PLANNING IN AN ERA OF SOCIAL REVOLUTION

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"ONE OF THE CHARACTERISTICS OF BEING HUMAN," wrote Arnold Toynbee, "is that one makes plans." One plans what to eat, how to dress, when to sleep, where to work, and whether to procreate. One makes such plans whether woman or man, young or old, poor or rich, yellow, black, brown, or white.

Another characteristic of being human is that one becomes part of "we" or "they." One becomes a member of a family, an informal group, an association, a formal organization, or a territorial entity. Each of these human groups may also make plans—open or covert, short- or long-range, utopian or realistic, rigid or flexible, narrow or broad, detailed or general. In all cases planning tends to be both "directed by habit, tradition, previous decision, or external pressure" and at the same time "spontaneous, inadvertent and random." [1] Invariably, some people plan for or against others. Most efforts to implement plans are impeded not only by scarcities in resources or planning skills but also by apathy, competition, or organized resistance. Hence, to paraphrase the famous lines of Robert Burns, the best-laid plans of families, organizations, cities, and nations—as of mice and men—"aft gang agley." When this happens—as also with successes—there is both mourning in some quarters and rejoicing in others. . . .

The power of these simple axioms is that they can be used in looking at villagization planning in Tanzania; physical, fiscal, social, and "model cities" planning in New York City; the planning of military operations by a general staff; highway subsidy planning by the automobile-highway-petroleum complex; sugar production planning by the Castro Government; and the Nixon-Agnew plans for the 1972 election. By themselves, however, they provide merely a background for trying to understand the changing styles of planning in America of the 1970's.

Until recently, after organizing several empirical studies of planning in other countries,[2] I looked at planning in the United States in terms of certain important changes in my own lifetime (with many of which I had been personally associated):

1. The steady growth of long-range, corporate planning over the entire period from the 1920's to the present,
2. The fumbling efforts of the New Deal to develop a planned escape from the Great Depression,
3. Large-scale World War II planning of economic production and military operations,
4. The sequence of Fair Deal, New Frontier, and Great Society plans for full employment and social welfare, each indirectly associated with cold war "growthmanship,"
5. The developer-speculator planning of the "march to the suburbs" and of inner-city "urban renewal," both serving the interests of business and upper-income groups.
6. The growth of so-called "systems planning" in the industrial-military complex and its attempted extensions to welfare programs, and,
7. The fascinating sequence of calculational techniques designed to assist in various tactical aspects of planning and control, particularly those associated with emerging computer technology.

I saw my own contributions to American planning in relation to the enactment of the Employment Act of 1946, and efforts to analyze realistically the power strategies and tac-

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tics of plan implementation, develop an annual system of social as well as economic indicators, and work toward a theoretical framework for social systems accounting.[3] It was in this spirit that I prepared a 1965 article in this REVIEW on national planning as a form of "structured competition" which may emerge in response to the widespread perception of imminent crisis.[4]

In the last few years we have had no shortage of actual crises. These are generally perceived as the threat of nuclear annihilation, the Black rebellion and white ethnic backlashes, student and youth revolts, drives for women's liberation, urban blight, environmental pollution, the fiscal problems of our cities and public service institutions, drug addiction, crime waves, the population explosion, the information explosion, the sexual revolution, the technological revolution, and—above all—the American military thrust into Indo-China. Most people see these as separate developments (and indeed each is complex enough to warrant special attention by many investigators). Some boil many of these down to one gigantic oversimplification: "scientific and technological change." They thus fail to connect science and technology with the social institutions in which they are rooted, while also ignoring the vastly different rates of change within science and technology.

