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Five Views on Values and Technology

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Abstract—This paper describes four common postures in writings on values and technology. These are called: the Luddite, the technocratic, the apocalyptic, and the "cautionary moral sermon." These positions are considered to be legitimate, but lacking in both instrumental significance or adequacy of their conceptualizations of human values. A discussion of values in the framework of a rudimentary decision theory is then presented. This leads to a consideration of several paradoxes involving values—one based on the dimension of time, another based on the shift from individual to collective values, and the third based on the exchange of one type of value for another as problems are solved. These paradoxes are offered as partial justification for a fifth perspective on the relation between values and technology: that of the "curious, hopeful, and sometimes astonished observer."

INTRODUCTION

WRITINGS on values and technology seem to me to fall into several categories, all of which I want to avoid if only because each category is already well visited. I have forced four such categories into existence and have affixed to each a label. These are: the Luddite, the technocratic, the apocalyptic, and the cautionary moral sermon. After a brief description of each of these, I would like to describe my own perspective on the problem, which I will call that of the curious, hopeful, and sometimes astonished observer.

The Luddite

The basic premise of writers in this category is that technological development is inevitably and fundamentally dehumanizing and corrupting. In a technologically developed society, man is forced to live in a way that is both unnatural and spiritually deprived. A common specter is that of short-sighted little men, usually engineers and profiteering businessmen, who have taken over spaceship earth and are mindlessly extinguishing all human values. But there is hope. Charles Reich foresees a spontaneous emergence of a new post-technological mentality which will restore human authenticity. Theodore Roszak sees hope in the development of an anti-technological counterculture.

The Technocratic

Skinner [11] asserts that technology is our strength and that if we want to survive we must play from strength. Technology is on the march, and man must adapt to it. Science is accepted as universal ethic, not just a method for finding the truth. But the admixture of outmoded,

traditional, quasi-religious ways of thinking and the scientific, sophisticated, correct way of thinking about man has produced the inefficient and potentially disastrous custom of "muddling through." We must clean up our thinking, design our futures, and control that which we can control, which, thanks to technology, is just about everything.

The Apocalyptic

This perspective has much in common with that of the Luddites. Both hold that man has created the means of his own destruction through the exercise of his rational powers. However, the apocalyptic vision does not share the belief that technological development can be stopped or that man will spontaneously reject the insane world he has created and return to pastoral innocence. Scientists, who are still engaged in the pursuit of saving truths, are not likely to act as prophets of despair—it is incompatible with the requirements of their role. Instead, this view gains clearest expression from critics, such as Leslie Fiedler and Ihab Hassan, novelists and filmmakers, such as Kurt Vonnegut and Stanley Kubrick. Other writers, such as Paul Ehrlich and Alan Toffler, present visions of the future which seem almost as hopeless, though they may continue to express the belief that there is a way out. The one shred of hope presented in this perspective is that perhaps the apocalypse will act as a massive cultural electric-shock treatment. Possibly, when the dust settles, the remainder of mankind will live a long while before creating another massive disaster.

The Cautionary Moral Sermon

The most common practitioners of this art form are scientists themselves, who for one reason or another look up from their laboratory benches and are alarmed by what they see. The list of practitioners reads like an honor roll of science—Rene Dubos, Jacques Monod, George Wald, Linus Pauling, Garret Hardin, John Platt, J. Bronowski. The common theme is that scientists have been naive and unwittingly irresponsible in the pursuit of their calling. They have been on the glimmering path of truth and have trusted to politicians to run the world and to the social scientists to keep score and offer practical advice. Now it is clear that scientists have misplaced their trust. They must rekindle their humane values and must play a crucial role in creation of a new and more benevolent world order. With Whitehead [12], scientists must recognize that "Mankind has raised the edifice of science, because they have judged it worthwhile." Science is value-laden in origin and

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effect, and it is up to scientists to redeem the trust humanity has placed in them by dedicating themselves to the highest human values.

Another Perspective: The Curious, Hopeful, and Sometimes Astonished Observer

I do not mean to treat these perspectives on the question of value and technology with disrespect. In fact, I think there is considerable merit in each of them. But I have a general dissatisfaction with them on two counts. First, the practical benefit for human society of such considerations is not demonstrably great. A second and related difficulty is that each perspective contains presuppositions about human values which strike me as psychologically naive.

