing.

New movements, although often faddish in execution, evoke new enthusiasms and rekindle dormant commitments. They also can ease the competition for resources. Insofar as the symbolism and impetus furnished by the futures movement results in better planning, and confers legitimacy upon the search for alternative and more desirable states, it must be welcomed. To attempt to shape our fate is itself a desirable alternative.

SOCIAL INDICATORS IN FUTURE POLICY FORMULATION

by

Walter F. Mondale

It is entirely fitting that I should be speaking to you on social indicators only a few weeks after we have celebrated our newest national holiday: Columbus Day. Some of you may not know that Christopher Columbus laid the foundation for modern social programs. When he embarked on his famous voyage, he did not know where he was going; when he got there, he didn't know where he was, and it was all done on borrowed money!

In a way, we are in even worse shape with respect to our social programs today. It is increasingly evident that we often do not know where we stand. At least, Columbus knew where he started from.

Whether we realize it or not, we have had a quiet revolution in America in the past twelve years; a revolution of rising expectations. After eight years of little turmoil or challenge, John Kennedy inspired us with a call to get the country "moving." As the expectations of the American people have risen in response to that and later challenges, the nature of governmental programs has had to change.

A recent report by the Brookings Institution phrases it well:

> In the 1960's, people began asking more of the federal government. First, a variety of new programs were enacted, many of them designed to provide direct services to people, especially poor people . . . . Other new programs were aimed at improving the quality of the environment — reducing air and water pollution, invigorating urban planning, and reducing urban blight.

As a result, we have encountered an entirely new set of problems which have changed the shape of the national debate over policy.

The Brookings report goes on to note that until recently, governmental programs were "relatively uncomplicated activities." Until the last decade:

> The major issues of public policy concerned *whether* the federal government should undertake a particular activity and *how much* should be spent on it, not *how* it should be carried out.

Social Security, for example, was once a radical concept. But it was not complicated. Highways are rather easy to design and build. In the Great Depression, when people were out of work, we acted directly to create jobs through the W.P.A.

Since the early 1960's, however, according to the Brookings report:

> The American people, and their political representatives have accepted a greatly broadened concept of the appropriate role of the federal government in dealing with the nation's social problems.

We now must decide how we are to shape this governmental role. It is no longer a question of how much money. We have a crisis in knowledge. We often don't know what to do, at all, about our problems or whether what we have tried does make a difference.

As programs have become more complex, standards for measuring their success have become more elusive. We can hire an engineer to build a bridge, or construct a schoolhouse. Once a school building is finished, it either stands or falls. We have a definite indicator of success.

However, that building tells us very little about the quality of the education within. And yet, in recent years, the primary purpose of federal education programs has been to improve the quality of education — not just to build more schools. And we have discovered that we can't just hire educators, tell them to improve reading or spelling or math achievement, and expect automatic success.

Mancur Olson expressed it very well in a 1970 article:

> We need information about the condition of society — about how much children have learned, not about the time and money used for schooling; about health, not about the number of licensed doctors; about crime, not about the number of policemen; about pollution, not about the agencies that deal with it.

And so it is with drug abuse, and with welfare and poverty, and consumer protection.

As standards for measuring a program's success have becomes more elusive, the possibility of waste has increased. As the ability to find easy solutions has

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**EDITOR'S NOTE:* The author is the Senior United States Senator from Minnesota.

After only two years in the Senate, he was already convinced that members of Congress, and the President as well, were forced to make many far-reaching decisions on the basis of wholly inadequate information. He was, thus, struck by the significance of a column by Joseph Kraft, in the 1967 *Washington Post*, which suggested the idea of a Council of Social Advisers.

Senator Mondale was scheduled to read his paper at the concluding session of the Seminar. As it turned out, however, the unusually late ending of the Ninety-Second Congress in 1972, coupled with the rigors of an election campaign for a second Senate term, intervened and Mr. Herbert N. Jasper read the Senator's paper instead. Mr. Jasper was introduced by Dr. Malcolm C. Moos, President of the University of Minnesota.

