Four views of the future, from the technological optimism of Buckminster Fuller through the danger warnings of Jacques Ellul to the "pop" futurology of Alvin Toffler, are discussed. It is argued that educational planners, who have largely concentrated upon statistical techniques, can learn a great deal from the futurologists in terms of the development of a philosophical and historical perspective on planning.

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Futurology and Education: Four Futurologists and Their Theories of Education

Educators are by the very nature of their profession almost compelled to be optimists, for there are few other professions more future oriented. The subjects of our activities as educators — children and young adults — will live in a world which most of us will not live to see, the world of the future. Consequently, the greatest part of our labors as educators and as teachers must be directed toward the future by giving our students both the knowledge and the skills they will require in order to live useful and meaningful lives, as well as by transmitting the values and ethos of our particular culture so as to give them a point of reference in their future lives and a sense of historical continuity with preceding generations.

This necessity of preparing people for the future requires that we exercise considerable imagination and insight in speculating as to what the future will bring, what skills will be necessary, what jobs and occupations will be in demand, and what sort of lives the majority of people will lead in the next decades.

Unfortunately, educators have come late to this particular ball, and it is a real pity, because perhaps no element is more important in considering the future than the nature, shape, and extent of future education. Professional futurologists have turned their speculative imaginations loose on this field, and their ideas and theories are well worth consideration by educational planners and by professionals in all fields of education, as we strive to create a new field of professional concern: educational futurism. We must become more receptive to such heretofore lonely voices crying in the wilderness as R. Buchminster Fuller, while also considering the futuristic thought of such respectable social scientists as Raymond Aron, Daniel Bell, Bertrand de Jouvenel, and Herman Kahn. The tremendous popular reception accorded to Alvin Toffler's *Future Shock* indicates an increasing awareness among the general public of the need for serious thinking about the future (although Toffler is more of a Gee Whiz! than a genuine futurologist.)

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We are concerned here with a very brief examination of the perspectives of some of the leading futurologists, and especially their speculations on the shape and scope of education in the world of the future. We also wish to generalize on the implications of futurological thought for today's as well as tomorrow's world.

The futurologists whose views will be examined in greatest detail in this essay are R. Buckminster Fuller, Jacques Ellul, Herman Kahn, and Alvin Toffler. Some justification of the choice of these particular four is necessary. Fuller belongs in this group by virtue of his primacy in the field; for nearly half a century he has been virtually alone in speculating seriously about the future. He has been the butt of ridicule on the part of those who run about in academic circles; his geodesic domes have been caricatured and his views lampooned. Despite all this, Fuller has sailed serenely onwards, oblivious to criticism, as befits a descendant of the old New England Transcendentalist Margaret Fuller. Enough of Fuller's observations and speculations have been borne out to give him the status almost of a minor prophet; certainly he has become one of the major sages of the Counter-Culture.

Acting essentially as a counterbalance to Fuller's optimism is Jacques Ellul, the French social philosopher, whose *The Technological Society* (Originally published in French as *La Technique: L'Enjeu du Siecle)* is a trenchant statement of the conservative, not to say pessimistic, viewpoint. While Fuller does not argue that the future will be utopian, Ellul comes close to depicting it as an anti-Utopia. As a useful warning to the dangers implicit in an overly technologized future society, Ellul cannot be ignored.

Herman Kahn, the third choice in our gallery of futurologists, first gained renown by *Thinking About The Unthinkable* and speculating *On Thermonuclear War* (the titles of two of his earlier works dealing with the possibility of a thermonuclear world conflagration and humanity's chances of survival of such a catastrophe). The bland assumption of the likelihood of thermonuclear war expressed by these two works served to set the teeth of a whole generation of liberal intellectuals on edge. Now, with the collaboration of Anthony J. Wiener and the sponsorship of the American Academy of Arts and Letters and its influential journal *Daedalus* (not to mention the patronage of Daniel Bell, Chairman of the Academy's Commission on the Year 2000), Kahn has turned his attention to the Year 2000, and his views have again provoked commentary and discussion in a wide variety of serious intellectual circles in the United States and abroad.

The final figure to be examined is Alvin Toffler, who admittedly is more of a publicist and a popularizer than a serious scholar. Nonetheless, *Future Shock* was such a *succés d'estime,* and it has played such a significant role in stimulating concern about the future among the literate general public, that almost despite himself Toffler has become a figure to be reckoned with

in the field of futurology. Furthermore, a brief presentation of his views may prevent their being accepted as *the* pattern which future developments necessarily will take, which because of the widespread popularity of Toffler's book is unfortunately rapidly becoming the case.

It should, however, be stressed that the choice of these four particular authors over many other contenders for inclusion was based to a certain extent upon personal predilections. Fuller and Ellul were included as the most eloquent spokesmen for their respective positions, that is, the optimistic and the pessimistic views of the future. Kahn was included because of the considerable interest which his views have generated (most notably the recent work by the Hungarian-born British Nobel Laureate Sir Dennis Gabor, *The Mature Society*), and because he might well be considered as the leading Establishment futurologist. Finally, Toffler was included as an "'orrible hexample" of Pop Futurology. No disparagement of any other scholars was intended by their exclusion from consideration in this present study.