Academicians are capable of considerable self-deception when it comes to considering the impact of their ideas and discoveries. Noting the spate of scholarly works on nationalism, a subject not irrelevant to the topic at hand; Kedourie [7, p. 125] notes:

It is absurd to think that professors of linguistics and collectors of folklore can do the work of statesmen and soldiers. What does happen is that academic enquiries are used by conflicting interests to bolster up their claims, and their results prevail. He who exercises power, exercises it while he can and as he can, and if he ceases to exercise power, then he ceases to rule. Academic research does not add a jot or a tittle to the capacity for ruling, and to pretend otherwise is to hide with equivocation what is a very clear matter.

At another point, Kedourie [7, p. 50] observes, "It is not philosophers who become kings, but kings who tame philosophy to their use." Mutatis mutandis this is also true for science.

My point is that knowledge is not necessarily power, nor does an enlightened perspective automatically attract the sympathetic cooperation of those in positions of social and political power. While we are occupied in talk about the evaluative implications of technology, our efforts are mocked by the force of events in the political and social realm. Lots of sensible plans exist for saving men from the negative effects of technological development—pollution, over-population, dissatisfaction with meaningless, repetitious labor, the arms race. But having a plan and being able to implement a plan are very different things. Skinner's plan for survival could just work, though I doubt its technical efficacy. But even if it were a great plan, somebody would first have to give massive political power to the Skinnerians, and this is an unlikely prospect. It is the beginning of wisdom about values to recognize that people do not always do what is good for them, even if they see the consequences of their actions very clearly.

This brings me to my second reservation about the common perspectives on the question of values and technology. They do not evince even this rudimentary insight into the values that direct human behavior. A positivistic scheme for a sane world order is all well and good, but such a scheme

arouses little passion. Instead, there is power in more mysterious doctrines. Leninism, it has been said, has the twin virtues of "simultaneously blurring the mind while guiding the feet." In certain circumstances, under certain conditions, men will heed their prophets. However, scientific training has hardly been a strong suit of the effective prophets of the past. "When a society starts to feel itself hemmed in by evil portents, whether they come as social unease, saber rattling, or erratic Dow-Jones averages, there will always be someone with a faraway look in his bright eyes, shouting, 'This way out!' And many of us tend to follow along because at least he seems to know where he's going. Therein lies the timeless appeal of psychic prophecy," [13]. But by some means, effective prophets have acquired a good functional understanding of human values.

This point has not gone unrecognized. In commenting on the work of two recent panels assessing the impact of new technology, one run by the National Academy of Sciences, the other by the Institute for the Future, J. Bronowski [2, p. 199] observes:

What the panels guess about changes in physical and biological habits is as always bold and stimulating; but what they say about the effect of such changes on personal and social psychology is as always meager, old-womanish, and painfully vague.

I assume that it is in recognition of this kind of criticism that a psychologist interested in values was asked to participate in this workshop. I also suspect that what I have to say about values and technology will decrease rather than increase your sense of certainty about the topic.

As a student of human values, I find my most legitimate stance to be that of the "curious, hopeful, and sometimes astonished observer," and it is this perspective which I assume for the present discussion. Much is to be learned about the origins and operation of human values, but the learning will come from observation, not from prioristic theoretical conceptions about what values must be. Like all scientists, the student of values must be hopeful that his observations will be of positive use. But, if I may hark back to the earlier point about the differences between knowledge and power, it is important to distinguish between hopes and realistic expectations about what the future might bring. Finally, if the observer is honest and if he observes widely enough, he will discover facts about values which are truly astonishing, or at the very least deeply puzzling.

The next section presents a rudimentary conception of values in a psychological framework. This will be followed by a consideration of three sets of observations about human values, each of which is both puzzling and highly relevant to the question of evaluating the impact of technological development.

A PSYCHOLOGICAL CONCEPTION OF THE GENESIS AND OPERATION OF VALUES

A few years ago I wrote a little book [10], which major premise is both useful and interesting to conceptualize at least some human behavior as following from individual

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Traditional, quasi-religious ways of thinking and the scientific, quasi-religious way of thinking about man have produced the modern and potentially disastrous custom of "muddling through." We must clean up our thinking, design our future, and control that which we can control, which, thanks to technology, is just about everything.

