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In speculating about the future, scholar-prophets can account for future social changes (such as those induced by computer technology) by extrapolating current trends, but "systems breaks," or sudden changes in the characteristics of a system (caused by biological transformations for instance) may invalidate their predictions. With that in mind, American society, education, and teacher education in the year 2000 will be discussed. Over 300 million Americans (75-80 percent in urban areas) will comprise a leisure-oriented society functioning with a shorter work week, sabbaticals for laborers, computer technology, an intellectual leadership group, and persisting social ills. The greatest increase in school enrollment percentages will occur in colleges, which could be supported by the nation with its GNP of $3 trillion. The teacher, who will be a member of a differentiated staff, may use a curriculum developed by professional federations and teach in a school serving more than academic needs. Attendance at a four-year liberal arts college, with more laboratories and field trips, may precede two years of professional education, which will also be extended to inservice teachers (during thei r working day) and specialists and paraprofessionals (on sabbaticals). A split between two kinds of teacher educators, scientific researchers and humanistic philosophers, may be on the horizon. (LP)

The Year 2000:

Teacher Education

WILLIAM VAN TIL

Coffman Distinguished Professor in Education

INDIANA STATE UNIVERSITY

TERRE HAUTE

Preface

Speculation about life in the future has always been both a favorite parlor game and a serious concern of scholars. Although conditions in the world of the year 2000 are often discussed casually, it is necessary for educational leaders to make a concerted and influential effort at serious planning for the twenty-first century. And because it is inconceivable that our present system of education can satisfy our needs thirty years from now, it is highly desirable for us to join with Professor Van Til in his consideration of the future.

With seriousness of purpose, Dr. Van Til has outlined clearly the major facets of life in the year 2000 and its resultant effects on teacher education. If we assume the accuracy of his predictions, we can see demonstrated the need for collaboration on a complete reorientation of teacher education to cope adequately with emerging educational dilemmas and with the needs of a changing society in a nation still under stress. And surely the participation of representatives from all disciplines as well as people from many segments of our social order would be invaluable in this effort to define what kinds of teachers will be needed in the future. If we are ever to achieve the status of a genuinely great society, we will need a revitalized system of education, especially teacher education, that emphasizes both man's individuality and his humanity and prepares him for the most profitable use of his time, knowledge, and energy.

You are invited then to join with Professor Van Til as he explores the prospects for a different world in the future, and the vital new role of teacher educators in dealing with the problems that will plague us. The challenges of life in the year 2000 will no doubt appear awesome, but hopefully, with the impetus afforded by provocative monographs similar to this one, we may be better prepared to meet these challenges.

ALAN C. RANKIN, *President*
Indiana State University

By WILLIAM VAN TIL

TRAVEL	The Danube Flows Through Fascism Foldboat Holidays (contributor)
TEXTBOOKS	Economic Roads for American Democracy Time on Your Hands Modern Education for the Junior High School Years (with others)
YEARBOOKS OF THE ASSOCIATION FOR SUPERVISION AND CURRICULUM DEVELOPMENT	Americans All (contributor) Toward a New Curriculum (contributor) Leadership Through Supervision (contributor) Forces Affecting American Education (editor and contributor) Role of Supervisor and Curriculum Director in a Climate of Change (contributor)
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SPEECHES	Great Human Issues of Our Times (contributor) Modern Viewpoints in the Curriculum (contributor) Humanizing Education (contributor)
SELECTIONS	The Making of a Modern Educator

Introduction

The Year 2000: Teacher Education began when two developments coincided. First, *Daedalus*, the journal of the American Academy of Arts and Sciences, published a Summer 1967 issue on *Toward the Year 2000: Work in Progress*. The volume is an account of working sessions and a collection of essays on specific problems by a distinguished group of scholars. I read the deliberations of the American Academy's Commission on the Year 2000 avidly and appreciatively, though the field of teacher education, I found, was not on the agenda of the Commission.

Second, the National Society of College Teachers of Education invited me to deliver the presidential address in Chicago in February, 1968, and the Association for Supervision and Curriculum Development invited me to address the assembly on teacher education in Atlantic City in March, 1968. Each group allowed me to choose my own topic. So I decided to assign myself the topic, *Toward the Year 2000: Teacher Education*. I had many misgivings about such an enterprise. My misgivings were only partially ameliorated by the practical recognition that not everybody in my audiences would be up and about during the year 2000 to check on the validity of my speculations.

But, in attempting to look ahead, I have had an exciting and, for me, important experience which will influence my own thoughts and actions. It is important to understand that *I have not attempted to construct a Utopia* in my two talks, my speech as published by NSCTE, and in this resultant pamphlet. I have chosen to speculate as realistically as I could on what might be the possible shapes of things to come in society, in education, and, finally, in teacher education in particular.

If there was any value in this exploration for my listeners and if there will be any value for the readers of this pamphlet, it should be in encouraging future-oriented dialogue, and in opening discussion to the end that each of us may participate still further in influencing whatever future lies ahead. I owe thanks especially to the *Daedalus* contributors; to those involved in the project of eight Western states, *Designing Education for the Future*, a series of publications focused on the year 1980; to Herman Kahn and Anthony J. Wiener of the Hudson Institute who wrote the volume *The Year 2000;* to my innumerable predecessors in speculation on teacher education today and tomorrow; and to my colleagues at Indiana State University who have borne with me as I bothersomely solicited their ideas over the past few months in a variety of academic and social settings. I owe a special thanks to those who have served as panel members on the two occasions when these ideas were delivered as an address. I owe extensive thanks to my colleagues in the National Society of College Teachers of Education who cooperated in publication of this material in speech form and who permitted me to publish the entire manuscript with supporting footnotes in the form in which the material is now presented in this pamphlet in the reader's hands.

WILLIAM VAN TIL

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The Year 2000: Teacher Education

On Speculating on the Future

Some may say, "But the year 2000 is far away!" Is it, really? The year 2000 is as far in the future as the year 1936 is in the past. From 1968, the year 2000 is thirty-two years away; so is the year 1936.

Historians will point out parallels between 1936 after the initiation of Franklin D. Roosevelt's New Deal program and 1968 after the initiation of Lyndon B. Johnson's Great Society program.[1] But they will also point out some major "system breaks," to use Kenneth E. Boulding's phrase,[2] meaning sudden changes in the characteristics of systems. Such discontinuities, sometimes termed "turning points" or "surprises," develop because of powerful social forces, unpredictable or only partially predictable in advance.

The Role of System Breaks

For the 1936-68 period, major system breaks included such events as World War II, 1939-1945; the first atomic bomb dropped on Japan, 1945; the outer space pioneering dating from the Soviet Union's Sputnik, 1957; and the United States participation in Asiatic land wars during the 1950's and 1960's.[3]

If we look for parallels and continuities between 1936 and 1968, we can find them. If we look for system breaks and discontinuities between 1936 and 1968 we can also find them.

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[1]Historians report that 1936 was the year of Roosevelt's second election during the era of the New Deal. The backbone of the Great Depression was being broken and such acts of social legislation as the establishment of the Social Security system and the Tennessee Valley Authority were already established historical facts. In Europe, Adolph Hitler, in power for three years, marched into the Rhineland and, in America, a struggle between isolationists and internationalists accelerated.

Historians will probably report that 1968 was the year of Lyndon B. Johnson's "completely irrevocable" decision not to seek or accept the nomination of his party after his term of office had expired. A war against poverty had been declared, with the outcome in doubt, and such acts of social legislation as Medicare and extended categorical federal aid to education were already established historical facts. In Asia, a war in Vietnam engaged American forces and drained our resources while the confrontation between whites and blacks in A m e r i c a n cities escalated.

[2]Kenneth E. Boulding, "Expecting the Unexpected: The Uncertain Future of Knowledge and Technology," *Prospective Changes in Society by 1980*, ed. Edgar L. Morphet and Charles O. Ryan (Denver: Designing Education for the Future, July, 1966), p. 208.

[3]While prophets of 1936 might have predicted (and i n d e e d did) the Second World War, no one could have predicted even from the vantage point of 1936 the exact alignments (the German-Russian non-aggression pact came in 1939) and certainly not the military development, extent, weaponry, or outcomes of the war. Few were the insiders in nuclear devastation. The science fiction writers had a monopoly on speculation on outer space conquest in 1936. Few students of the international scene in 1936 could have envisioned American men fighting in local wars on the Asian mainland following a victory in a major World War.