In the opinion of some observers, all these many changes and crises are interconnected parts of a *system change: a profound and none-too-peaceful transformation from advanced industrialism to a post-industrial cybernetic service society*. Like the industrial revolution of a previous era, this social revolution sets the stage for fundamental political changes—not necessarily political revolutions—in every country it touches, mainly the already industrialized nations of the world. In America, it has already shattered many existing plans of people, families, organizations, and governments. Internationally, while undermining confidence in present forms of organization and planning, it has made *the development of new modes of social organization and planning the dominant challenge to mankind.*

One response to this challenge may be to speed merrily along the road to a nuclear holocaust or a neofascist serfdom. Another could be the radical reconstruction of society along humanistic lines that most of us cannot presently foresee. The setting for all possibilities is the emergence for the first time in history of a truly world society of interdependent — although bitterly divided— nations, groups, and individuals.

To understand this challenge, it is not enough to focus on the rapidly changing *status quo*. We must also try to understand the historical dynamics of social revolutionary processes and, as "social futurists,"[5] try to sense the imminent crises and potentialities of the next years and decades. In this spirit, I have designed this article to raise certain difficult questions concerning:

—the acceleration of cumulative system change,
—the implications of past social revolutions for human planning,
—the societal transformation now convulsing America and other parts of the world,
—certain Grand Alternatives that are now opening up for new forms of social organization and new modes of human planning, and
—the possible course of change in the "post-service" era.

In the course of this hazardous and somewhat shaky exploration, I shall draw selectivity from the literature, old and new, on historical change, cultural evolution, futurism, and planning, including the other articles in this issue. Since the purpose is to promote debate rather than nail down fixed positions, the documentation will be sparse.

The Acceleration of Cumulative System Change

The planet Earth, it has been roughly estimated, is about five billion years old and living systems have existed for about half that period. With the appearance of man, biological evolution seems to have been replaced by societal and cultural evolution. This new evolutionary process has been punctuated by at least three relatively clear-cut system transfor-

mations (or societal revolutions) in the past, with an unclear transformation taking place at present and unexplored possibilities in the more distant future.

	Estimated Age		Period Labels
Homo Predator	500,000		
to			
Pastoral Nomadism	200,000(?)	"Pre-history"	Paleolithic
to			Stone Age
Agriculturalism			
—Early	20,000	Civilization	
—City-based	5,000	Recorded	
—Mercantilism	500	History	Neolithic
to			Bronze and
Industrialism	200		Iron Ages
to			
Service Societies	10-25		
to			Modernity
Post-Service			
Societies	Minus ?		

Although these various stages are given different labels by archaeologists, palentologists, anthropologists, cultural evolutionists, and historians, it is clear that there has been a *very marked acceleration in the rate of change.* While there is room for exciting dispute on whether pastoralism preceded agriculturalism or just what has been happening recently, there is no doubt that significant changes have been coming more rapidly than ever before in history.

Each new system state has brought with it certain important, albeit elusive, changes in both the substance and the forms of human planning. Despite immense differences among and within different industrial societies, for example, the coming of industrialism itself produces certain commonalities in some forms of social organization, in modes of decision making and communication, and in values affecting the mobilization, maintenance, use, and legitimation of power. For example, with successive societal transformations, as Herman Mertins has suggested, the time span of planning is lengthened (and in some cases the very concept of time radically changed). Thus, hunters and gatherers may be presumed to have focused mainly on immediate needs such as the next meal or the next day, pastoralists on the present and coming season, agriculturalists increasingly on the annual round of seasons, and industrialists on many years and occasionally decades.

Moreover, each system has performed certain socioeconomic functions more efficiently than its predecessor. The nomads were better hunters than predatory man. The agriculturalists developed grazing land more efficiently than the grazers. Agriculture became more productive under industrialism, and industry is becoming more productive under post-industrialism. In each case, the increase in efficiency has been associated with new and more specialized techniques of producing, changing, or moving various forms of information, energy, and mass. One of the by-products of this cumulative and accelerating technical progress has been *the shallow and dangerous but extremely popular idea of general or all-purpose progress in all aspects of life.*

One of the many contributions of Karl Marx and the Marxians has been to stress the dynamics of systemic transformation. They have pointed out the process of small marginal changes that may eventually add up to a major structural change: what Hegel called "the transformation of quantity into quality." They have stressed the importance of social conflicts and their resolution—although conflict dialectics involves many groups other than classes and much more than a simple, two-element thesis and antitheses. Above all, they have shown how each successive stage of technology contributes to historical discontinuity by "sowing the seeds of its own de-

struction" and helping bring its successor into being.