II

What distinguishes contemporary futurology from the Utopianism (or anti-Utopianism) of earlier speculations about the future? Or what even distinguishes it from science fiction! Like the anti-Utopias of Huxley and Orwell or the semi-Utopias of Heinlein and Arthur C. Clarke, it has a strong grounding both in the practices and techniques of the natural and the social sciences. Where it differs from these is in its overall perception of science and technology within the broader perspective of the whole of human existence. Contemporary futurology is essentially gestalt futurology; it is concerned with the entire realm of human existence. It places its emphases not merely on descriptions of the possibilities of development in some limited sphere, such as technological innovation, for example, but rather it attempts to relate a wide variety of probable or even possible future developments into a concrete phenomenological matrix. Futurology is systematized field theory, unified and logically consistent in all respects. It is this test which must be applied to all speculation and theorizing about the future in order to determine whether it is in fact futurology or merely science fiction on a greater or lesser degree of abstraction.

Joan Criswell has defined a *gestalt* as

> . . . an organized entity or whole in which the parts, though distinguishable, are interdependent; they have certain characteristics produced by their inclusion in the whole, and the whole has some characteristic belonging to none of its parts. The gestalt thus constituted is 'a unit segregated from its surroundings' (W. Kohler, *Gestalt Psychology,* New York: Liveright. 1947, P. 137) behaving according to certain laws of energy distribution.[1]

Of all futurologies, that of R. Buckminster Fuller most clearly meets this criterion of evaluation. Fuller is concerned and involved with Man; he has

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[1]Joan Criswell, "Gestalt", in Julius Gould and William L. Kolb, eds., *A Dictionary of the Social Sciences* (New York: The Free Press, 1965), p. 287.

an almost Victorian faith in his perfectability. The future which Fuller visualizes is an existential condition; Man is a constant state of Becoming. His view of the future is not merely an extension and continuation of present trends (indeed, in many respects it is a downright reversal of these trends), nor is it a Cloud-Cuckoo-Land sort of Utopia, with a happy humanity leading a rich, meaningful existence in a Dymaxion world of geodesic domes. For Fuller the future is a more complete actualization of human potential than is now possible, an actualization assisted and enhanced but not overwhelmed by technology. Again in a very Victorian sense science and technology are seen as the servants and not the masters of Man. The spirit which pervades all of Fuller's work is that of an almost unquenchable opimism.

Fuller is a leading exponent of what the English psychologist Edward de Bono has termed "lateral thinking." This he defines as the ability to

> . . . explore all the different ways of looking at something, instead of accepting the most promising and proceeding from that.[2]

This latter type of thinking, known as linear or vertical thinking, is what might otherwise be termed the "conventional wisdom." It is rigid and is bound by the inexorable laws of logic. Its use in problem solving has been almost predominant. Vertical thinking is inherently conservative, whereas lateral thinking has to do with new ways of looking at things as with new ideas of every sort. One observer has even gone so far as to term linear thinking as a threat to futurology.[3]

What de Bono terms "lateral" thinking, Fuller refers to as "comprehensive thinking.[4] These are highly non-specialized forms of thought not tied to a particular pattern or framework of rules, but which can adjust rapidly to extremely discrete and diverse situations. Fuller's comprehensive thinking is geared to specific circumstances; it is innovative in the extreme, unhampered by precedent or experience. It is in effect an assumption that all situations are novel and can only be dealt with in novel fashions and by novel means.

Fuller's universe is Heraclitean; it is constantly in flux. It is moving from a Newtonian static norm to an Einsteinian all motion norm.[5] Because of this, the individual who can function most effectively as a human being in such a universe is one who is not laden with a set of preconditions, prejudices, and precedents. He is a generalist par excellence; the direct descendant of the *Homo unico* of the Renaissance. Because of his generalized outlook and

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[2]Edward de Bono, *The Use of Lateral Thinking* (Harmondsworth, Middx., England: Penguin Books, 1967), p. 10.
[3]Landheer, op. cit., p. 93.
[4]R. Buckminster Fuller, *Operating Manual for Spaceship Earth* (Carbondale and Edwardsville, Ill.: Southern Illinois University Press, 1969), p. 44.
[5]R. Buckminster Fuller, *Education Automation: Freeing the Scholar to Return to his Studies* (Carbondale, Ill.: Southern Illinois University Press, 1964), p. 52.

comprehensive patterns of thought, the individual in Fuller's future can be the master of many technologies, not merely the servant of one.