What is the shape of things to come in the year 2000, thirty-two years away? Can we envision at all the tomorrow of 2000 from the viewpoint of 1968? Or will major system breaks with respect to war or technology or biology or international development so c h a n g e the current scene that a contemporary Rip Van Winkle falling asleep in 1968 would, like Rip, wake to a totally unimaginable and incomprehensible environment in the year 2000?[4]

World War or Famine as System Breaks. So, before venturing any extrapolations of data and trends, we will formulate and invoke Rip Van Winkle's law, "All bets are off if such major system breaks as world war or world famine occur." In a time when the grinning horror of a nuclear war marked by incalculable devastation or a population growth culminating in famine must be regarded as a nightmare possibility, Rip Van Winkle's law must more than ever be respected.

Technological Developments as System Breaks. But what about the role of technological developments in making the year 2000 unimaginable and incomprehensible from the viewpoint of 1968? How about the possibility of the wizardry and marvels of gimmicks and gadgets in a time of accelerating technology transforming the recognizability of the year 2000? Sociologist Daniel Bell, writing early in the *Daedalus* explorations, ventured a sober and unromantic assessment: "The simple point is that a complex society is not changed by a flick of the wrist. Considered from a viewpoint of gadgetry, the United States in the year 2000 will be more *like* the United States in the year 1967 than *different*. The basic framework of day-to-day life has been shaped in the last fifty years by the ways the automobile, the airplane, the telephone, and the television have brought people together and increased the networks and interactions among them. It is highly unlikely that in the next thirty-three years (if one takes the 2000 literally, not symbolically) the impending changes in technology will radically alter this framework."[5]

Sociologist Bell's judgment may be influenced by w h a t another *Daedalus* contributor would term his n o n s c i e n c e background. In a *Daedalus* discussion, Ithiel Pool pointed out, "When I looked at the Rand Delphi predictions, I was struck by the difference between the predictions made by the science panel and those made by other panels. The nonscience panels essentially predicted that whatever was recently happening was going to continue, only a little more so."[6]

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[4]Rip, you may remember, fell asleep in the Kaatskill mountains "w h i l e the country was yet a province of Great Britain" and returned twenty years later to his village to hear his fellow residents talking about "rights of citizens—elections—members of congress—liberty—Bunker's Hill—h e r o e s of seventy-six—and words which were a perfect babylonish jargon to the bewildered Van Winkle" and to hear "that there had been a revolutionary war — that the country had thrown off the yoke of old England — and that, instead of being a subject of his Majesty George the Third, he was now a free citizen of the United States." *Selected Writings of Washington Irving*, ed. Saxe Cummins (New York: Modern Library, 1945), pp. 14, 18.

[5]Daniel Bell, "The Year 2000 — The Trajectory of an Idea," *Daedalus* XCVI (Summer, 1967), 641-42.

[6]"Baselines for the Future," *Daedalus* XCVI, 659.

Today some scholars are speculating on system breaks which may grow out of technological developments. One possible system break relates to the encompassing social implications of the growth of computer technology. Economist Kenneth E. Boulding speculates, "The crucial problem here is whether the development of electronics, automation, cybernation, and the whole complex of control systems does not introduce as it were a new gear into the evolutionary process, the implications of which are as yet only barely apparent. The computer is an extension of the human mind in the way that a tool or even an automobile is an extension of the human body. The automobile left practically no human institution unchanged as a result of the increase in human mobility which it permitted. The impact of the computer is likely to be just as great, and indeed of the whole world electronic network which represents, as McLuhan has pointed out, an extension of the human nervous system and what is perhaps even more important, a linkage of our different nervous systems. It seems probable that all existing political and economic institutions will suffer some modifications as a result of this new technology; in what directions, however, it is hard to predict."[7]

William T. Knox of the Office of Science and Technology, Executive Office of the President, predicts flatly and positively, *"The impact on U. S. society of this (computer systems) development will exceed the impact of the automobile."*[8,9]

Biological Developments as System Breaks. Another possible "system break" grows out of developments in biology. Some observers believe that we are leaving a century in which physics was queen of the sciences and entering a new era. Robert Wood, an urbanist, says, "I t h i n k one shrewd point of departure would be to recognize that the physical sciences have had their day for a while, that there is an innovative turn to the life sciences, and that most of our problems will come from the new advances in genetics, pharmacology, artificial organs, and medicine."[10] Ernst Mayr, a biologist, comments in the *Daedalus* discussions that one of his colleagues regards our times as "the beginning of the century of biology."[11]

The biological transformation of man via genetics, DNA developments, chemicals, and drugs is on the threshold.[12]

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[7]Boulding, *Prospective . . . 1980*, p. 209.

[8]William T. Knox, "The New Look in Information Systems," *Prospective . . . 1980*, p. 223.

[9]"If the middle third of the twentieth century is known as the nuclear era, and if past times have been known as the age of steam, iron, power, or the automobile, then the next thirty-three years may well be known as the age of electronics, computers, automation, cybernation, data processing, or s o m e related idea." Herman Kahn and Anthony J. Wiener, *The Year 2000: A Framework for Speculation on the Next Thirty-three Years* (New York: Macmillan Co., 1967), p. 8

[10]"Baselines for the Future," *Daedalus* XCVI, 663.

[11]*Ibid.*

[12]The century of biology is both welcomed and deplored. Richard L. Shetler, as the President of General Learning Corporation, comments on "another era in

International Developments as System Breaks. Still another foreseeable system break relates to the international scene. In the broadest terms, the problem is the extent to which the world will be nationally or globally oriented during the next thirty-two years.[13] In the narrower sense, the question is the extent to which the United States will follow the course of enhancing the immediate twentieth-century consumption of its citizenry as contrasted to the course of supporting the development of human and material resources abroad among underdeveloped peoples because of some combination of humanitarian and long-range survival considerations. If one extrapolated some current trends, the result would be ambivalent. Simultaneously, the United States is the long-range and altruistic nation of the Marshall Plan, the Agency for International Development, and the Peace Corps. It is also an immediate-consumption-oriented nation which reduces appropriations for foreign aid and which responds inadequately as the economic gap between the developed and underdeveloped lands grows wider and wider while the rich get richer and the poor get children. A world famine in the era of the population explosion might be the precipitator of a system break toward the global view. A system break might also be brought about by aggressive threats by coalitions of nations, newly industrialized and reaching for power.

The Expected and the Unexpected. Thus, anyone who attempts to envisage the shape of things to come in 2000 for the sake of considering alternative futures in his own field of inquiry (in this case teacher education), and possibly helping to shape directions in his field of inquiry, must face a paradox. The paradox is that he must report as though assuming that there will occur no major system breaks or surprises. Yet, at the same time, his historical sense tells him that system breaks or

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which there may be some massive break-throughs by 1980 — the field of molecular biology, of imposing changes in and around the living cell, thus possibly changing the character and quality of life itself. All the overtones of 1984, of Orwell and Huxley, are there, of course. But there are other and more hopeful overtones, too — of conquering disease and ignorance, and of opening boundless new horizons to human experience. I hope we have the good sense and humanity to use such a tool wisely and not monstrously, if we are able to use it at all. But I have enough faith in our instincts to hope that we do not shrink from the adventure of using it." "Major Problems of Society in 1980," *Prospective . . . 1980*, p. 268.

On the other hand, Joseph Wood Krutch views man's possible use of biological developments with alarm. In his article, "What the Year 2000 Won't Be Like," humanist Krutch carries on his long-term feud with the determinists in which an earlier battle was his assault in *The Measure of Man* on B. F. Skinner's *Walden Two*. " 'Would you like to control the sex of your offspring? Would you like your son to be six feet tall? Seven feet? . . . We know of no intrinsic limitations to the lifespan. How long would you like to live?'

"How would *you* like to be able to determine this or that? To me, it seems that a more pertinent question would be: 'How would you like *someone else* to answer these questions for you?' And it most certainly would be *someone else!*" *Saturday Review*, January 20, 1968, p. 43.