What the Marxians seem to have almost ignored are two underlying continuities. First of all, systemic change has been partly cumulative, with the past never fully destroyed but always, in part, embodied in the present. Thus, all human societies—no matter how industrial or post-industrial—are still characterized by agricultural and pastoral values and modes of thought. *All are still predatory*—that is, involved in taking from or exploiting nature, people, or both. This is one of the reasons for going back to "pre-history" in an effort to understand our present crises and those that may be looming ahead.

Second, each successive system has been progressively more destructive of man's physical environment. The pastoralists and their goats left many vast barren areas in their wake. The agriculturalists often wore out the soil. Industrialism—socialist as well as capitalist—has despoiled the soil, water, and air, and initiated processes of "biocide" or "ecocide" that are accelerating in the urbanized world of post-industrialism. This trend has been associated with exponential growth rates in both population and per-capita consumption of pollution-creating energy conversion material processing.

Past Social Revolutions

Societal evolution, as pointed out by both V. Gordon Childe and Claude Levi-Strauss, is enormously complex. First of all, even biological evolution has had enormously complicated aspects. It "is never represented pictorially by a bundle of parallel lines, but by a tree with branches all up the trunk and each branch bristling with twigs." Similarly, "differentiation—the splitting of homogeneous cultures into a multitude of distinct local cultures—is a conspicuous feature in the archaeological record." [6]

Second, there are many societies in which change has been like, in Levi-Strauss' words, "an undulating tide which, once in motion, could never be canalized in a permanent direction," or "like the progress of a knight in chess, who always has several moves open to him but never in the same direction." [7] As Darcy Riberio has pointed out, pastoral nomadism has appeared in at least two major forms: an earlier form which in some cases preceded agriculture and a later form in which "nomadic pastoral chiefdoms" incorporated the iron-age technologies of urban-based agriculture. Moreover, many extremely important changes occur within any important stage. In reviewing the long history of agriculturalism, for example, Ribeiro regards as revolutionary system transformations the emergence of urbanism, irrigation, metallurgy, mercantilism, and the second phase of pastoral nomadism.[8]

Here, no attempt will be made to deal comprehensively or intensively with all the tremendous varieties of past societies and past social revolutions. Instead, the emphasis will be more on certain similarities underlying the huge differences produced by different environmental conditions, ethnic backgrounds, particularistic traditions, and inter-social influences.

From Predator to Shepherd

Like the anthropoid apes before him, the first men were engaged in life-and-death struggles for survival against starvation, thirst, disease, and attack by other animals. These problems were met by improved forms of predatory taking (gathering, picking, fishing, and hunting) and cooperative self-protection. As Leslie A. White has pointed out, the improvements stemmed from "the emergence of the faculty of symbolizing expression in articulate speech," with language opening the door to far more cooperation than was possible in anthropoid societies:

> When, in the transition from anthropoid to man, the family acquired the ability and the means to behave cooperatively in the life-sustaining activity of subsistence and the life-preserving activity of defense and offense, the door was opened to virtually unlimited social evolution because of the almost limitless possibilities of the development, of the expansion and extension, of cooperation.[9]
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> The formation of larger cooperative groups by the intermarriage of families was brought about by the definition of incest and the institution of the laws of exogamy. Kinship became a sociological rather than a biological affair. . . .[10]

Within kinship groups, rudimentary divi-

sions of labor came into being between males and females, old and young, leaders and followers. In a vast variety of forms—as yet insufficiently analyzed by archaeologists and anthropologists—these predatory societies gave birth not only to magic and religion but also to tool-making. Hunting tools probably came first. Then came other tools and implements associated with the cooking of food (particularly the use of fire), food storage, the production of clothing, and the development of dwellings from caves to man-made shelters. In this social and technological setting human planning was relatively short-range in nature and oriented toward the dominant concerns of survival: food gathering, defense against the elements and other animals, and offensive operations against both animals and other men. The undoubted hero of predatory society was Man the Killer.