Mr. Jasper is staff director of the Special Subcommittee on the Evaluation and Planning of Social Programs. He also covers a wide variety of legislative issues for Senator Mondale, especially in the fields of health, labor, manpower and science.

decreased, the frustration of people with this waste has continued to grow.

While we have sometimes not invested sufficient sums in new social programs to give them a fair test – educational aid for the disadvantaged comes to mind – it is clear that our growing sense of failure is not because we have not tried. Both absolutely and relatively, social programs have grown rapidly. This year, the Federal budget allocates 42% of the total for human resource programs: more than $110 billion.

And so, we have invested ever-increasing billions in these programs, assuming, as we used to, that simply determining what should be done and how much should be spent would suffice. As a result, waste has continued to grow.

We may have come to the end of the line with our conventional approach. There is a growing demand to know "what works" before we try, at least in domestic programs.

For the eight years in which I have been in the Senate, I have constantly fought against waste in our military and space programs. I believe in a strong defense establishment and in a sound space program. But I have observed that such programs are weighed on a different scale.

Three years ago, I began my opposition to the development of a space shuttle – a fancy truck designed to carry eight men into space – with a total program cost of $40 billion. I oppose the shuttle because I am convinced that the shuttle is a wasteful luxury and that we can have a better space program without it.

Those of us who have opposed unjustifiable space ventures and useless military hardware must also recognize that there is another kind of waste; waste caused not by desire to preserve large bureaucracies or to please powerful interests, but waste resulting from inability to know when a program designed to meet real human needs is succeeding or, for that matter, failing.

Today, we don't even have the basic information needed to plan such programs effectively. And we also lack the techniques for telling us when a program has really helped the people it was designed to serve. In short, we plan, develop and carry on programs without benefit of meaningful analysis.

In several important areas, lack of information, and lack of ability to measure success, have led to disaster.

Public housing is one example of where we have spent billions. It began as a laudable attempt to remove people from intolerable living conditions into safe, decent environments. In fact, many of these projects often resulted in condemning those people to live in twenty-story concrete closets – out of sight and out of mind of the most affluent society in the world.

We ignored the social implications of these projects. In so doing, we continued, and maybe have even increased, the concentration of the poor. We failed to address ourselves to the psychology of the poor. And so we necessarily failed to devise ways to help them make themselves unpoor.

Just as with public housing, urban renewal has sometimes fallen short of our expectations. Too often renewal has meant uprooted lives and the destruction of old and stable communities. Over a hundred years ago, Henry David Thoreau remarked that "cities are millions of people being lonely together." Over a century later, government urban renewal programs spend billions of dollars and often only add to the sense of loneliness of our nation's people.

In other areas, we have failed by not even trying. In the face of a continued rural-urban migration, we have devised no policy or program. A rural way of life is often praised but little is being done to preserve it. Instead, we stand by while tens of thousands stream into our already crowded cities.

There are many reasons for our failures. At least by now we *should* know that try now, pay later, is not the way to build the society we seek. But have we learned?

Despite our experiences with public housing, urban renewal, and other disappointments, we're still relying, more than we need to on trial and error to find out what works and what doesn't. We spend over $50 billion yearly on education in this country. Less than ½ of 1% of that sum goes to basic educational research.

In my work as Chairman of the Select Committee on Equal Educational Opportunity, I have been appalled by our lack of knowledge. This has led some – such as Christopher Jencks – to suggest that it doesn't matter much what we do in our schools. I am not prepared to accept such a conclusion. A nation that can put men on the moon can surely figure out better ways to educate its children.

Often, we do know – unlike Columbus – where it is that we want to go . . . . But we must figure out *how* to get from where we are to where we want to be. The problems we face will become geometrically more complex and the size of the mistakes which we could make, if we continue "stumbling into the future," will also increase geometrically.

I am reminded of such a tragic mistake which we made, for want of analysis, in 1969. The new Administration learned that the Job Corps was spending over $7000 per enrollee and that *only* 50 to 70% of the participants could be termed successful.