The Speculative

This perspective has much in common with that of the futurists. Both hold that man has created the means of his own destruction through the exercise of his rational powers. However, the speculative view does not share the belief that technological development can be stopped or that man will spontaneously reject the insane world he has created and return to pastoral innocence. Scientists who are still engaged in the pursuit of saving truths are not likely to act as prophets of despair—it is incongruous with the requirements of their role. Instead, this view calls for a re-examination of their role, instead of the usual re-examination from critics such as Leslie, Lasker, and Harlan. Human novelists and filmmakers, such as K. L. R. Younger and Stanley Kubrick. Other writers, such as Paul Ehrlich and Alan Toffler, present visions of the future which seem almost as hopeful, though they may continue to express the belief that there is a way out. The one kind of hope presented in this perspective is that perhaps the speculative will do as a massive cultural electro-shock treatment. Possibly, when the dust settles, the remainder of mankind will live a long while before creating another massive disaster.

The Cautionary Moral Dimension

The most common practitioners of this view are scientists themselves, who for one reason or another look up from their laboratory benches and are alarmed by what they see. The list of practitioners reads like an honor roll of science—René Dubos, Jacques Monod, George Wald, Louis Pasteur, Carter Harbin, John Platt, Bronowski. The common theme is that scientists have been naive and unwittingly irresponsible in the pursuit of their calling. They have been on the giddy path of their own making, trusting to politicians to run the world and to the social sciences to keep score and offer practical advice. Now it is clear that scientists have misplayed their trust. They must reclaim their human values and must play a crucial role in the creation of a new and more benevolent world order. With Whitehead [12], scientists must recognize that "Man-kind has raised the edifice of science, because they have judged it worthwhile." Science is value-laden in origin and

This paper describes five common practices in writing on values and technology. These are called: the futurist, the technocratic, the speculative, and the "cautionary moral dimension." These practices are considered to be legitimate, but lacking in both instrumental and intrinsic value. A description of their conceptualizations of human values, a description of their views on the framework of a technology decision theory is then presented. This leads to a consideration of several processes involving values—our based on the discussion of the "cautionary moral dimension" from individuals to collective values, and the third based on the exchange of one type of value for another as a means of exchange. These processes are offered as partial justification for a fifth perspective on the relation between values and technology: that of the "curious, hopeful, and sometimes astonished observer."

INTRODUCTION

WRITINGS on values and technology seem to me to fall into several categories, all of which I want to avoid if only because each category is already well-visited. I have forced four such categories into existence and have affixed to each a label. These are the futurist, the technocratic, the speculative, and the "cautionary moral dimension." After a brief description of each of these, I would like to describe my own perspective on the problem, which I will call that of the curious, hopeful, and sometimes astonished observer.

The Futurist

The basic premise of writers in this category is that technological development is inevitably and fundamentally dehumanizing and corrupting in a technologically developed society. Man is forced to live in a way that is both unnatural and spiritually deprived. A common specter is that of short-sighted, but morally upright, engineers and practicing businessmen, who have taken over scientific and are mindlessly extinguishing all human values. But there is hope. Charles Reich foresees a spontaneous emergence of a new post-technological morality which will restore human authenticity. Theodore Roszak sees hope in the development of an anti-technological counterculture.

The Technocratic

Skinner [11] asserts that technology is our strength and that if we want to survive we must play from strength. Technology is on the march, and man must adapt to it. Science is accepted as universal ethic, not just a method for finding the truth. But the admixture of unmodeled,

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beliefs and values. The two key terms are related to two major areas of psychological research and theory—cognition and motivation. Also, the terms beliefs and values are related in a generic way to two subdivisions of philosophical inquiry, epistemology and ethics. What a man does is conceived as depending both upon what he believes (expects, knows, suspects) and what he values (wants, desires, prefers).

Admittedly, such a conceptualization is highly schematic and crude: indeed, even if developed it turns out that there are many important psychological questions which simply cannot or should not be approached in this way. But if one is to undertake a discussion of values, it is important to recognize the logistic position of values in a full behavior theory.