In simpler predatory societies certain activities took place that led to a more complex mode of social life. The killing of some animals led to the capture and eventual domestication of others. The domesticated animals, until they too were eaten, had to be fed. This led not only to a wider geographical range of hunting but also to a more far-ranging search for forage, fruits, and berries. From such factors came the slow evolution of pastoral and nomadic societies. . . .

The essence of pastoralism is animal husbandry, the shepherding of sheep, goats, fowl, cattle, swine, and the domestication of horses and dogs. The maintenance of most such groups of animals required the finding of suitable forage land, the defense of such land against other clans or tribes, and then—when the forage was depleted—the search for new lands. It was thus inherently mobile and dynamic.

No matter what the environmental conditions, nomadic pastoralism called forth qualitatively different levels of human calculation and control. As Toynbee has put it,

> The Nomad's life is, indeed, a triumph of human skill. He manages to live off coarse grasses that he cannot eat himself by transforming them into the milk and flesh of his tame animals, and in order to find subsistence for his cattle, in season, and out of season, from the natural vegetation of the bare and parsimonious Steppe he has to adapt his life and movements with meticulous accuracy to a seasonal time-table. In fact, the *tour de force* of Nomadism demands a rigorously high standard of character and behavior.[11]

These challenges of pastoral nomadic life required not only vastly improved technologies of transportation (including the wheel) and combat, but also greatly increased division of labor and more formalized councils of elders at which alternatives could be weighed and decisions made or legitimated.

With pastoral nomadism, man was now able to plan predatory operations on a larger scale, taking forage land as well as food. Above all, he could take the property of other tribes— and those other tribesmen whom he chose not to kill. Thus booty and plunder included not only land, animals, and material possessions, but also people: wives and slaves. The herding of other human beings required improved weapons; more differentiated forms of social organization; more elaborate traditions, ceremonies, and rituals; and more highly articulated forms of magic and religion. Cunning, improvisation, imagination, and accumulated knowledge became more highly valued. The honorific forms of pastoral-nomadic life included the Shepherd, the Tribal Leader, the Priest, the Artisan—and still Man the Killer.

The pastoral-nomadic form of social organization proved extremely long-lived, with survivals through subsequent forms of agriculturalism. A few nomadic tribes established short-lived empires: the Hyksos in Egypt, the Avars, the Western Huns, the Parthians, and the Mongol-II Khans. A few—such as the Masai in Kenya and the Badu and the Bedouins in Arabian and Israeli deserts—lasted into the 20th century.

With pastoral and nomadic societies, many activities led to early agriculturalism. Animal husbandry led to cultivation of crops that could be harvested from year to year. Good land was too valuable to give up. Possessions became too costly to move. From such factors came sedentary agriculture. . . .

The Agricultural Revolution

The coming of agriculture was one of the greatest of all social revolutions in the history

of mankind. Its essence was making instead of taking: the direct production of food and fiber by harnessing the forces of nature. This yielded huge increases in energy made available directly through roots, fruits, and—in the more temperate areas—cereals. Indirect yields of energy came from the increased use of animals fed from cultivated fields or crops. The two together led to the world's first population explosion. As Ribeiro has noted, this was expressed in two ways: "initially, in fission and lateral expansion, which constituted the dynamic factor of the Agricultural Revolution; and subsequently, in agglutination and vertical stratification, which became more marked in the succeeding Urban Revolution." [12]

Early Agriculture. Coming into existence about 20,000 or more years ago, agriculturalism provides the first clear-cut examples of dramatic conflict between different sociotechnical systems. Agricultural and pastoral-nomadic societies were often locked in mortal combat. As in the biblical story of Cain and Abel, many mythologies record the eventual outcome. Abel, it will be recalled, was a keeper of sheep and Cain a tiller of the soil. Although the Lord had respect for Abel, nothing could save Abel from death at Cain's hands.