[13]"Will the world separate out into two cultures, both within countries and between countries, in which a certain proportion of the people adapt through education to the world of modern technology and hence enjoy its fruits, while another proportion fail to adapt and perhaps become not only relatively worse off but even absolutely so, in the sense that what they have had in the past of traditional culture collapses under the impact of the technical superculture and leaves them disorganized, delinquent, anemic, and poor?" Boulding, *Prospective .. 1980*, pp. 209-10.

surprises (and not necessarily those mentioned above) are likely to occur and may be unpredictable.[14] In such a dilemma, some would educate simply for surprises and forego all speculations, recognizing the wisdom of the early suggestion of Heraclitus that there is no permanent reality except the reality of change. Perhaps the only thing of which the prophet can be sure is that his predictions are bound to be wrong, in large or in small part, if not totally. He must recognize, with Boyd H. Bode, that the gods give no guarantees.

Yet, despite the inevitability of surprises in the pattern of change, men must try to see where they seem to be going. They must attempt to see what now seem to be reasonable possibilities, so that they can have some possible participation in influencing the future, in tempering trends with their values, in considering realistic alternatives, in short, in planning ahead. Educators who are committed to the improvement of the educational process and product must necessarily attempt to plan for educational change and participate in its direction and control as best they can. Abraham Lincoln said it well, "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." Not to attempt to look ahead is to be unintelligent. To look ahead without recognizing that surprises must be also anticipated is also to be unintelligent.

Consequently, the writer will attempt in this paper to follow the advice of Fred Charles Iklé, a *Daedalus* contributor; to infer from past observations to future ones, to use predictions which seem logically true, to depend on common sense, and to be aware of one's own inclinations to Utopianism.[15] Yet he will also recognize the role of the unexpected, as

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[14]Those who attempt to envisage the shapes of things to come must even take into account the possibility that they are now living through an actual system break as they speculate and write. For instance, we may now be living through a period of literal social revolution which may be moving toward a culmination in open warfare between whites and blacks and toward new patterns of social arrangements imposed by the victors, rather than simply living through a period of swift social change in relationships between Negroes and whites within established precedents. We may be living through a period of triumph of anarchy as world-wide youth revolt spreads, as alienation characterizes masses of mankind, as more and more of the young and old withdraw from the Establishment, rather than simply a period of youth dissent marked by temporary withdrawals which the established society can absorb.

Even between the first draft and the final editing of this pamphlet, President Johnson terminated the bombing of Hanoi and asked for negotiations in the war in Vietnam; simultaneously, President Johnson announced his decision to neither seek nor accept the nomination for presidency; Martin Luther King was assassinated and violence and destruction ensued in 125 communities; a general strike swept France; student protests with attendant violence developed at Columbia University; Robert F. Kennedy was assassinated at the close of the Democratic Primary in California; the problem of violence in America dominated political discussion. Swift and astounding social change? Definitely. An indication of major system breaks? Quite possibly.

[15]"As said above, for the first step in 'guiding predictions' we have to infer from past observations to future ones, using theories and empirical laws from all branches of science as much as we can. Second, we should not overlook the usefulness of logically true predictions. Third, we also have to rely on common sense .... Fourth, the greater the role of this tacit reasoning, the more we must beware of the distorting effect of our emotions." "Can Social Predictions Be Evaluated?" *Daedalus* XCVI, 751.

advised by Boulding.[16] He will regard such social changes as local or regional wars, extensive computer technology, extensive biological developments, and expanding international participation as likely to affect American life. But he will not regard these as system breaks. He will reserve that term for nuclear World War, the computer influential as the automobile, biological transformations, and sharply increased gap-reducing globalism; he will regard such sweeping developments as authentic system breaks, turning points, surprises.

So let us plunge into a description of the probable United States in the year 2000 (assuming current trends and substantial social changes, yet excluding system breaks) as the U.S. is envisaged by the scholar-prophets who are willing to speculate on possibilities or alternatives. Later, we will identify factors in this projection of the year 2000 which may influence education in 2000. Finally, we will attempt to describe the possible resultant nature of teacher education and the value choices as to alternative futures which may be before teacher education in the year 2000.

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[16]Boulding, *Prospective . . . 1980*, pp. 199-213.

American Society in the Year 2000

Some Projections

The prophets assume that in the year 2000 the United States will still exist both as a nation and as a major world power. The states of the Union (by then possibly fifty-two in number, including the states of Puerto Rico and the Virgin Islands) will be more heavily populated than the United States of 1968.

Population Projections. The Bureau of Census machine in Washington, D.C., which tolls off the population, recorded 200 million Americans on November 20, 1967. In a recent projection by the Bureau of Census, the total population for the United States is calculated as 241 million in 1980.[17] Philip M. Hauser and Martin Taitel of the University of Chicago write, "The population of the United States . . . is being projected to exceed 300 million by the turn of the century."[18] They add, "The projections utilize conservative assumptions about the future. The critical one is the birth rate. If it should not decline during the sixties, and then remain at a lower level, the total population of the United States may well be over 250 million by 1980 and close to 350 million by the end of the century."[19,20]

Urbanism and Metropolitanism. Both the anticipated Americans of 2000 and the Americans already born will live in urban territory. "By 1980, between 75 and 80 percent of our population may live in urban territory, which would place almost as many persons in urban territory in 1980 as there are in the entire United States today."[21,22]

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[17]Philip M. Hauser and Martin Taitel, "Population Trends — Prologue to Educational Problems," *Prospective . . . 1980*, p. 25.

[18]*Ibid*, p. 24.

[19]*Ibid*, p. 54.

[20]Sensibly, they hedge their bet because of the great imponderable, fertility. No population analyst can ever forget the great miscalculation of the 1930's, based on the society of the Great Depression, when the experts predicted 165 million as the peak population of the United States to be reached about the year 2000. Hauser and Taitel say, "Experience is lacking with regard to reproductive behavior in an era of easy and effective birth-control, relative affluence and nuclear power as a factor in world politics." *Ibid.*, p. 25.

[21]*Ibid.*, p. 41.

[22]William L. C. Wheaton, Professor of City Planning and Director, Institute of Urban and Regional Development, University of California, Berkeley, says, "In short, during the next fifteen years, we must build about as many cities as were created in the first 200 years of this nation's existence. The population of the United States is moving to cities, and primarily to metropolitan areas." "Urban and Metropolitan Development," *Prospective . . . 1980*, p. 139.

As for the year 2000, Harvey S. Perloff says, "At present about 140 million Americans, out of a total of 200 million, are classed as urban dwellers. By 2000 at least 280 million, out of a total population of about 340 million, are expected to be living in urban areas."[23]

Not only will the future America be urban, it will also be metropolitan. Americans will reside largely in what the Bureau of the Census now terms Standard Metropolitan Statistical Areas.[24,25]

By 2000, some predict the agglomeration of many metropolitan areas into three megalopolises. Herman Kahn, formerly of Rand Corporation and now Director of Hudson Institute, and his colleague Anthony J. Wiener, report, "We have labeled these — only half-frivolously — "Boswash," "Chipitts," and "Sansan." Boswash identifies the megalopolis that will extend from Washington to Boston and contain almost one quarter of the American population (something under 80 million people). Chipitts, concentrated around the Great Lakes, may stretch from Chicago to Pittsburgh and north to Canada — thereby including Detroit, Toledo, Cleveland, Akron, Buffalo, and Rochester. This megalopolis seems likely to contain more than one eighth of the U. S. population (perhaps 40 million people or more). Sansan, a Pacific megalopolis that will presumably stretch from Santa Barbara (or even San Francisco) to San Diego, should contain more than one sixteenth of the population (perhaps 20 million people or more)."[26]

The Gross National Product. The residents of the United States in the year 2000 are expected to have a substantially higher Gross National Product and GNP per capita.[27] Kahn and Wiener say, "The surprise-free United States economic scenario calls for a $1 trillion economy in 1975, 1.5 trillion in 1985, and about $3 trillion in year 2000 . . . . The assumptions used in the projections for the 'Standard Society' yield a GNP for year 2000 (in terms of 1965 dollars) of $2.2 to $3.6 trillion; based upon a 1965 GNP of 681 billion, this range implies average annual rates

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[23]"Modernizing Urban Development," *Daedalus* XCVI, 789.

[24]Hauser and Taitel, *Prospective . . . 1980*, p. 30.

[25]Standard Metropolitan Statistical Area (SMSA) is defined by Hauser and Taitel as "one or more central cities of 50,000 or more persons, the balance of the county or counties containing such a city of cities, and such contiguous counties as, by certain criteria, are 'essentially metropolitan in character and are socially and economically integrated with the central city' " Ibid., p. 30.