The environment of the future, as Fuller sees it, is benign; Man today is engaged in approaching this benign environment. Fuller's future is synergistic, it is automated, it rejects decisively Newton's Second Law of Motion; but more than anything else, it is an intensely human future, cast in human scale, with man standing at the center, undwarfed by his machines and uninhibited by his technology.

What sort of education can produce such a man? For Fuller, the ideal education is naturally education in comprehensivity, extreme generalized and unspecialized, so as to enable the individual to be the completely flexible human being which the future will demand. The educated man is the nonspecialist, the comprehensivist, receptive to all new technologies and innovations. Fuller was a midshipman at the United States Naval Academy at Annapolis during World War I, and his ideal education is patterned to a great extent on his experiences at that time, which apparently made a far greater impression upon him than did his attendance at Harvard.

> Luckily I went to the U.S. Naval Academy during World War I. . . . There were barely two thousand men at the naval academy learning how the old great powers ran the world. Their studies deliberately made them comprehensivists . . . . You were trained to be able to take all that had been found out about the physical universe and put it into all those tools of enormous tonnage. You had to be able to take all that hardware and go half-way around the world, and there was no way you could be communicated with about strategic matters faster than a courier could be taken by another ship . . . . Therefore, when you went off in a ship with all that expensive hardware, there was no central authority to tell you what to do. You had to be trained to be able to build new naval bases. You had to understand the whole pattern of the great ambitions, of how you run the world, and where the major commerce was, where all the resources were, how to handle people, and how to organize things in fundamental ways. So the training was designed to make a man a comprehensivist. And the very essence of being a comprehensivist is the following: you learn about generalized principles, because it isn't a generalized principle if there is any single exception.[6]

The subtitle of Fuller's book *Education Automation* is even more revealing: *Freeing the Scholar to Return to His Studies.* In this small volume (Less than a hundred pages), designed originally to express his views in the construction of a new campus for Southern Illinois University at Edwardsville, Illinois, Fuller gives the clearest exposition of his educational theories. Like his general view of the future, it too is geared to the individual.

For Fuller the essential task of the educator is "How do we make available to these new students what we have been able to discover fairly accurately about the universe and the way it is operating?"[7] Fuller's new education does not need massive Goergian piles of brick and mortar, nor probably

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[6]R. Buckminster Fuller, "Education for Comprehensivity," in R. Buckminster Fuller, Eric A. Walker, and James R. Killian, Jr., *Approaching the Benign Environment* (University, Ala.: Published for Auburn University by the University of Alabama Press, 1970), pp. 61-62.

[7]Fuller, *Education Automation,* p. 54.

does it really need glass curtain walls or even perhaps geodesic domes as well. It is what goes on inside the building, not the building itself, which is important. As long as the building is more or less aesthetically satisfactory and the details of its architecture and construction do not actively impede the learning process, then almost any sort of structure will satisfy Fuller's needs for a learning environment.

For Fuller, as for many of the so-called "radical" educational reformers, there is a clear distinction between schooling and education. Fuller visualizes schooling as essentially a baby-sitting function, a service to the parents.[8] Learning is seen as essentially an ancillary function of schooling, a game to keep the children occupied.[9] Actual learning for Fuller does not and cannot take place in a formal classroom structure, with rows of desks primly spaced and with a bored teacher reading from last year's notes to serried ranks of equally bored students.[10] Rather, instruction should be multimedia oriented, with great reliance upon videotape and television, especially two-way television, which would enable the listener to communicate directly with the speaker in the studio, much as two-way radio works.

Furthermore, students will have the opportunity of hearing and seeing lectures whenever they wish to do so on an individual basis through the use of tape libraries and tape projectors in specially assigned study areas. By imbuing the process of studying with various attributes to enhance its prestige, such as making it a privilege to enter the study areas, limiting the activities which can be carried on there, etc., the motivation of the individual student will be increased and actual relevant learning can be carried on.[11] Of course, implicit in this program is the idea that the amount of knowledge available to us concerning the learning process and concerning learning theory in general will have increased substantially.

Learning for Fuller thus becomes humanized, even though it relies heavily upon technology for its tools and accessories. The student learns at his own pace and at his own level, supplementing electronic lectures, at which he is the only audience, with electronic conversations between master teachers and himself and with actual tutorial sessions with individial faculty members and with ordinary group interaction between his fellow-students and himself, in the form of "bull sessions", informal joint-study groups, and other groupings with which we are all familiar.

For Buckminster Fuller as for Marshall McLuhan, "the medium is the message"; the use of technology as an instructional tool gives the student a sense of mastery over technology from the beginning of his formal exposure to institutionalized education. The individual thus educated will possess a

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[8]Fuller, *Education Automation,* p. 55.
[9]*Ibid.,* p. 55-56.
[10]*Ibid., p. 56.*
[11]*Ibid.,* p. 41-42.

sense of familiarity with the instrumentalities of automation, in place of the sense of anxiety so characteristic of today. Again, Fuller's world, like McLuhan's, is a "global village", and the essence of village life and society is ease of communication within the village. In the global village not everyone will be able to communicate with his neighbor. Education for Fuller is communication; communication with one's fellow man, communication with the environment, communication with the universe.