So it closed 51 camps and abolished 17,000 training slots. A number of us asked for data which would permit a comparative analysis of the Job Corps with a variety of other manpower programs which were favored by the Administration. Weeks later, following repeated Congressional inquiries, the GAO produced a table which featured the number "2". This was a footnote which said that the data were "not available."

Lack of hard data is no excuse to stop trying to reach the goals of increasing equality of opportunity, improving the quality of public services, and rescuing the environment. As the Brookings report points out, "There is now a widespread consensus, transcending party lines," that these goals are and should be important concerns of the federal government.

But if we are to avoid mistakes, we need information. If we are to avoid massive waste, we need to know where programs which we have begun are leading. We need to improve very greatly both the quantity and the quality of our analysis.

John Gardner has described our stumbling into the future as a "great and honored tradition."

> We are heedless and impulsive. We leap before we look. We act first and think later. We back into next year's problems studying the solutions to last year's problems.

No one solution will enable us to change this pattern of thinking. But we must begin to grasp the future and shape it to our country's needs.

For that reason, I have introduced legislation to establish a Council of Social Advisers. The bill is called the Full Opportunity and National Goals and Priorities Act. I first introduced this bill in 1967. In 1970, it passed the Senate and died in the House. It passed the Senate again last July, but was not acted on in the House. Perhaps we can do better in the 93rd Congress.

This bill would establish a Council of Social Advisers in the Office of the President, to do for us in the social sphere what the Council of Economic Advisers does in the economic sphere. The Council would have the responsibility for establishing principles of social accounting and for spearheading a social indicators program — for appraising domestic programs — and for advising the President on domestic social problems. The bill would require the President to submit an annual Social Report to the Congress. And the Congress would hold public hearings and subject the President's Social Report to critical analysis.

We've had a Council of Economic Advisers since 1946. It has more than proved its value. When we're dealing with economic questions, the Council provides us with much of the information we need. We have the basic facts about the national income, about employment and unemployment, about wholesale and retail prices.

We watch these statistics as a physician watches his patient's fever chart. They measure the health of our economy and they give us standards for judging the effectiveness, or the ineffectiveness, of our economic programs.

The Council of Economic Advisers cannot solve our economic problems, but the Council does make it a little easier for us to deal with them.

Unfortunately, we have nothing comparable when it comes to measuring our social well-being or to solving our social problems. We have lots of analysis by the agencies — and the lobbyists — who know what *they* want. And they tell us forcefully what we should do. But when we ask critical questions, the modern electronic data system suddenly stops working.

As Dr. Denis F. Johnston stated in the paper he prepared for one of the seminar sessions yesterday:

> If the scope of the indicators is delimited by that of existing programs, they are unlikely to yield insights which are qualitatively different from those which inspired these programs in the first place.

As a nation, we can deal reasonably well with "tactical" day-to-day problems. But we have no systematic way of bringing research and analysis to bear on the fundamental strategic questions facing our society. So we concentrate our efforts on sub-optimization; we get better and better at making the decisions which do not really count for much.

Former White House aide Joseph Califano has gone so far as to compare decision-making processes in the federal executive to the "intuitive judgment of a benevolent tribal chief in remote Africa." And it is this resort to intuition which I think a Council of Social Advisers would help us avoid.

The Council I propose would serve us first of all by collecting the essential raw data of our society — what I call the *cold facts*. When he testified in support of my bill two years ago, Joseph Califano described the extraordinary lack of the most basic information concerning welfare which existed at the highest policy-making levels of government.

At a time when our welfare bill was running only about $4 billion annually, Califano said that he recalled distinctly asking then-Secretary Gardner: who was on welfare?

> The Secretary said, 'About 7 or 8 million people.' Califano asked, 'Well, who are they? Are they blind or disabled? Are they alcoholic? Are they children?'
>
> Gardner replied that he would report the facts next morning. He went back to the Department and found out that no one in HEW knew.