In part, the conflict was over the use of scarce fertile lands. Cropping and grazing were essentially antagonistic. Beyond this, different ways of life were involved: the sedentary vs. the mobile, the struggle to master a part of the world vs. always moving to new horizons, Gods of the tribe vs. Gods of the place, opposing conceptions of space and time.

Just as the pastoral-nomads continued predatory operations more efficiently, the agriculturalists in due course achieved greater efficiency than their predecessors in both hunting and fishing and animal husbandry. This was based upon a slow but steady growth in tool making, shelter building and the acquisition of lore concerning crops, seeds, seasons, rains, and floods. All this led to the expansion of trading activities begun by nomads and the development of paleolithic villages as centers for trade, as well as for religion and government.

In his chapter, "The Agricultural Revolution," Leslie White has vividly described the social and cultural institutions associated with the agriculturalist's planned control over the lives of plants, animals, and other men. Increased food production led to increased population, which led to increased specialization and differentiation. "A new principle of social organization was thus introduced: occupation," as a minority of the population became weavers, spinners, dyers, wood, leather, and metal workers, masons, bakers, brewers, and so on.

> Kinship as a basis of society's organization was diminished in magnitude and subordinated in importance. . . . This required the abandonment of the old economic system of mutual aid among kindred and the adoption of a feudal or a commercial system, depending upon which emphasis was uppermost in the transition, the military or the monetary process. Communal tenure of property gave way to private ownership. . . . The free circulation of commodities and money resulted in the division of society into debtors and creditors, and eventually into rich and poor.[13]

Throughout this period, a new two-sided concept of territoriality developed. On one side, underlying the tremendous variety of agricultural societies, there was a growing attachment to the specific territories. The linkages between the People and the Land became very powerful, and were vividly expressed in religion, magic, and poetry. On the other side, there was a tendency for all agricultural societies—particularly those that were more productive of food and population—to be territorially expansive. The capacity to absorb additional population was limited, particularly where primogeniture traditions protected against the division of land among many heirs. Able people became increasingly interested in a new form of predation, agricultural imperialism. But this did not become administratively feasible until the birth of city-based agriculture.

City-Based Agriculture and Empire. The next great social revolution took place 5,000 or 6,000 years ago in the Mesopotamian, Nile, and Indus valleys as the pre-industrial city—one of the greatest social inventions in history—ushered in the advanced agricultural society. This was the first "urban

transformation" recorded vividly by Gordon Childe, Lewis Mumford, and Gideon Sjoberg. Such cities as Eridu and Ur, Memphis and Thebes, Harappa and Mohendro-Daro, were communities of substantial size and population density that included a variety of nonagricultural specialists: artisans, workmen, soldiers, priests, and a literary elite. These nonagricultural specialists made possible—and lived off—a growing agricultural surplus. Their City-States became the innovating centers, kingpins and citadels of larger agricultural, mineral, and pastoral regions. Through colonization and conquest they built and managed empires. Many of the imperial cities still stand—Athens, Rome, Byzantium (now Istanbul), and Peking.[14]

Among the dusty ruins of ancient temples in Mesopotamia, Egypt, India, China, and Peru, archaelogists have found many inscriptions attesting to the power and glory of the God-Kings for whom they were built. One fragment from Mesopotamia, according to Wittfogel, has been deciphered as follows: "The people . . . according to established plan." [15]