A clear paradigm is afforded by modern decision theories of both descriptive and normative varieties. All such theories contain a variable that is cognate to value and all contain a variable that is cognate to belief. It is also common to all such theories that choices, decisions, or behaviors are presumed to result from some combination of motivational and cognitive antecedents. In simple gambling games, for instance, choice of play is presumed to depend upon the expectancy of success associated with each outcome and the positive or negative payoff of each outcome. In normative terms, the expected value of each bet can be readily calculated for all well-defined games. In descriptive terms, a major psychological scaling problem exists in understanding how individual expectancies and utilities are functionally related to the objective odds and payoffs.

The fundamental operation for defining values in this approach relies upon the preference paradigm. Given a range of possible objects, events, or states of being, all of which are equally available to the subject (in this case expectancies are equivalent for all options), the relative frequency of choice among options is supposed to reflect the relative values of the subject for the objects, events, or states of being in the array. As we shall see later, some fundamental problems are submerged by this method of operationalizing values. However, it should be clear that the preference paradigm is the major way of closing the conceptual gap between values and behavior.

If decision theories offer a way of conceptualizing the relationship of values to behavior, they do so by incorporating certain facilitative assumptions about the nature of values. It is generally assumed, for example, that values are where you find them—preference hierarchies are assumed as given, and the problem of the genesis of values is simply avoided. The question of how values are translated into behavior is only one of the concerns of the motivational psychologist. The other question is that of genesis or development. How do evaluative dispositions come to be what they are? What are the antecedents for the development of human motives?

At one time the stock answers for this sort of question were taken from the instinct psychologies. Post-Darwinian thinkers of the 19th century were ready to consider human beings as motivated by the same sorts of instinctive dis-

positions as were thought to control lower animals. However, the behaviorist-empiricist revolution in 20th century American psychology led to a rejection of this sort of explanation. In its place, great emphasis was placed on the processes of learning and conditioning. The second law of thermodynamics, leading in physiology to the principle of homeostasis, led in psychology to the proposition that all behavior is drive-reducing. This principle, together with the principles of association borrowed from the British empiricists, led to apparent theoretical solutions to both the performance and the development problems of motivation. Behavior results from a state of disequilibrium and is directed to a reestablishment of equilibrium. The sorts of stimulus events which can lead to disequilibrium and the kinds of motoric performances which are instrumental to the reestablishment of equilibrium were acquired through associative learning.

It would take us far afield to consider the controversies to which psychology was led by this general point of view. Suffice it to say for the present that the old instinct doctrines have never again enjoyed the use they once had in answers to the question of where values come from. However, the empiricist doctrine of associationism which replaced instinct theory has come upon evil days as an adequate theoretical base for responding to the same question. Some of my colleagues will still disagree, but I believe it correct to assert that both instinct theory and classical learning theories have failed as attempts to account for the origins of human values.

But the question of the origins of values is still a very lively one. In contemporary psychology, research and theory on this problem comes under the heading of socialization. The human infant is born as a social innocent but comes in the course of development to manifest an entire range of tastes, preferences, passions, desires, and moral principles as a product of his continual interaction with societal influences. Freud suggested that the major mechanism of socialization is identification, whereby the child comes to introject the moral standards and values of his parents. More modern theorists and researchers, from G. H. Mead to Jean Piaget and Lawrence Kohlberg, consider that a child develops through a series of stages in the process of socialization which correspond in part to the stages of his cognitive or intellectual development. The sources of internalized norms and values are considered to be not only parents, but peers, social reference groups, and idealized ethical systems.

For the present discussion it is sufficient to recognize that there is in contemporary psychology a great amount of theoretical and research activity on the problem of socialization—on the problem of how individuals come to acquire the values that regulate their social behavior.

For example, a number of monographs have appeared on the problem of political socialization, where the concern is to describe the way in which a child comes to evaluate political figures, institutions, doctrines, and opportunities for political activity [3], [5], [6]. This line of research has received a great impetus recently from recognition of the

effect and it is up to scientists to reduce the trust humanity has placed in them by dedicating themselves to the highest human values.