It took more than one and a half years to get the answer. And when we finally had the data, we learned how false our conception of the welfare syndrome was. We found that only 1/10 of 1% of those on welfare were able-bodied males.

Just a few years ago, we also began to learn the facts about hunger in America *for the first time*. As Whitney Young told us:

> Nobody, it turned out, knew the extent or degree or geographical distribution of hunger or malnutrition in America. The Secretary of Agriculture, who runs the food programs, did not know. The Surgeon General of the U.S. did not know. The Secretary of Health, Education, and Welfare did not know.

In 1967, we were confronted with an astonishing and horrifying experience, when city after city in the U.S. literally exploded in our faces. We must ask ourselves: what kind of reporting and analytical systems do we have which would permit us to be surprised by such events?

So, the Council of Social Advisers would provide us with the data — the cold facts — which describe our society. But it would also give us the *hot facts*, the analyses of these data so that we can see more clearly where our problems lie, how our programs are working, and whether they are bringing us closer to solving our problems.

If we had been better informed a decade ago, might we perhaps have avoided the disasters of our public housing and urban renewal programs? As it was, we spent billions of dollars on these programs, only to find that they sometimes had highly undesirable social consequences.

If we had been better informed, might we perhaps have understood what life in our inner cities was like? I think we must have better ways than riots to measure the state of our social health. And I can't help

wondering whether we might have been spared the tragic destruction of these neighborhoods, if only we had known what was going on there.

I am encouraged by the consensus which the Brookings report refers to. There does seem agreement that we must have a just society. And there can be little doubt that this will cost money — lots of money. There are things which we do know how to accomplish, if we will put up the necessary funds.

At the same time, there are problems which still confound us. I have no illusions about the ability of a Council of Social Advisers to solve these problems for us. It would be wrong to suggest that the development and use of social information will give us automatically the answers we seek. It would be naive to think that we can find a way to avoid, or even to recognize, every impending crisis. There is no magic formula in my proposal.

Even so, the Council would enable us to take a small step forward in our search for solutions to our social problems. That is what social indicators are all about. As Professor Raymond Bauer said in the introduction to the important work *Social Indicators* in 1966:

> . . . social indicators . . . enable us to assess where we stand and are going with respect to our values and goals, and to evaluate specific programs and determine their impact.

Or, to put it another way, as Lincoln said more than a century ago:

> If we could first know where we are, and whither we are tending, we could better judge what to do and how to do it.

APPENDIX
1

Questionnaire on Preparation Programs

Name: _____ Institution: _____

1. Our institution now offers the following degrees in educational administration (Check appropriate one(s)):

   Masters _____ Ph.D. _____

   Specialist[1] _____ Ed.D. _____

2. Our institution plans to add the following degrees during the 1972-74 period (Check appropriate blanks if you have such plans):

   Masters _____ Ph.D. _____

   Specialist _____ Ed.D. _____

3. Our institution plans to eliminate the following degrees during the 1972-74 period (Check appropriate blanks if you have such plans):

   Masters _____ Ph.D. _____

   Specialist _____ Ed.D. _____

4. The degree(s) our institution offers were initiated during the following time periods (Check appropriate degrees and time periods):

Degree	Before 1941	1941-45	1946-50	1951-55	1956-60	1961-65	1966-70	Since 1970
Masters								
Specialist								
Ph.D.								
Ed.D.								

5. Our institution has eliminated degree(s) in the time periods checked below (Check if and as appropriate):

Degree	Before 1941	1941-45	1946-50	1951-55	1956-60	1961-65	1966-70	Since 1970
Masters								
Specialist								
Ph.D.								
Ed.D.								

1 This degree (or certificate in many institutions) is referred to informally by differing titles as, for example, Sixth-year, Two-year, Masters plus one, and so forth.