With small variations there was once an "established plan" in each of these arid and semiarid areas. With the addition of Turkestan, part of Mexico, Hawaii, and Bali, these areas covered a large part of the planet's land surface. In each of them the possibilities of rainfall agriculture were limited. A living could be wrested from the soil only by man-made irrigation works to bring water to the rain-starved land during most of the year and provide for protection against destructive floods during rainy seasons. Individual farmers could not handle this task by themselves. "Farmers eager to conquer arid lowlands and plains are forced to invoke the organizational devices which—on the basis of premachine technology—offer the one chance of success: they must work in cooperation with their fellows and subordinate themselves to a directing authority." [16]

In every case the key to effective action "according to the established plan" was the administration, or management, of "an organizational web which covers either the whole, or at least the dynamic core of the country's population," [17] At the fringes of the web were "the people." Closer in were the on-the-spot foremen, leaders, and disciplinarians. Toward the center were the middle-level functionaries and the technicians in the arts of engineering, mathematics, astronomy, record-keeping, and magic. In the central positions were the kings, warrior chiefs, priests, top executives, and higher bureaucrats. The links between them were established by complex lines of hierarchical authority, communication, and espionage, by elaborate rules and rituals, and a system of rewards (with much room for bribery) and punishments (with considerable violence). Thus came into being the first national bureaucracies, the first Oriental despotisms, and the first precursors of modern totalitarianism.

In the more successful and dynamic hydraulic systems the agro-managerial planners extended the "established plan" far beyond irrigation and flood control. The water works were expanded to provide for drinking water and navigation channels. The same manpower was used to build huge fortifications and vast armies. The despots extended their power through wars of conquest and elaborate plans for the management of conquered territory. They solemnized and glorified their power with monumental temples, palaces, and tombs.

For the rulers themselves there were consequences that were unforeseeable or, when foreseen, unpreventable. Not many died of old age. Their entry into the already-prepared monumental tombs was often hastened by the sword, rope, or poison of the invader, associate, or relative. With new people eager to replace the dead, the organizational webs lasted for decades, sometimes more than centuries. But sooner or later they too fell apart. Eventually, although not according to the established plan, the waterworks, palaces, and temples crumbled into ruins.

Although their achievements ended in dust, the agro-managerial planners left their mark upon the world. They developed the first arts of writing, formalized law, mathematics, astronomy, engineering, and—despite religious, magical, and ritualistic wrappings—scientific observation in general. Their priests incorporated in sacred writings many of their most

cherished practices and procedures. Many of their most experienced bureaucrats wrote elaborate—and remarkably frank—classics on the arts of administration and planning, such as Kautilya's *Arthasustra,* Sun Tzu's *The Art of War,* Liu Shao's *The Study of Human Abilities,* and Nizam Al-Mulk's *The Book of Government*. Through both direct and indirect contact, they passed on their methods of construction, military organization, and bureaucracy to many people in less arid lands. Elements of oriental despotism and planning seem to have entered into the Roman and Byzantine empires, Moorish Spain, Ottoman Turkey, and Tsarist Russia.

Mercantilism and "Enlightenment." Through the foreign aid processes of conquest or diffusion, these revolutionary forms of social organization and technology gradually reached the whole of Western Europe and in time the "New World" of America. There, with rainfall agriculture and varied soil capacities, the problems of existence and growth were too intricate to be met by any older methods. One of the best ways to cope with the unpredictabilities and limitations of agriculture was to get away from over-dependence on it—that is, by more processing of the products of nature and the development of more extensive networks of trade and exchange.

The expansion of processing, trade, and services, in turn, created still greater uncertainties, uncertainties that could be handled most rationally by *national planning.* Under various forms of mercantilism, the kings of England, France, Italy, and Germany with their capitalist allies and bureaucratic aides developed plans far more complex (although usually not so large in terms of the population involved) than those of the agro-managerial despots. They consolidated national power by planning and regulating the expansion of handicrafts, finance, international trade, and colonial possessions. They thus provided the help, protection, and framework of calculable law within which early capitalism began.[18] The early capitalists were thus both proponents and beneficiaries of national planning.