III

The difference between Buckminster Fuller and Jacques Ellul is the difference between an engineer and a philospher. Where Fuller is positive, optimistic, certain in his beliefs that man can coexist with his technology and that the future will bring a better world, Ellul (who is Professor of Legal and Social Philosophy at the University of Bordeaux) remains far more somber and pessimistic about the future. He stands in the great Continental tradition of cautious pessimism. There is no guarantee that the future will be any improvement over the past or even the present; indeed, given the record of human history and our knowledge of human nature, there is every likelihood that it may in fact be worse.

For Ellul, as for Fuller, the great problem is that of coming to grips with technology. This is the great gamble of modern society, that we will in fact be able to do so (thus he subtitled his great work *La Technique: L'Enjeu du Siecle,* the Gamble of the Century), and it is a gamble in which the odds do not at all favor man. In his approach to technology, Ellul is not far distant from Henry Adams, who foresaw the coming Age of the Dynamo at Chicago's Columbian Exposition in 1893, and saw in this new age the destruction of most of mankind's traditional values.

Ellul's vocabulary is highly specialized, not to say idiosyncratic, and his terms are in need of clarification for the general reader who may be unfamiliar with his usages. By "technique" Ellul means much more than simple technology:

> Technique refers to any complex of standardized norms for attaining a predetermined result. Thus, it converts spontaneous and unreflective behavior into behavior that is deliberate and rationalized. The Technical Man is fascinated by results, by the immediate consequences of setting standardized devices into motion.[12]

In other words, then, Ellul is suspicious, as was Jacob Burckhardt, of the "terrible oversimplifiers." Ellul's great fear is that the future may belong to the systems analysts and the field theorists. Not that Ellul is unalterably opposed to systems *per se;* like any good philosopher he is a determined system-builder himself. The difference between Ellul and someone like Fuller lies in the fact that whereas Fuller is an advocate of comprehensive systems, Ellul's systems are non-comprehensive, discrete, and destandardized.

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[12]Jacques Ellul, *The Technological Society*. Translated from the French by John Wilkinson, with an introduction by Robert K. Merton (New York: Vintage Books, 1964), p. vi.

They are, if you will, anti-systems.

The new world which Ellul sees coming is a monolithic technocracy, which can neither be checked nor guided.[13] It will be a world in which not only all traditional human values and norms will be negated, but also one in which the physical laws of the universe will once and for all be set at naught as man's technology becomes not only the master of man himself but also of the physical universe as well.

> Who is too blind to see that a profound mutation is being advocated here? A new dismembering and a complete reconstitution of the human being so that he can at last become the objective (and also the total object) of techniques. Excluding all but the mathematical element, he is indeed a fit end for the means he has constructed. He is also completely despoiled of everything that has traditionally constituted his essence. Man becomes a pure appearance, an abstraction in a milieu that has become frighteningly concrete — an abstraction armed with all the sovereign signs of Jupiter the Thunderer.[14]

Scientists and technolgists, continues Ellul, are naive. By ushering in a golden age in which human thoughts, desires, and emotions can be shaped at will in order to reach certain efficient, pre-selected collective decisions, scientists are paving the way for the harshest dictatorship that the world has ever seen, far harsher than that of Hitler.[15] "That it is to be a dictatorship of the test tube rather than that of hobnailed boots does not make it any less of a dictatorship."[16]

Ellul faults most scientists, including even Einstein, for knowing little or nothing of political or human reality.[17] Most scientists tend to think in banalaties, Ellul says:

> Their pomposities, in fact, do not rise to the level of the average. They are vague generalities inherited from the nineteenth century, and the fact that they represent the furthest limits of thought of our scientific worthies must be symptomatic of arrested development or of a mental block.[18]

Particularly disturbing for Ellul is the gap between the enormous power which scientists wield and their critical faculties, which he estimates as null.[19] Because of these views, Ellul is far from convinced that the future will be the "golden age" which the scientists and technologists assure us that it will be. He has no confidence in their abilities outside the narrow confines of their specialties, and none in their ability to operate coherently in the political sphere. A future dictated largely by the scientists and the technocrats would be for Ellul, in a very real sense, an anti-Utopia to rival the worst nightmares of a Huxley or an Orwell.

Given this *Weltanschauung,* it is to be expected that Ellul would hold a dim view of the educational theories and practices of the future, if they are to be based upon current trends and practices, and if in fact the scientists

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[13] *Ibid.*, p. 428-29.
[14] Ellul, *op. cit.*, pp. 431-432.
[15] *Ibid.*, p. 434.
[16] *Idem.*
[17] *Ibid.*, pp. 434-35.
[18] *Ibid.*, p. 435.
[19] *Ibid.*

are to be the architects of the future. While accepting the necessity for a more "progressive" educational praxiology, he is disturbed by the *étatism* which is implied in so much of progressive educational theory.