Even for 1980, the predictions are for 70 percent of our population living in metropolitan areas. "By 1980, of some 170 million people in metropolitan areas, about 100 million are projected to be in suburbs, about 70 million in central cities." Ibid, p. 37.

[26]"The Next Thirty-Three Years: A Framework for Speculation," *Daedalus* XCVI, 718-19.

[27]Joseph L. Fisher, President of Resources for the Future, says, "A two-thirds increase in GNP in the next fifteen years seems altogether reasonable; indeed if the rather higher rate of increase in the last several years continues, the 1980 GNP will be near the high estimate shown in the table rather than the medium." (His high estimate for 1980 in his table is 1,250 billions; medium estimate 1060 billions in 1960 dollars), "Natural Resource Trends and Their Implications," *Prospective . . . 1980*, p. 9.

of growth of GNP of 3.4 percent and 4.9 percent, respectively. Considering a year 2000 population of 318 million, per capita GNP would be slightly more than double the 1965 amount under the assumption of the low rate of productivity increase, and, under the high rate of increase, would be about 3.5 times the 1965 figure."[28]

Technological Developments. In a United States which is more heavily populated, more densely urbanized, and wealthier, some recent social trends may be expected at least to continue and probably to accelerate. For instance, scientific knowledge and technological development are expected to expand further. As an illustration, nuclear power plants should be producing much of our power in 2000. The computer should be a remarkably influential force by the year 2000.[29,30]

The National Society and Creative Federalism. The nation may be expected to become increasingly "a national society," as Daniel Bell phrases it, characterized by more use of instrumentalities such as government, mass media, and modern transportation.[31] Yet this "national society" may not necessarily see governmental power concentrated in a highly centralized national government.[32] Some foresee a "creative federalism." Organizations may be expected to flourish, according to Grant McConnell, Professor of Political Science, University of Chicago, who quotes Tocqueville and judges that "it seems reasonably safe to predict that in the next few decades private and non-government associations will be important factors in our common social and political life."[33]

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[28]*"The Year 2000 . . .*, p. 167-68.

[29]"It is necessary to be skeptical of any sweeping but often meaningless or nonrigorous statements such as 'a computer is limited by the designer — it cannot create anything he does not put in,' or that 'a computer cannot be truly creative or original.' By the year 2000, computers are likely to match, simulate, or surpass some of man's most 'human-like' intellectual abilities, including perhaps some of his aesthetic and creative capacities, in addition to having some new kinds of capabilities that human beings do not have." *Ibid.*, p. 89.

[30]There are some observers like Joseph Wood Krutch who says, "And although the man in the street still thinks of a brighter future only in terms of more, rather than less technology, there are at least a few who are beginning to ask if we are not becoming more dependent and vulnerable rather than more and more dependent and safe."

"If You Don't Mind my Saying So . . ." *American Scholar* XXXII (Spring, 1966), 183-84.

[31]Bell, *Daedalus* XCVI, 643.

[32]Daniel J. Elazar, Political Scientist, Temple University, foresees for 1980 that

(1) All governments will continue to grow.
(2) Sharing will be equally important in the future and will even seem to increase. ("One of the characteristics of the Great Society Programs has been the increased emphasis on federal aid to anybody.")
(3) The states will have to act constantly and with greater vigor to maintain their traditional position as the keystones in the American governmental arch.
(4) Localities will have to struggle for policy — as distinct from administrative — control of the new programs.

"The American Partnership: The Next Half Generation," *Prospective . . . 1980*, pp. 111-15.

[33]"Non-Government Organizations in America," *Prospective . . . 1980*, pp. 123-24.

The Roles of Work and Leisure. In the economic realm, the trend in the American democracy which was also early reported by the French observer Alexis de Tocqueville, is anticipated to continue — what the few have today, the many will demand tomorrow.[34] So, despite probable continuing inequalities, goods and services will probably be diffused throughout the general population.

With the problem of production largely solved through the persistence of the historical American combination of facilities, geographic location, substantial resources base, and an innovating technology, the question of the work distribution among the population may become critical. Current trends indicate that the population may be increasingly characterized by what some term the masses and an elite or, if you prefer, the common man and a leadership group. Many Americans may work about a thirty to thirty-two hour week.[35] The sabbatical, once the exclusive fringe benefit of professors, may be extended to labor, along with long vacations and opportunities for early retirement.[36] Other workers may do only nominal or occasional work, resting content with their relatively low level of societal provision for maintenance.[37] But a vital group of Americans should be needed to man the specialized key positions which they hold by virtue of varied types of intellectual mastery. These key men may be expected to overwork themselves because of a variety of drives, including prestige, status, differential income, and desire for accomplishment.

The Knowledge Explosion. The knowledge explosion may be anticipated to continue its convulsive leaps. But since time is not expansible and since human beings are limited in the amount they can retain, more and more emphasis will probably be placed on storage and retrieval facilities and on computers to reduce the intellectual version of manual labor. The mastery of knowledge sources may well become an imperative educational goal for the individual who aspires to leadership and social regard.[38]

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[34]Bell, *Daedalus* XCVI, 643.

[35]Kahn and Wiener, *The Year 2000 . . .*, p. 175.

[36]"However, hours of work now average about 38½ per week, and by 1980 we anticipate something like a 36-hour work week. In addition, it may become common to have a sabbatical for labor; that is, a period in which a worker, after several years of work, may need retraining or additional training, travel, or to pursue some other activity of his choice." Gerhard Colm, "Prospective Economic Developments," *Prospective . . . 1980*, p. 92.

[37]"Let us assume, then, with expanded gross national product, greatly increased per capita income, the work week drastically reduced, retirement earlier (but active life-span longer), and vacations longer, that leisure time and recreation and the values surrounding these acquire a new emphasis. Some substantial percentage of the population is not working at all. There has been a great movement toward the welfare state, especially in the areas of medical care, housing, and subsidies for what previously would have been thought of as poor sectors of the population." Kahn and Wiener, *The Year 2000 . . .*, p. 194.

[38]Many such individuals will temporarily be placed in a relatively new occupation, that of graduate student, since, as Professor Joseph W. Gabarino tells us, "For a number of reasons, including the competition for good students and the early age of marriage in recent years, a growing proportion of our university students have been converted into a special type of 'employee'." "The Industrial Relations System," *Prospective . . . 1980*, p. 159.

Goals and Directions. More questionable as to predictability are a nation's norms. Yet likely, if present trends are extrapolated, is a further shift in American orientation away from Max Weber's "Protestant ethic" of hard work, thrift, and spare living and toward leisure-oriented, free-spending and hedonistic living.[39]

It seems likely that the democratic way of life will continue to be the official ideology of the country and that the basic documents of democracy will probably continue to be venerated by the citizens and reinterpreted by the philosophers. Of the Jeffersonian trilogy, "life, liberty, and the pursuit of happiness," it seems quite possible that the latter may come into its own as never before. "Life" having been cushioned economically, and protected and extended medically, may increasingly be taken for granted.[40] "Liberty" should still be a heated focus of struggle, particularly on the part of the sensitive who reject massive invasions of privacy by governmental fact banks and law enforcement agencies and who resist impersonal controls by extended bureaucracies. But "the pursuit of happiness" may well be the aspect of the official democratic ideology which will engage the energies of most Americans and which will perturb the reflective.

While hobbies proliferate, travel expands, and educational opportunities enlarge, the present trend of spectatoritis may also grow via sports, movies, concerts, wide screen TV, etc. Discussion may be rife among intellectuals as to how man and woman should best pursue happiness in a society of multiple options.

Utopia will not have arrived by 2000. Americans of the year 2000 may well have their particular social problems, even as Americans of 1968 now have theirs—Vietnam war, Negro-white relations, the persisting slums and ghettos, the urban jungle, alienated youth, etc. Some of the social problems we now face in 1968 were readily predictable by the forecasters; the contributors to the *Daedalus* discussions comment frequently on the prescience and wisdom of *Recent Social Trends,* a publication of the Hoover era, in foreseeing 1968 dilemmas.[41]

The Persistence of Problems. Problems that lend themselves to technological solutions seem easier for Americans to cope with than problems which have largely social answers.[42] So one might anticipate

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[39]There Is a Basic, Long-Term, Multifold Trend Toward . . . Increasingly Sensate (empirical, this-worldly, secular, humanistic, pragmatic, utilitarian, contractual, epicurean, or hedonistic) cultures." Kahn and Wiener, *Daedalus* XCVI, 706.