A further perspective: The Current, Hospital, and Zygomatic A. Maudsley Division

I do not mean to treat these perspectives on the question of value and technology with disrespect. In fact I think there is considerable merit in each of them; but I have a general dissatisfaction with them on two counts. First, the practical benefits for human society of such considerations is not demonstrably great. A second and related difficulty is that each perspective contains presuppositions about human values which strike me as psychologically naive.

Academics are capable of considerable self-deception when it comes to considering the impact of their ideas and discoveries. Noting the state of scholarly works on a particular subject, a subject not irrelevant to the topic at hand; I observe [7, p. 122] notes:

It is absurd to think that professors of linguistics and collectors of folklores can do the work of statisticians and soldiers. What does happen is that academic opinions are used by conflicting interests to bolster up their claims, and their results prevail. He who exercises power, exercises it while he can and as he can, and if he ceases to exercise power, then he ceases to rule. Academic research does not add a jot or a tittle to the capacity for ruling, and to pretend otherwise is to deal with equivocation what is a very clear matter.

At another point, Kuhn [7, p. 20] observes: "It is not philosophers who become kings, but kings who use philosophy to their use." What he means is that the true

My point is that knowledge is not necessarily power, nor does an enlightened perspective automatically affect the sympathetic cooperation of those in positions of social and political power. While we are occupied in talk about the evaluative implications of technology, our efforts are blocked by the force of events in the political and social realm. Loss of sensible perspective for ruling men from the negative effects of technological development—pollution, over-population, dissimulation with meaningless, repetitive labor, the arms race. But having a plan and being able to implement a plan are very different things. Kuhn's plan for survival could just work, though I doubt the technological efficacy, but even if it were a great plan, a nobody would first have to give massive political power to the politician, and this is an unlikely prospect. It is the planning of wisdom about values to recognize that people do not always do what is good for them, even if they see the consequences of their actions very clearly.

This brings me to my second reservation about the conventional perspectives on the question of values and technology. I do not even have this rudimentary insight into the values that direct human behavior. A positive bias seems for a one world order is all well and good, but such a scheme

arouses little passion. Indeed, there is power in more mysterious doctrines. Einstein, it has been said, has the twin virtues of "simultaneously blurring the mind while guiding the ear." In certain circumstances, under certain conditions, there will be a strong sense of the direction of training has hardly been a strong sense of the direction of the ear. "When a doctor states that he will remain in his field, he is not saying whether they come to assist or to hinder, or to cause harm or to cause good. There will always be someone with a faraway look in his right eye shouting 'This way out!' And many of us tend to follow along because at least we seem to know where he's going. This is the timelier aspect of the 'psychic program' [1]. But by some means, effective programs have produced a good functional understanding of human values.

This point has not gone unrecognized. In commenting on the work of two recent papers assessing the impact of new technology, one run by the National Academy of Sciences, the other by the Institute for the Future, I observe [2, p. 192] observe:

What the papers guess about changes in physical and biological habits is as bold and stimulating; but what they say about the effect of such changes on personal and social psychology is as always, drab, old-fashioned, and painfully vague.

I assume that it is in recognition of the kind of criticism that a psychologist interested in values was asked to participate in this workshop. I also assume that what I have to say about values and technology will decrease rather than increase your sense of certainty about the topic.

As a student of human values, I and my colleagues have to be that of the "curious, hopeful, and sometimes astonished observer," and it is this perspective which I assume for the present discussion. What is to be learned about the origin and operation of human values, but the learning will come from observation, not from prescriptive theoretical conceptions about what values must be. Like all scientists, the student of values must be hopeful that his observations will be of positive use. But if I may turn back to the earlier point about the difference between hope and power, it is important to distinguish between hope and realistic expectations about what the future might bring. Finally, if the observer is honest and if he observes widely enough, he will discover facts about values which are truly astonishing or at the very least deeply puzzling.

The next section presents a rudimentary conception of values in a psychological framework. This will be followed by a consideration of three sets of observations about human values, each of which is both puzzling and highly relevant to the question of evaluating the impact of technological development.

A PSYCHOLOGICAL CONCEPTION OF THE GENESIS AND OPERATION OF VALUES

A few years ago I wrote a little book [10] which major premises is both useful and interesting to contemporary researchers about human behavior as following from individual