> We note first of all that this technique must be implemented by the state, which alone has the means and the breadth to carry it through. But the rigorous application of the psychopedagogic technique means the end of private instruction, and therefore of a traditional freedom.[20]

Like Fuller, Ellul sees the new education as being comprehensive both in its scope and in its sweep, but where Fuller sees this as a positive benefit, Ellul views it as a cause for alarm. He fears especially the compulsory adaptation of the child to the social needs of a given society and the end of the "gifted loners". In this he completely fails to understand Fuller's concept of comprehensivity, if indeed he is even familiar with it, for Fuller's name fails to appear in Ellul's bibliography. The comprehensive society of Buckminster Fuller is not some form of social hive, as Ellul apparently regards the organization of the future society; and Ellul's failure to recognize that comprehensivity and individuality are not mutually exclusive must of necessity limit his entire insight. This is of course especially true of education, which in Fuller's future remains highly individuated.

Ellul sheds a tear for the decline of humanism as a goal or end of education in itself; "Education has only one goal, to create technicians," he writes.[21] The fact that humanism can be a component within education rather than its end or goal does not seem to have entered Ellul's mind. Perhaps this is because his humanism is drawn in fragile lines and constructed by traditional French cultural constraints. One wonders sometimes if Ellul does not confuse humanism with preciosity.

Ellul's warnings about the dangers of an overly technologized education are not without some merit, however, and should not be disregarded lightly. The problem with Ellul is that he has confused possibility with inevitability. There is no guarantee that the future will require little technocrats who have been educated to be the dutiful servants of the machines whose buttons they push and whose internal workings they maintain. It is far more likely that the future society will demand individuals educated to be (in Fuller's phrase) "the masters of several technologies" rather than the servants of one all-powerfull Technology.

In contrast to the blueprint for the future which Buckminster Fuller has drawn, and also to Jacques Ellul's pessimistic adumbrations about the state of future society, Herman Kahn and his associate at the Hudson Institute, Anthony J. Wiener, present a comprehensive strategy (one might even go so far as to label it a "game plan") for the future. Kahn and Wiener present a plausible scenario of a world not so very different from that which we know

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[20] Ellul, *The Technological Society*, p. 346.
[21] *Ibid.*, p. 348.

today. Relying heavily on statistical forecasting of demographic, socioeconomic and cultural trends, they envision a future society even more technologized than our own contemporary society; but in contrast to Fuller's optimistic outlook, they adduce little evidence that man will have learned any more about the control of his technology than he knows today. In a sense, Kahn and Wiener's "standard future" is a vindication of Ellul's worst nightmare.

Kahn and Wiener see a basic, long-term multifold trend toward:

1. Increasingly Sensate (empirical, this-worldly, secular, humanistic, pragmatic, utilitarian, contractual, epicurean, or hedonistic, and the like) cultures.
2. Bourgeois, bureaucratic, "meritocratic", democratic (and nationalistic?) elites.
3. Accumulation of scientific and technological knowledge.
4. Institutionalization of change, especially research, development, innovation, and diffusion.
5. Worldwide industrialization and modernization.
6. Increasing affluence and (recently) leisure.
7. Population growth.
8. Urbanization and (soon) the growth of megalopolises.
9. Decreasing importance of primary and (recently) secondary occupations.
10. Literacy and education.
11. Increasing capability for mass destruction.
12. Increasing tempo of change.
13. Increasing universality of the multifold trend.[22]

As one can see from the preceding table, there is nothing radically unfamiliar in the future which Kahn and Wiener predicate, except perhaps for a somewhat unfamiliar terminology borrowed largely from Ptirim Sorokin. All of the trends and indicators listed above are either readily perceivable now or are the logical consequences of present trends and conditions. In this future, we would find ourselves much in the position of a contemporary Indonesian, for example, who had been transported in time back to the days of the Roman Empire:

> The preindustrial countries are in the condition one might think of as historically "normal". Many people . . . have pointed out that for the last ten thousand years or so, excluding the last two or three centuries, no large human society has ever produced more than the equivalent of some $200 per capita per year, nor dropped much below about $50 per capita per year for any appreciable period of time. Kenneth Boulding points out that, from this point of view, Indonesia represents "normal civilization" — or "civilization" — since it has a population of some one hundred million people, roughly that of the Han Empire or of the Roman Empire, and an average per capita income of about one hundred dollards per year. Thus most Indonesians live in a manner recognizable to both the Romans and the Han Chinese, and if Indonesians could visit such economies, they would

[22]Herman Kahn and Anthony J. Wiener, *The Year 2000: A Framework for Speculation on the Next Thirty-Three Years* (New York: Macmillan, 1969), p. 7.

find much that is familiar.[23]

Likewise, were we transported forward in time to a future such as that described by Kahn and Wiener, we would find many familiar elements, such as concern over the role of technology, worries over pollution, overpopulation, and the imminent dangers of global conflagration, and many other items all too familiar to us from our daily newspapers. The only things different, at least superficially, would be the date on the calendars and perhaps the shape of the automobile models. It must be admitted that a future not radically different from the present is hardly a pleasant one to contemplate.