[40]Indeed, debate may center on how long the old should be kept alive in the century of biology in which transplants of organs are taken for granted.

[41]In retrospect, was it not also apparent that, with respect to Negro-white relations, our nation must sometime inherit the wind during the 20th century as a heritage of years of slavery and segregation for Negroes, while whites mouthed what Myrdal termed the American Creed?

[42]Bell writes in his introduction to *The Year 2000,* "The Connecticut Yankee at King Arthur's Court was able to introduce quickly all kinds of wonderful inventions from the nineteenth century, but he foundered when he sought to change the religion and the monarchy — a lesson in the comparative recalcitrance of technology and belief systems in social change." P. xxiii.

that some problems now looming large for the last third of the twentieth century may well yield to the ingenuity of technology by the year of 2000. Illustrations that leap to mind are air and water pollution, with the attendant problem of waste disposal. But possibly more difficult for the year 2000 may be the struggle against social problems which eventually come home to roost. Such problems could include organized crime, environment, housing, governmental structures, and operation of voluntary associations. [43]

Crime. By organized crime, we mean the planned lawlessness of criminal syndicates rather than "crime in the streets," today's euphemism for Negro rioting and violence. Today's struggles against the Cosa Nostra are clearly ineffectual, though the Mafia-type operations of today may appear child's play compared with the procedures of future organizations making maximum use of technology, brain power, and apparent respectability. Tomorrow's struggle against criminal syndicates which may operate systematically and precisely, will, in all probability, take place in a land rendered more vulnerable to organized crime by population density accompanied by individual invisibility, by a structure of living both more independent and more fragile, and by a climate of values in which striving for present gratifications is taken for granted.

Environment. Similarly, the year 2000 may be an era when Americans struggle for a better quality of the natural environment. As Joseph L. Fisher, President of Resources for the Future, suggests, "Conservation now and for the future will be at least as much involved in preserving the quality of the natural environment as it will be in maintaining a capacity to produce quantities of goods. As technology and management assure raw materials for the future, our attention will switch to the qualitative aspects of abating water and air pollution, preventing pesticide damage, and improving the design and use of both the rural and urban landscape."[44]

Housing. In relationship to the natural environment, housing may prove a continuous problem. Possibly, after many blighted areas in central cities are rebuilt with high-rise apartments, or cleared for urban recreation, the suburban rings may have become obsolescent and be candidates for reconstruction.[45] Or areas of metropolises may have become 'slurbs' — a partially urbanized area in which the countryside has been effectively destroyed,"[46,47]

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[43]Should we expect that by the year 2000, America will have resolved its major Negro-white problems through a major social drive on this obvious difficulty? How long, O Lord, how long? Or is the more realistic possibility to anticipate half-measures and the consequent persistence of the Negro-white confrontation into the twenty-first century?

[44]*Prospective . . . 1980,* p. 14.

[45]Hauser and Taitel, *Prospective . . . 1980,* p. 37.

[46]Wheaton, *Prospective . . . 1980,* p. 145.

[47]William L. C. Wheaton points out that already "Our newer metropolitan areas are also beginning to suffer from obsolescence in neighborhood shopping centers. While they still contain tawdry and obsolete string shopping centers, vestiges of the streetcar era, they also contain small shopping centers which were quite modern in the 1930s, but have been rendered obsolete by the more advanced designs and merchandising skills of the 1950s and 60s." *Ibid.*, p. 148.

Governmental Structures. Perhaps it will have taken the development of the megalopolises of Boswash, Chipitts, and Sansan predicted by Kahn and Wiener to drive home the absurdity and obsolescence of our governmental structures in metropolitan areas. We refer to the multiple local governments which proliferate in the suburbs which ring the metropolises in a nation of 56,508 local governments, not counting school districts.[48] Already the political scientists are agreed on the unreality of our local governmental structures. Authors predict, "With the continuation of extensive urbanization and metropolitanization during the next few decades *will come increased recognition that our 20th-century technological, economic and demographic units have governmental structures of 18- and 19th-century origin and design.*"[49,50] Perhaps the culmination of the drive for Negro rights will provide the crucial element in achieving consolidation in metropolitan areas and the breaking down of city-suburban isolation, rather than the continuance of the current 1968 pattern of central cities which are increasingly Negro and suburbs which are almost all white.[51] But possibly Black Power will result in black separatism, rather than racial integration, while white power preserves white separatism in a nation even more sharply divided.

Associations. The role of voluntary associations and internal and external controls in such associations may be among the crucial problems of the year 2000. Grant McConnell points out that studies of private associations show that "they generally lack the constitutional restraints which we have learned to regard as essential in our public institutions of government."[52] He says that "their governing institutions and modes of operation often do not adequately reflect the diversity of interest and will among their members; it is also that sometimes they do not serve the principle of liberty well. We can expect this to be a continuing problem in our common life."[53,54]

Summary on Society. To this point we have reviewed four major "system breaks" or "surprises" which are, paradoxically, foreseeable and have forewarned of their possible havoc to extrapolation prophecies

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[48]Hauser and Taitel, *Prospective . . . 1980*, p. 42.

[49]*Ibid.*

[50]Wheaton, writing about aspects of urban and metropolitan government in which growth and change are necessary, says, "First among these is surely the establishment of metropolitan area governments or policies. Some of our older metropolitan areas have as many as a thousand local governments, the accumulation of a hundred years of political history and of slow growth both in urban population and in urban services. Under these circumstances of multiple governments, no effective local government is possible." *Prospective . . . 1980*, p. 143.

[51]Hauser and Taitel comment that today for the 24 Standard Metropolitan Statistical Areas which contain the 24 larger cities, the central city Negro population numbers 83% of all Negroes in those Standard Metropolitan Statistical Areas. Hauser and Taitel, *Prospective . . . 1980*, p. 45.

[52]McConnell, *Prospective . . . 1980*, p. 128.

[53]*Ibid* p. 129.

[54]McConnell also points out that "inside a small association, an individual can find community and a sense of relation with his fellow man and need not feel alone or helpless . . . . In this setting he is not alienated. Thus, he and his fellows are unlikely to engage in activities that might disrupt society and they can be brought into line when necessary." *Ibid.*, p. 126.

In terms of other social trends discussed earlier, this sounds like an important prescription for the year 2000.

—the catastrophe of the occurrence of war or famine, the computer having become as influential as the automobile, the biological transformation of man, and the development of highly accelerated international support by the developed nations with substantial gap reduction between have and have-nots. We also have reviewed the data predictions of the scholar-prophets, hedged against "surprises" — expanded population, increased urban territory and metropolitan areas, higher Gross National Product and GNP per capita. We have reviewed trends predicted by the scholar-prophets — expansion of scientific knowledge and technological development, the national society marked by creative federalism and voluntary associations, diffusion of g o o d s and services, less working time required of the common man and much expected of an intellectual leadership group, new communication tools to cope with the knowledge explosion, and a leisure-oriented pursuit of happiness. We have predicted the persistence of social problems, such as crime, environment, obsolescence in housing, governmental structures, and roles of associations and members.

American Education in the Year 2000

Breaks and Trends

In the light of the above, what might education in the year 2000 be like? The question brings us again to the problem of "system breaks." In the event of major war, education becomes a zeal-for-our-side operation, a war support apparatus; in atomic catastrophe, what is left becomes a giant subsistence housing barracks. In the event of overwhelming impact of computer technology, the school becomes a clean factory in which workers quietly use machines. In the event of biological transformation, schools have a different population to educate. In the event of global emphasis, schools become oriented to vicarious and actual travel abroad and an American appropriation for education widely shared with the underdeveloped world. But if such system breaks do not occur, the following are likely developments in American education. (Whether these developments are desirable or undesirable is a completely different question on which the reader is invited to judge.)

The Educational Population. As to the population to be educated, elementary education should be quite manageable. By 1968 we have already achieved, in effect, elementary education for all of the children of all of the people. In the years to 2000, the numerical task for elementary schools will be only to absorb the population increase.[55]

For secondary education, by 1968 we had reduced the dropout rate with respect to high school graduation to less than one in three persons. We did this by almost doubling high school enrollment between 1950 and 1965 as secondary school enrollment rose from 6.7 million to 13 million. To absorb most of the youth population increase plus to hold many of the one-third who now drop out, "the high schools still have a few more years of rather rapid enrollment increases (about 13 percent between 1965 and 1970) before relief arrives in the form of smaller enrollment increases," as Hauser and Taitel point out.[56] Then to 2000 the increase will represent simply population increases plus completion of secondary education for those who formerly dropped out.