APPENDIX 2

THE UNIVERSITY OF MINNESOTA
SEMINAR FORMAT

PROGRAM

UCEA CAREER DEVELOPMENT SEMINAR

"IMAGING ALTERNATIVE FUTURE SCHOOL ORGANIZATIONS"

OCTOBER 29 – NOVEMBER 1, 1972
HOLIDAY INN CENTRAL
MINNEAPOLIS, MINNESOTA 55407

COSPONSORS

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OFFICE OF APPLIED SOCIAL SCIENCE AND THE FUTURE,
UNIVERSITY OF MINNESOTA

SUNDAY, OCTOBER 29

5:30- 7:30 P.M.	DUTCH TREAT MIXER *(14th FLOOR, THE HALL OF SATELLITES)*

MONDAY, OCTOBER 30 (LOWER LEVEL - *HALL OF AVENUES)*

PROFESSOR CHARLES H. SEDERBERG
Session Chairman

8:15- 8:45	WELCOME – JACK C. MERWIN, Dean, College of Education, University of Minnesota; VAN D. MUELLER, Chairman, Division of Educational Administration, University of Minnesota; JACK A. CULBERTSON, Executive Director, University Council for Educational Administration
8:45- 9:45	MICHAEL MARIEN, Research Fellow, Educational Policy Research Center at Syracuse

ALTERNATIVE FUTURES for the AMERICAN EDUCATIONAL SYSTEM

9:45-10:30 DISCUSSION

10:30-11:00 BREAK

PROFESSOR RICHARD F. WEATHERMAN
Session Chairman

11:00-12:00 VAUGHN HUCKFELDT, Research and Development Unit, National Center for Higher Education Management Systems at WICHE

IMAGING FUTURE ORGANIZATION IN HIGHER EDUCATION

12:00-12:30 DISCUSSION

12:30- 1:30 LUNCH

PROFESSOR WILBUR L. WAKEFIELD
Session Chairman

1:30- 2:30 IAN H. WILSON, Consultant, Business Environment Studies, General Electric Company

IMAGING FUTURE VALUE SYSTEMS: PARADIGMS AND PARADOXES

2:30- 3:15 DISCUSSION

3:15- 3:45 BREAK

PROFESSOR GARY F. ALKIRE
Session Chairman

3:45- 5:00 REACTION PANEL – WILLIAM M. AMMENTORP, Associate Professor of Ed. Ad., U. of Minn.; W. RAY CROSS, Associate Prof. of Ed. Ad., U of Minn.; DON H. MORGAN, Associate Professor of Ed. Ad., U. of Minn.

EVENING SESSION: GUTHRIE THEATRE – 8:00 P.M. Curtain (Sharp)!

The Anthony Burgess Version
of
Sophocles, "Oedipus the King"

TUESDAY, OCTOBER 31 (LOWER LEVEL - *HALL OF AVENUES)*

PROFESSOR THOMAS L. JACKSON
Session Chairman

8:30- 9:30 DENIS F. JOHNSTON, Senior Demographic Statistician, Office of Manpower, Structure and Trends, U.S. Dept. of Labor

SOCIAL INDICATORS and SOCIAL FORECASTING

9:00- 9:30 DISCUSSION

9:30- 9:45 BREAK

PROFESSOR CLIFFORD P. HOOKER
Session Chairman

9:45-10:45 STUART A. SANDOW, Assistant Director, Educational Policy Research Center

HUMANISTIC VERSUS TECHNOCRATIC METHODOLOGIES IN FORECASTING

10:45-11:15 DISCUSSION

PROFESSOR ARTHUR M. HARKINS
Session Chairman

11:15-12:30 REACTION PANEL - ROBERT H. BECK, Professor of History and Philosophy of Education, University of Minnesota; LUTHER P. GERLACH, Professor of Anthropology, University of Minnesota; RICHARD H. HALL, Professor of Sociology, University of Minnesota; DR. JACK SHUMAN Program Analyst, HEW, Washington, D.C.