However, Kahn's future is not entirely static: he perceives not one possible future, but rather several such futures. There is one strongly probable, to which he assigns the term "Standard World",[24] and eight variations, each with a lesser degree of probability. The Standard World is essentially surprise-free, and is based largely upon fairly straightforward forecasting and statistical predication. The eight variations, which Kahn and Wiener term "canonical", take into account various tendencies indicated by current trends, such as the degrees of global integration, orientation, and disarray. As could be anticipated from Kahn's earlier work, his concern with the future is essentially political; he addresses himself principally to political issues rather than to general human concerns (as does Fuller) or to fundamental philosophical and moral questions (as is the case with Ellul). If in Fuller's future man is technologized, and in Ellul's he is dehumanized, in Kahn's future cosmogony he very definitely is politicized.

Kahn perceives his Standard World of the final third of the present century as demonstrating the following characteristics:

1. Continuation of basic, long-term "multifold trend".
2. Emergence of "postindustrial" culture.
3. Worldwide capability for modern culture.
4. Very small world: increasing need for regional or world-wide "zoning ordinances" for control of arms, technology, pollution, trade, transportation, population, resource utilization, and the like.
5. High (1 to 10 per cent) growth rates in GNP per capita.
6. Increasing emphasis on "meaning and purpose."
7. Much turmoil in the "new" and possibly in the industrializing nations.
8. Some possibility for sustained "nativist", messianic, or other mass movements.
9. Second rise of Japan (to being potentially, nominally, or perhaps actually, the third largest power).
10. Some further rise of Europe and China.
11. Emergence of new intermediate powers, such as Brazil, Mex-

[23] *Ibid.*, p. 57.
[24] Kahn and Wiener, *Toward the Year 2000,* p. 7.

ico, Pakistan, Indonesia, East Germany, and Egypt.

12. Some decline (relative) of the U.S. and the U.S.S.R.
13. A possible absence of stark "life and death" political and economic issues in the old nations.[25]

Not at all a pleasing prospect, by any means! Particularly upsetting is Kahn's idea that technology will need some form of external "control". Fuller, of course, postulates that since man will be the master of his technologies, external controls will be superfluous; while Ellul argues that since technology is *de facto* uncontrollable, any attempts to impose external controls upon it are foredoomed to failure. Kahn's world is essentially today's world carried forward; technology has created additional new problems for every old problem which it has solved, and political and socioeconomic issues related to technology are still paramount. Kahn's future is the future of *le plus ce change, le plus c'est la même chose.*

It is significant that nowhere in their bulky study do Kahn and Wiener devote more than a few offhand remarks to education. Since the world of tomorrow will be essentially the world of today, there is no need to do anything radically different in order to educate the man of tomorrow. Of course, this happy view fails to take into account the fact that we are not even doing a very good job of educating the man of today; and it would be highly unlikely that if we continued to do the same things in the same ways that we could do a very much better job of educating the man of tomorrow. It is true that in a list of one hundred technical innovations very likely to occur in the last third of the Twentieth Century, Kahn and Wiener list such items as "New Techniques and Institutions for Adult Education,"[26] "new and more reliable 'educational' and propaganda techniques for affecting human behavior — public and private," [27] "Practical use of direct electronic communication with and stimulation of the brain,"[28] "New techniques and institutions for education of children."[29] But all that Kahn and Wiener do is to titillate the imagination with this list. Nowhere is there any discussion, even superficial, of what these items actually mean. Potentially, of course, any one of these developments, should they actually come to pass, could significantly and materially alter the nature of education and of the learning process; but since Kahn and Wiener do not illustrate what form or shape these new educational developments may take, the reader can only guess at their possible effect. For a discussion of some possible explanations and applications of new educational techniques and procedures which Kahn and Wiener coyly hint at here, the educational planner would be far better advised to consult the writings of Arther C. Clarke and other more philoso-

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[25]Kahn and Wiener, *Toward the Year 2000,* p. 23.
[26]*Ibid.,* p. 52.
[27]*Ibid.,* p. 53.
[28]*Idem.*
[29]Alvin Toffler, *Future Shock* (London: Pan Books, 1971), pp. 361-62.

phically oriented writers of speculative and science fiction.