The greatest increase in enrollment percentages between 1968 and 2000 is expected to come on the college and university levels. Past increments include 61 percent in the decade of the 50's and 60 percent in

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[55]"During the sixties and seventies, the pressure on the grade schools will sharply decrease. Between 1965 and 1980, enrollment may increase by over 4 million or by only 12 percent. This is approximately an average of 1 percent per annum, an easily managed rate. The major problems, therefore, will not be those of rapidly achieving net increases in total quantities of facilities and personnel. Rather, emphasis will be upon the relocation, improvement and replacement of physical facilities, upon the improvement of personnel and upon the innovation and development of materials and techniques," Hauser and Taitel, *Prospective . . . 1980*, p. 52.

[56]*Ibid*

the first half of the 1960's. A 61 percent increase is expected from 1965 to 1980.[57,58] The period from 1980 to 2000 should be marked by still more growth in college and university attendance, though the volume is not easily predictable. In addition, adult education may expand markedly.[59]

As to urbanization and metropolitanism, the typical student of year 2000 will be among the 280 million of 340 million living in urban areas.[60] The very large majority will be living in metropolitan areas described by Hauser and Taitel.[61] Almost half may live in the Boswash, Chipitts and Sansan described by Kahn and Weiner.[62] So schools will be very largely located in urban settings, except for some universities consciously located by their founders on open land and temporarily away from the enveloping grasp of urbanism.[63]

Support for Education. The American student of the year 2000 will be living in a nation which, barring "surprises," can afford to support education out of its GNP.[64] For education will go on in a nation in which Kahn and Wiener suggest as their "Standard Society" projection, a low per capita GNP in 1965 dollars of $6,850 and a high per capita GNP of $11,550.[65]

Even more important, the student generation should be living in an era in the year 2000 in which education will probably be respected for its economic power. Even today, in 1968, leading economists stress the value of education in the economic development of the nation[66] while

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[57] *Ibid.*, p. 53.

[58] According to Gerhard Colm, Chief Economist, National Planning Association, as to sheer numbers, the enrollment on the college level, from 1960 to 1980, will rise by more than 7 million human beings while enrollment on the elementary school level, from 1960 to 1980, will rise by just about the same number, more than 7 million. *Prospective . . . 1980*, p. 83.

[59] "Because men will live longer, the life cycle will become more and more of a problem as people do not pursue simply one career, but go through different career cycles . . . The problem of indecisiveness about what to educate for will increase . . . ." Bell, *Daedalus* XCVI, 667.

[60] Perloff, *Daedalus* XCVI, 789.

[61] Hauser and Taitel, *Prospective . . . 1980*, p.p 29-42.

[62] Kahn and Wiener, *Daedalus* XCVI, 718-19.

[63] "Institutionalized escapism may be imperative if the social order of the future continues to be subject to pathologies such as those so visible currently. The society of the future may be forced to introduce mechanisms for utilizing living time in nonfriction-producing settings." Luvern L. Cunningham, "Leadership and Control of Education," *Implications for Education of Prospective Changes in Society*, ed. Edgar L. Morphet and Charles O. Ryan (Denver: Designing Education for the Future, January, 1967), p. 186.

[64] Whether it *will* adequately support education is another question. By 2000 education will still have its problems but they should not be financial support problems — yet there will probably be financial crises throughout the later decades of the twentieth century which will be related to obsolete tax systems.

[65] *The Year 2000 . . .*, p. 168.

[66] As Kenneth E. Boulding says, "A great many studies have indicated that in terms of sheer rate of return on investment, investment in education brings a higher rate of return than that of any competitive industry." *Prospective . . . 1980*, p. 212.

advertisers exhort potential dropouts to stay in school through familiarizing them with the relation between income and increased years of schooling.[67]

By 2000, this continuing trend of respect for education may result in advanced education being taken for granted as the indispensable key to membership in an intellectual elite at the social controls. Indeed, as Michael Young predicts in *Rise of The Meritocracy, 1870-2034*, elitism based on education may be becoming so advanced as to provoke dissent from the masses by 2000.

The likelihood of the continuance of the explosion of knowledge trend should result in expanded use of computers and retrieval facilities at all educational levels, since man's cognitive apparatus is definitely finite rather than illimitably expansible, barring biological system breaks. How to accumulate relevant data will be regarded as far more significant than an outmoded stuffing of the memory.[68,69]

Curriculum Development. In a national society characterized by creative federalism, curriculum making may be more and more the province of federations of professionals who develop concepts and create materials to implement their concepts. The parochialism of projects in the fifties and sixties which involved few others than specialists in a discipline may have been outgrown. It may be taken for granted in the development of projects and learning materials that specialists in the foundations — social, philosophical, and psychological — specialists in varied media, and curriculum specialists will be heavily utilized, in addition to liberal arts scholars in the disciplines. Rather than a single curriculum design for a field, such as PSSC physics, multiple designs may have been created, many by regional research and development laboratories which were first initiated in the 1960's.[70]

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[67]Nor is anyone particularly startled when Thomas A. Vanderslice of General Electric points out that "When a company, particularly a scientifically oriented company, contemplates moving into a community, quite often the decisive factor is not taxes, not the labor supply, and not the nearness to market. What really makes the difference is the quality of the school system. . . ." *Saturday Review*, January 13, 1968, p. 48.

[68]"Computers will also presumably be used as teaching aids, with one computer giving simultaneous individual instruction to hundreds of students, each at his own console and topic, at any level from elementary to graduate school." Kahn and Wiener, *The Year 2000 . . .*, p. 90.

[69]As Shetler says, "Just imagine the staggering possibilities of having all the world's great libraries, the accumulated knowledge of mankind, at your fingertips, of being able to select from them the information that is desired, and at the same time having a machine that can analyze, sift, integrate and calculate for us. There are machines that can, in a moment's time, go through successive calculations that would require hundreds of years in the slow motion calculating ability of our minds." *Prospective . . . 1980*, pp. 266-67.

[70]"I regard it as urgent that by 1980 the most resourceful administrative units such as cities, subdivisions of states, entire states, or clusters of states become aggressively engaged in curriculum development so that all schools will have a diversity of high-quality programs to choose from and we will not have drifted into nationwide curricular uniformity by default." Henry M. Brickell, "Local Organization and Administration of Education, "*Implications . . .*, p. 231.

Educational Associations and Educators' Roles. In the world of the year 2000, educational associations may be larger because of the increase of educators numerically and the necessity for the salary advancement, welfare provisions, and professional information which associations provide. Quite possibly, one major organization may bargain collectively and negotiate professionally for teachers.[71] Characteristic also may be both proliferation of organizations to match new job titles in an increasingly specialized educational profession[72] and coordination through super-organizations or holding companies to relate the work of specialized groups to a larger focus.

By the year 2000, the roles of most teachers will have been heavily influenced by the existence of supporting personnel, the available technology, and the extension of specialization. Secretarial staff, teacher aides, instructors and assistant teachers may be the personal supporting staff of the coordinating teacher in the discharge of his responsibilities. A pool of technicians, evaluators, and researchers, available to the teacher, may also be drawn upon.[73] The coordinating teacher increasingly may be the master of the mix, as O. K. Moore has phrased it, drawing upon readily accessible libraries or banks of books, films, television programs, sound tapes, computer consoles, etc., and utilizing trips, individual guidance, independent study, guests, etc., for instructional purposes with the aid of his staff. Perhaps a third of the coordinating teacher's six-hour working day may be spent supervising student learning of content in the existent disciplines and interdisciplines. Another third may be spent with various staff members in coordinating and planning future learning experiences. The final third may represent his specialization in education; consequently, some teachers would be engaged in individual therapy; others in conducting analysis groups for discussion with students; others in preparing television presentations and tapes; others

[71]My crystal ball tempts me to predict that the most remarkable and remarked-upon development as to educational organization will be the creation of the National Education Federation of Teachers, a coalition of the former National Education Association and the former American Federation of Teachers. NEFT, as it will inevitably be abbreviated, will grow out of a steady evolution of the National Education Association toward welfare concerns and the American Federation of Teachers toward professional concerns. After years of internecine warfare, rank and file movements in both organizations will result in amalgamation, despite the opposition of the managerial hierarchies and the swollen bureaucracies of the two organizations. Thus says the crystal ball — which possibly is cracked.