12:30- 1:30 LUNCH

PROFESSOR L. HENDRIX
Session Chairman

1:30- 3:00 EARL C. JOSEPH, Staff Scientist, Sperry Univac, St. Paul, Minnesota

COMPUTER-BASED FORECASTING

3:00- 3:30 BREAK

3:30- 5:00 DR. JOSEPH and DR. JAMES LINDSAY will lead the seminar in a computer-based exercise. Dr. Lindsay is Research Coordinator, Total Information for Educational Systems (TIES), St. Paul

WEDNESDAY, NOVEMBER 1 (LOWER LEVEL - *HALL OF AVENUES)*

PROFESSOR RONALD T. LAMBERT
Session Chairman

8:30- 9:30 JACK A. CULBERTSON, Executive Director, UCEA

UCEA IN A FUTURE TIME FRAME

9:30-10:00 DISCUSSION

10:00-10:30 BREAK

PROFESSOR JON R. MORRIS
Session Chairman

10:30-12:00 REACTION PANEL - RICHARD C. LONSDALE, Professor of Educational Administration, New York University; DONALD WILLOWER, Professor of Educational Administration, Pennsylvania State University

12:30- 1:15 LUNCH (14TH FLOOR - *HALL OF SATELLITES)*

PROFESSOR THOMAS F. STARK
Luncheon Session Chairman

1:15- 2:30 HONORABLE WALTER F. MONDALE U.S. Senator

SOCIAL INDICATORS in FUTURE POLICY FORMULATION

The Senator will be introduced by
MALCOLM C. MOOS, President,
University of Minnesota

SEMINAR COORDINATOR: SAMUEL H. POPPER, Professor, Educational Administration, University of Minnesota

APPENDIX 3

UCEA MEMBER UNIVERSITIES 1972-73

University of Alabama	University, Alabama
State University of New York at Albany	Albany, New York
The University of Alberta	Edmonton, Alberta, Canada
Arizona State University	Tempe, Arizona
University of Arkansas	Fayetteville, Arkansas
Boston University	Boston, Massachusetts
State University of New York at Buffalo	Buffalo, New York
University of California at Berkeley	Berkeley, California
State University of California at Los Angeles	Los Angeles, California
The University of Chicago	Chicago, Illinois
Claremont Graduate School	Claremont, California
Columbia University	New York, New York
The University of Connecticut	Storrs, Connecticut
Cornell University	Ithaca, New York
Florida State University	Tallahassee, Florida
University of Florida	Gainesville, Florida
George Peabody College of Teachers	Nashville, Tennessee
Georgia State University	Atlanta, Georgia
University of Georgia	Athens, Georgia
Harvard University	Cambridge, Massachusetts
Illinois State University	Normal, Illinois
University of Illinois	Urbana, Illinois
Indiana University	Bloomington, Indiana
University of Iowa	Iowa City, Iowa
University of Kentucky	Lexington, Kentucky
University of Maryland	College Park, Maryland
University of Massachusetts	Amherst, Massachusetts
Michigan State University	East Lansing, Michigan
University of Michigan	Ann Arbor, Michigan
University of Minnesota	Minneapolis, Minnesota
University of Missouri	Columbia, Missouri
University of New Mexico	Albuquerque, New Mexico
New York University	New York, New York
The Ohio State University	Columbus, Ohio
Oklahoma State University	Stillwater, Oklahoma
University of Oklahoma	Norman, Oklahoma
The Ontario Institute for Studies in Education	Toronto, Ontario, Canada
University of Oregon	Eugene, Oregon
The Pennsylvania State University	University Park, Pennsylvania
University of Pennsylvania	Philadelphia, Pennsylvania
University of Pittsburgh	Pittsburgh, Pennsylvania
Purdue University	Lafayette, Indiana
The University of Rochester	Rochester, New York
Rutgers University	New Brunswick, New Jersey
Syracuse University	Syracuse, New York
Temple University	Philadelphia, Pennsylvania
University of Tennessee	Knoxville, Tennessee
The University of Texas	Austin, Texas
University of Utah	Salt Lake City, Utah
University of Virginia	Charlottesville, Virginia
Washington State University	Pullman, Washington
University of Washington	Seattle, Washington
Wayne State University	Detroit, Michigan
West Virginia University	Morgantown, West Virginia
University of Wisconsin	Madison, Wisconsin