There is no question but that the plausibility of Kahn and Wiener's thesis adds much to its seductivity. It is statistically true that the best and most accurate prediction of the future is to say that present trends will continue. Also, Kahn and Wiener have performed a real service in presenting a clear, coherent, and logically consistent matrix for futurological speculation. One may disagree with the conclusions which they reach and still accept the validity of their conceptual framework. Their chief fault seems to lie in their over-reliance on statistical indicators. Kahn's futurology is a play-it-safe statistical exercise, devoid of real speculation. The probabilities of a future such as Kahn and Wiener's Standard World coming to pass are unfortunately all to high because of this. It behooves us to consider alternative and more humanistic conceptions of the future in order to prevent the Kahnian nightmare from actually happening, for we owe it to our children not to perpetrate the present upon them.

Nevertheless, it would be unfair to conclude a discussion of Kahn and Wiener without acknowledging our debt to them for their penetrating analysis of existing socioeconomic trends and for their prognosis, disturbing though it may be, based upon their analysis of these trends. If Kahn's future is alarming, it is because it represents a future without any real human progress or change, a negation of the very concept of "future". Herman Kahn and Anthony Wiener have created, very simply, an Anti-Future.

V

In contrast to Fuller, Ellul, and Kahn, who all boast formidable academic credentials and professional qualifications in the field of futurology, Alvin Toffler is essentially a publicist, and this colors his whole approach to the subject. While it is true that Toffler has held academic appointments (at Cornell and at the New School for Social Research), and currently serves as a Visiting Scholar at the Russell Sage Foundation in New York, he is more widely known as the author of a wide variety of books and articles on a diverse number of subjects for an equally diverse number of periodicals. This should not be held against him, however; on the contrary, Toffler is a practicing comprehensivist, in the best sense of Fuller's term; and for this he is due considerable respect, as it is quite a difficult feat to be so successful in so many areas in our compartmentalized world of today.

Toffler's thesis is fairly straightforward: he contends that when humans are confronted with rapid technological and cultural change, change too rapid to be incorporated or assimilated into their systems of values and beliefs, they undergo an equally rapid psychological disorientation, not to say disintegration. Since the future is expected to bring even more technological

and sociocultural change at an even faster pace, Toffler argues that this psychological dislocation will become intensified, not only in heretofore static societies but even in those societies where change has until now been fairly well institutionalized, such as the United States.

The actual scope and dimension of Toffler's future is essentially superfluous to this discussion, much more so than is the case with the other three futurologists presented earlier. For one thing, there is little that is original in his conception of the future; much of his book is reportorial in tone rather than speculative. Also, much of his description is aimed at a mass or lay audience rather than at other professionals in the field, and is written in a popular sort of prose which one suspects he learned while serving on the staff of *Fortune.* It is often difficult at times to determine whether he is seriously presenting a trend or development for our analysis or whether he is simply offering us a juicy tidbit for our delectation.

These cavils aside, what can one say about the Future, as perceived by Alvin Toffler? It will be highly technologized, diverse in scope and interest, with a greatly enlarged population able to augment themselves both personally and psychologically through increased self-awareness stimulated externally through technological developments and by increased leisure time which will permit them to enjoy the benefits of the new technology. In short, Toffler's future might briefly be characterized as a period of great internal freedom for the individual, a period in which he will be able to make real progress toward what might be called (in Maslow's phrase) his self-actualization; while at the same time his external freedom will become increasingly limited by political, cultural, and technological constraints. In all fairness, it must be stated that this is probably an accurate picture of what the future holds for man. It is a restatement, in somewhat different words, of Herman Kahn's Standard World. Where Toffler parts company with Kahn is in his actual descriptions (or "scenarios", as Kahn and Wiener would have it) of the future. Instead of being based upon statistical analysis of socioeconomic and sociocultural indicators, Toffler tends to base his speculations on educated guesswork. This is not in itself a bad thing, but it sould be done in moderation. To base a futurological work entirely on imagination reduces it (or, according to one's philosophical predispositions, elevates it) to metaphysics. Toffler and Kahn, like Fuller and Ellul, represent opposite poles of the same approach.

It is Toffler's concept of the nature of education which is most stimulating for the educational planner and policy maker. Toffler, who has written an excellent study of urban education (*The Schoolhouse in the City)* speaks with considerable expertise when he warns of the dangers of taking a horse-and-buggy educational system (and its accompanying value structure and philosophy) into a thermonuclear age. Contemporary education, he notes, is mass education; and mass education is a product of the industrial age,

which needed it to produce the kind of adults who could be utilized by the factories of the new industrial state.

> The problem was inordinately complex. How to pre-adapt children for a new world — a world of repetetive indoor toil, smoke, noise, machines, crowded living conditions, collective discipline; a world in which time was to be regulated not by the cycle of the sun and moon, but by a factory whistle and the clock.

Toffler argues that the solution was to produce an educational system which simulated this new world:

> . . . The whole idea of assembling masses of students (raw material) to be produced by teachers (workers) in a centrally located school (factory) was a stroke of industrial genius. The whole administrative hierarchy of education, as it grew up, followed the model of industrial bureaucracy. The very organization of knowledge into permanent disciplines was grounded on industrial assumptions. Children marched from place to place and sat in assigned stations. Bells rang to announce changes of time.[31]

The literature of educational sociology knows of few more perceptive analyses of the structure of contemporary education than the above paragraph. Its accuracy is obvious, and the conditions which it describes are all too familiar to anyone who has undergone processing in those factories disguised as classrooms which distort the educational systems of the world.