[72]"The present role of teacher will gradually evolve into a cluster of roles encompassing such discrete functions as team leader, formulator of detailed objectives, instructional sequence planner, script writer, presenter of information, evaluator of pupil responses, and designer of supplementary pupil experiences. The new administrative and supervisory specialties will include position titles such as Specialist in Outside Developments, Supervisor of Professional Training, Director of Equipment Acquisition and Maintenance, Chief of Materials Production, Program Assessor, Coordinator of Temporary Personal Assignments, Professional Librarian, and Travel Officer. We can anticipate that an Assistant Superintendent for Development and Training will cap off the pyramid of such positions in the central office of the school system." Brickell, *Implications . . .*, p. 227.

[73]"We can expect, even by 1980, an enormous expansion in sub-professional or para-professional full-time and part-time workers. Some will be attached to teachers as general aides, while others will serve as instructional machine operators, playground supervisors, information room clerks, data assistants, equipment maintenance technicians, travel aides, and so on." *Ibid.*, p. 227.

in association with specialists programming computers; others in developing evaluation techniques and tests, etc. These specializations would reflect the personalities and preferences of individual teachers, as well as their academic backgrounds.

Overall management of the individual school may be shared by an administration specialist and a curriculum specialist. Coordination of schools and other community enterprises, often physically clustered in an educational park, will be the responsibility of the superintendent, largely a political force in school and community, and his complex supporting staff. Some of the supporting staff may be worried about teachers who seem unable to utilize varied resources with ingenuity and who spend most of their teaching time standing before the class and talking at them.[74]

The Pursuit of Knowledge and Leisure. For the students of the year 2000, both the pursuit of knowledge and the pursuit of leisure will be important. Their lives outside of schools will, as now, be divided variously between study and recreation but the settings will be different. More prosperous homes may be able to afford, in the year 2000, a home learning and information center. Such a center might include "video communication for both telephone and television (possibly including retrieval of taped material from libraries or other sources) and rapid transmission and reception of facsimiles (possibly including news, library materials, commercial announcements, instantaneous mail delivery, other printouts)."[75,76] The home center might mainly be used by young people but also by adults, much as a collection of books, or a telephone, or an encyclopedia in the home is used today by youth and also by parents.

We may see an absorption of recreational facilities into recreational parks, a process somewhat similar to the absorption of recreational facilities onto college campuses through student unions, gymnasiums, natatoriums, etc. Instead of returning to the neighborhood for recreation after school, the youth of 2000 may turn to centers for sports, arts, gossip, etc., which are embraced in the master plan for the youth environment. His excursions into the countryside may be made in part via the school camp, while his younger brother and sister may visit the farm maintained by the school system for educational purposes.[77]

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[74]"Very probably (I regret to assume) if one opens the door to a typical 1980 classroom and walks inside, the teacher will be standing up front talking." *Ibid.*, p. 216.

[75]Kahn and Wiener, *Daedalus* XCVI, 714.

[76]"The sum of all these uses suggest that the computer utility industry will become as fundamental as the power industry, and that the computer can be viewed as the most basic tool of the last third of the twentieth century. Individual computers (or at least consoles or other remote input devices) will become essential equipment for home, school, business, and profession, and the ability to use a computer skillfully and flexibly may become more widespread than the ability to play bridge or drive a car (and presumably much easier)." Kahn and Wiener, *The Year 2000* . . ., p. 91.

[77]"It is much better to think in terms of the positive use of the countryside: for example, maintaining farms city children can visit for both recreational and educational purposes, or leasing open land for use by various groups in camping and in other related recreational activities." Perloff, *Daedalus* XCVI, p. 793.

Summary on Education. As to education in general in the year 2000, to this point we have commented on the possible influence of societal "system breaks" on education, on the probable especial increase in the college and university populations, on relations of education to increased urbanism, metropolitanism and per capita GNP, and on increasing emphasis on the importance of education. We have speculated on increased use of educational technology (especially computers), on future coordinated use of education personnel in projects, on development of associations, on changing teacher roles and on resources for students for learning and leisure.

Teacher Education in the Year 2000

We turn now to teacher education in the year 2000.[78] What might be some possible developments reflecting the social scene and related to the total education enterprise of the year 2000? What are some alternative future value choices?

Possible System Breaks in Education

Again, as in our consideration of the social setting of the year 2000, a question immediately arises. How about major "system breaks" or "surprises"? The answer is much the same as that for education as a whole. But what of the possibility of minor system breaks in that smaller system called teacher education?

Teacher education may undergo its version of system breaks or surprises by 2000. Forces leading in the direction of system breaks include persistent sharp criticism of the efficacy of teacher education by students, teachers, and scholars; slow adaptation of teacher education to such fast-moving social forces as technology; general conservatism in teacher education; and admission of weaknesses by teacher educators themselves. Forces leading away from system breaks include the considerable autonomy of key social institutions in teacher education such as schools of education, teachers colleges, and state departments of education; the success of resistance to past "outside" proposals for change; and the lack of realistic alternatives to the present system.

If a system break appears in teacher education between 1968 and 2000, what form might it take? Among the possibilities are sharply reducing professional education preparation, and turning what remains of the teacher education effort over to the liberal arts scholars. Yet the need for some body of professional education content and the unwillingness of the liberal arts scholars to take over, as distinct from criticizing, have militated against broad acceptance of this type of system break.

Another possibility is teacher education taken over by teachers through their unions and organizations. Teachers then would be inducted into the profession through fellow teachers in on-the-job relationships. Yet, teachers are so involved in salary and welfare campaigns and in adaptations to new curricula and technology that presently they show no eagerness to assume the burden of preparing their successors.

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[78]At this point, footnotes and supporting data will be abandoned to dramatize that what follows is a beginning on speculation through material for dialogue, an attempt to open rather than close possibilities.

Possibilities sometimes proposed include take-over of education by state departments of education. It seems likely that state department take-overs would result in either other versions of schools of education, though under differing auspices and perhaps located in state capitals, or apprenticeship systems of training, conducted by teachers stressing practice and supervised by college professors moved into state departments.

Another possible system break is teacher education in 2000 planned and conducted through an industry-government complex composed of the private corporations which will have developed technologies and a U.S. Office of Education operating as does a European or Asian Ministry of Education. Militating against this development are the Constitution of the United States, the historic American distribution of power among local, state, and national levels, and the prophecy of creative federalism.

The Continuing Program

If such system breaks do not occur within teacher education, we will assume that teacher education will probably continue primarily under the aegis of colleges and universities in increasingly urban settings. It will probably include as program-influencing forces liberal arts college specialists in disciplines or interdisciplines and specialists in professional education, whether organized in departments, schools or colleges. The programs implemented by these college and university staff members may be influenced, but in changing ways, by such institutions as federal government, state departments of education, unions, and certification bodies. An additional influencing force may be the future teachers themselves, for the voices of students will probably be heard in the land. Both implementing and influencing agents will be heavily affected by the social setting of the year 2000 which we have sketched above and by the education taking place in this social setting.

Machines and Men in Teacher Education. Expanded population, expanded enrollments, and expanded teaching personnel combined with developing technology, the continuing knowledge explosion, and new social problems may result in a teacher education which, by the year 2000, differentiates between what can be learned through machines and what can be learned through the personal presence of liberal arts professors and teacher educators. Books will still be read in 2000 but, additionally, students individually and in groups will utilize film and television collections, computer-aided instruction, simulation, models, and various information and concept-oriented laboratories. The personal presence of teacher and liberal arts educators, no longer regularly required for lectures, may take the form of individual and group planning conferences, discussion leadership, research planning, field work leadership, and occasional major lectures on new insights not yet recorded by technology.

The first four years of higher education may stress general liberal education and specialization in a discipline or interdiscipline. These college years may be set in locales comparable to present day universities,

though characterized by many more laboratories reflecting technological developments. But students may often be away from the campus, both for immersion in the field studies which may by then characterize instruction in the social sciences and humanities and for retreat to camp settings in the diminished countryside for absorption and contemplation of insights from field work and campus study carried on in urban and metropolitan areas.

A minimum of two intensive years beyond the general liberal education years may be devoted to study and practice of professional education as the minimum preparation for teaching. While centers of professional education, emphasizing laboratories for use of technology and for research, will probably persist on university campuses, a substantial proportion of the teacher education program may take place within public school settings. As educational parks develop in old and new cities, teacher education centers, university-related, may increasingly be included among the park facilities. Professional teacher educators may work within systems both as partners in the total educational enterprise and as teachers of teachers, pre-service and in-service. Those ghetto and other slum schools which persist may present a more formidable space problem for such programs, but rental of empty store fronts and other obsolescent space will probably provide headquarters for teacher educators and teachers-to-be at the scene of the action.

Sequences of Professional Education. In such public school settings, students in training may experience evolutionary sequences beginning with observation, going on to participation, including student teaching and culminating in internship. Each student, from his entrance into the two-year program, may have one continuing advisor throughout the entire program. Characteristics of the advisor may well include recent teaching experience on the level on which he now supervises beginning teaching, knowledge of professional education and subject content, and demonstrated skill in fostering self-actualizing personalities.

Observation may take place in a variety of settings; participation may be consciously planned to include both upper and lower income situations, largely urban and metropolitan, occasionally rural. Taking the cue from the development of field work in the social sciences, specialists in the foundation areas and the theory and practice areas may be concerned with both substantive content and field experiences in school and community. Instruction in the foundations areas and in theory and practice may be timed to coincide with observation and participation experiences. Some scholars in the foundation areas and in theory and practice may be engaged in research and study to be embodied in books and technology; other scholars may have as their role the interrelating of issues and ideas with the school and community experience being encountered by the future teacher.

All student teaching may be televised for frequent individual replay and study by the individual and also by the advisor and the individual, and for large and small group discussion by specialists in teacher

education and teachers in training. For instance, the specialist in reading would include in his armory of materials television depiction of successful reading procedures as well as programs presenting problems posed for discussion.

Internship may be the transitional phase between preparation and independent teaching. As the focus of the final months of the program, internship may be accompanied by culminating seminars in which representatives of foundations, theory and practice, and the continuing counselor may participate, sometimes in the school and sometimes in the university research and laboratory settings.

More functional use of summer vacation periods by future teachers is a likely social development by 2000. The three summer vacations related to the two-year teacher education concentration may be divided among subsidized travel experiences abroad resembling more the Experiment in International Living than the traditional packaged Grand Tour, paid employment involving working with youth in summer school and community projects, and apprenticeship in research and development with educators who are carrying on studies or developing learning materials for the various technologies.

If a system break toward globalism, a highly accelerated American participation in foreign nations, should develop, the second year of the teaching preparation period for many young Americans may take place in underdeveloped countries, with, possibly, Puerto Rico and the Virgin Islands as staging areas and take-off points. Teaching, like diplomacy, may involve rotation in international assignments with occasional sabbatical-type returns to the United States for vacation, observation of American developments, and sharing of experiences.

Advanced Study of Education. Bi-annual extended vacation periods, subsidized leaves of absence, and taken-for-granted sabbatical years for all teachers may often be given over by teachers to retooling and doctoral work. The return would often be from the public school scene of the action to the university or regional laboratories and centers of discussions. Some sabbatical experiences may result in career shifts, from, for instance, coordinator teaching roles to material development, computer programming, evaluation development, supervision, or curriculum development, accompanied by the attainment of the doctoral degree in a credentials society which requires this demonstration of specialization for a major career shift. Such periods may also provide opportunities for the expanding number of paraprofessionals, assistant teachers, retreads from other occupations including housewifery, to be educated to become coordinating teachers.

But we should not forget that in a leisure-oriented society in which teachers are well organized in the interest of salary and welfare, many teachers may not aspire beyond their original posts and the ascending salary steps won by their negotiators. Vacations and sabbaticals may be used by many for leisure and renewal. Consequently, if teachers are to keep up with fast-developing educational technology and practice, in-service education as a part of the basic teacher working day would be

essential. Here teacher education based in school systems, local and metropolitan, or operating from regional centers, would play a crucial role.

Thus teacher educators of the year 2000 may be involved in conducting two-year pre-service training programs in school and university settings, helping paraprofessionals to professional status via institutes, workshops, etc; educating specialists at the doctoral level in university settings; and participating as partners with school systems in in-service education of the permanent teaching staff.

Possible Splits in Teacher Education

One may predict with fair safety that in the year 2000 there will still be splits among educators over teacher education. It is probable that the liberal arts-professional education schism may persist. Yet it may be less virulent than during the 1950's when open warfare prevailed. Perhaps we may have reached, by the year 2000, a type of 38th parallel in the struggle, with a stalemate resulting in four collegiate years allotted to liberal arts and subject specialization and two years allotted to professional education.

It is also probable that the philosophers will not have become completely reconciled. We may still be hearing, under whatever titles, the cases for essentialism, reconstruction, progressivism, realism, idealism, etc. But the discussion may be increasingly ecumenical and oriented to dialogue rather than acrimonious.

The Technologists and the Social Emphasizers. Possibly such historic splits may be muted by a new split which may now be on the horizon—the split between the scientific research wing of teacher educators, here termed the technologists, and the humanistic philosophical wing of teacher educators, here termed the social emphasizers. The two wings are likely to perceive education differently and to stress differing values.

The technologists may stress the compression and synthesis of exploding knowledge into a variety of technologies for learning. The social emphasizers may stress examination of the human dilemmas of mankind through the posing and testing of alternatives.

The technologists may foster research, based largely on physical science models, which can be translated into quantitative terms and embodied in storage and retrieval technology. The social emphasizers may foster research, based largely on social science models, which can be synthesized and made available to decision-making bodies ranging from the electorate to institutionalized in-groups.

The technologists may point to past educational break-throughs in technical competencies based on scientific research and development, and involving innovation, evaluation, feedback, and diffusion. They may see man's technological quests as mankind's best bet. The social emphasizers may point to past gains in control over social difficulties

through use of problem-solving in the educational process and to catastrophes which continue to threaten human survival. They may urge that the world can afford technological failure while social failure would be fatal.

The technologists may look forward to increased experimentation into affecting h u m a n potential through controlled conditioning, drugs and chemicals, and influences on intellectual acuteness. The social emphasizers may view with distinct reserve the extension of experimentation on modifying human potential, citing the dignity of human personality, unsuccessful genetic experimentation toward a new b r e e d, and reminding the public of the horrors of the Hitler regime.

The technologists may be preoccupied with closely defined, value-free laboratory studies of education-related techniques intended to foster production and efficiency. The social emphasizers may be preoccupied with the quality of life, work, and leisure, the possible ways for man to pursue happiness, and attendant value-oriented consideration of alternatives through schools.

The technologists may argue for acceptance of a split between elite and masses by pointing out the accelerating concentration of knowledge for decision-making in elites and uncertainty about decisions on the part of the common man under the severely restricted condition of information in the communication system, upon which the masses depend. The social emphasizers may claim that such acknowledgement merely defines the urgent problem to be faced by mankind: finding ways of making the knowledge of the elite accessible to the masses so that the common man may use intelligence in problem-solving and the leaders may be humanely oriented in their endeavors.

The technologists may be impressed by the order and efficiency of the new technology which is increasingly characteristic of school and society. The social emphasizers may be impressed by the planlessness and even chaos related to persistence of crime, poor land use, obsolete housing, ineffective government structures, competing interest groups, and other problems currently unpredictable.

The technologists may be pleased by the logic and clarity of the content developed in many subjects by projects which continually update knowledge. The social emphasizers may be troubled by the turbulence within man and disorder in society.

The technologists may develop and support teacher-proof materials. The social emphasizers may develop and support creativity in teaching and autonomous self-actualizing teachers.

The technologists may be charged with stressing things and ignoring people. The social emphasizers may be charged with stressing people and ignoring things.

Occasional versatile teacher educators may h a v e the educational background and personality structure to harmoniously reconcile both the technologist and the social emphasis viewpoints. But the majority

may lean to one or the other persuasion and may combat their opponents academically. They may even be heard speaking disparagingly of them at parties at which both old and new forms of libations and stimulants are served.

There is only one way in which to close the venture into the year 2000 represented by this paper. It is to predict, with appropriate uncertainty, that before the year 2000 is reached, one or more major and minor system breaks, whether anticipated or not even dimly envisaged, will take place. These developments will have a profound influence on the future of mankind, including the activity termed teacher education. One insignificant pigmy outcome of such developments will be that the venture into the future represented by this paper on tomorrow's teacher education will largely be of historical interest to whoever might come upon it in the year 2000.