Critics of this pattern of education, such as John Dewey, continues Toffler, were concerned with changing the orientation of the schools from the past, but they raised their sights no further than the present. Even for this heresy the "Progressive" educators were damned by the schoolmen and the educational bureaucrats. Given the resistance to educating merely to meet the needs of contemporary society, especially on the part of such major educational theorists as Robert Maynard Hutchins and Jacques Barzun (not to mention Max Rafferty!), the howls of anguish which will be raised when any proposal for educating for the future is advanced can well be imagined.

Yet not only is there a vital need for such education, a need which is increasing almost daily with each new technological and social advance, but the very means for bringing about this new education are now at hand in the technology which the children of today must learn to master in the world of tomorrow. Applying technology to education does not mean purchasing slide projectors or teaching machines or videotape recorders which stand idle because no one knows what to do with them. It likewise does not mean co-opting the mass media into the existing educational system, a la *Sesame Street.*

What then can the educational planners learn from the futurologists, if anything? The answer to this question is far more complex than the question itself, because it can be answered on two levels. Certainly in terms of methodology the planners can learn nothing, for they are already the masters of extremely sophisticated statistical techniques and technological usages. Indeed, it is this very mastery of statistical procedures and their applications

[31]Toffler, *Future Shock,* p. 362.

to planning which is cause for concern. Too often the methodology is confused with the process, and forecasting and prediction become synonymous with planning itself. Much of what is termed educational planning is really little more than advanced statistical manipulation. While no one can deny that this is a highly important element within the planning process as a whole, to confuse the part with the whole is to commit a basic error. Futurology is more speculative and less statistically oriented (with the notable exception of Kahn and Wiener), and the futurologists can teach educational planners little about the methodology of planning.

Yet in another sense the educational planners can learn a great deal from the futurologists, chiefly in terms of the development of a philosophical and historical perspective on planning. Too few educational planners concern themselves with more than the "nuts and bolts" aspects of planning; many educational planners, and social planners in general, seem unconcerned with the larger implications of their work.

Traditionally educational planners have tended to confuse means with ends, whereas the futurologists have felt that the ends would shape the means. If the future was to be dehumanized and technocratic, as Ellul would have it, then the means which would be used to create this particular world of the future would be the dehumanizing technologies of science. Likewise, if Fuller's humanistic world is the final goal, then the applications of technology to achieve this goal will likewise be humanistic. Yet by and large educational planners have not really been concerned with ends. They have not, for example, asked themselves what sort of world their students will face; they have not concerned themselves with the development of new technologies, new occupations, new life styles. Rather, educational planners have been content to forecast the number of third grade students in Oshkosh in the year 2000. What these students will be learning in their classrooms in Oshkosh has been largely irrelevant to the purposes of planning. In fact, planners haven't even asked themselves if there will be an Oshkosh in the year 2000, or even if there should be an Oshkosh. These are all questions which an acquaintance with futurological thought would logically lead them to ask themselves.

Contemporary educational planning has fallen into a Kahnian matrix, but largely through default. Whereas Kahn and Wiener, and to a lesser extent Toffler, developed their "Standard World" on the basis of their interpretations of statistical data, the educational planners of today are seemingly content merely to amass such data and to interpret it in a highly simplistic fashion. They do not ask themselves what are the implications of the world which their forecasts seem to indicate, and whether any value judgments can, or even should, be made about this world. Hence, the future of today's educational planners is depressingly like the present, without the virtue of Kahn's "Standard World" in that they have given little

thought to the end result of their statistical juggling.

It is time for the educational planners, and for social planners in general, to start looking at the forest instead of simply counting the trees. They must begin to formulate some clear, logically consistent picture of the future for which they are planning, and must begin to estimate its possible and probable requirements. Of course it would be both overoptimistic and naive for us to expect that educational planners will become their own futurologists (although some gifted individuals, such as Constantine Doxiadis in our own day, may in fact do so), but it is not too much to expect that planners become familiar with futurology and let a certain amount of speculation creep into their statistics.

To plan without having a clear idea of what one is planning for, as in presently the case, is seemingly as futile as setting out on a journey without a map. Yet by failing to adopt a perspective such as these advanced by the futurologists discussed in this paper, and by still others whom space did not permit us to discuss, this is precisely what the planners have done. Serendipidity is a most useful device, with much to be said in its favor, but to make it the basis of planning is, to say the very least, paradoxical. The futurologists can serve the same role for the educational planners as did the geographers for the explorers of the Renaissance! Fuller and Ellul and Kahn can become the Mercator and Waldseemuller and de l'Isle of planning, whereas Toffler could do far worse than to become its Hakluyt.