But the major thrust of the Renaissance and the Enlightenment came not from the Mercantilist State but from the central theme that "Man's Reason Can Prevail." Copernicus, Galileo, Bruno, and Kepler had destroyed the old image of man and his planet as the center of the universe. While this was a shattering blow to many old illusions, it opened up new vistas of observation and discovery. With the development of printing (earlier invented by the Chinese), more people familiarized themselves with the long-lost wisdom of the past and the newly recorded knowledge of the present. There was an unprecedented increase in the number of people engaged in scientific observation and speculations.[19]

By the time of Descartes, Newton, and Locke, Rationality became a widespread article of faith. The central theme that "Man's Reason Can Prevail" became embodied in three major premises. The first was the idea that "there is no limit to man's ability to understand the world." The second was the idea of unlimited progress in the provision of material benefits. The third was the still more revolutionary idea that progress could affect men's relations among themselves. In negative terms, this meant the elimination, or curbing, of despotism and inequality. In positive terms, it meant freedom for men and women to work together in determining their own destiny and equality in opportunities to enjoy such freedom.[20] Freedom and equality became "rights of man" that served as effective instruments to help the rising middle classes mobilize allies and supporters among artisans, farmers, and the lower classes in general.

The Industrial Revolution

Rooted in mercantilism, the Enlightenment, and centuries of slowly accumulating technological invention, the industrial revolution gave rise to vast and accelerating increases in energy and population. It started in England and the United States, with France, Germany, and the Scandinavian countries soon catching up. Eventually, it was to affect in some way almost every country in the world.

To understand the growth of industrial-

ism, however, we cannot blindly accept the old-fashioned Marxian sequence of primitive communism-to-feudalism-to-capitalism-to-socialism. As already indicated, the early transformations were from predatory societies to primitive agriculture and then city-based agriculture; many different political and cultural superstructures, including various forms of federalism, developed on agricultural foundations. The next parts of the Marxian sequence, still blindly accepted by many non-Marxians, need still more fundamental reconstruction.

Capitalist Industrialism. The great social transformations in England, France, and the United States from the end of the 18th century through the 19th century were indeed capitalist—but can best be described as early capitalist industrialism. The spread of industrialism involved a huge increase in agricultural productivity and a decline in the proportion of people working in agriculture. In Herbert Heaton's vivid words,

> The old order was suddenly broken into pieces by the mighty blows of the steam engine and the power loom, the spinning machines, the improved roads, domestic and foreign trade, and *The Wealth of Nations*. . . . Population was torn up by the roots and, like industry, was dragged from cottages in distant valleys into factories and cities.[21]

As industrialism spread to other countries, it was characterized by large elements of monopoly and oligopoly, by wide-ranging imperialist penetration and subordination of agricultural societies, by major tendencies toward "state capitalism" and the "welfare state," by the rise of fascism in some countries belatedly industrialized, and by World Wars I and II.

Unfortunately, one gets a false picture of this contrast if he takes too seriously the anti-planning ideology of neo-classical economists or "free enterprise" and "laissez-faire" propagandists. For many decades, particularly in the United States, they developed a mythological dichotomy between "the market" and "economic planning." According to this mythology, the presumedly impersonal forces of the market make all major decisions in response to the will of "sovereign consumers," with business firms impelled by the profit motive to accept the market's decisions.

It is indeed true that in its early stages the growth of capitalist industrialism involved a withdrawal by the State from some of its economic activities under mercantilist planning. But this withdrawal, while very significant, was also accompanied by an equally important entry of the States into a wide range of other kinds of economic decision making: (a) the improvement and regulation of banking and monetary systems; (b) the protection (and indirect subsidization) of domestic production through tariffs and other barriers to imports; (c) the elaboration of judicial facilities for the enforcement of contracts and the settlement of disputes; (d) the maintenance of law and order; (e) the expansion of public works and of public services in such fields as health, education, and transportation; (f) the regulation of working conditions; (g) the adjustment of the poor laws to provide a larger supply of labor for the factories; (h) various regulations to protect the market against restraints and "conspiracies"; (i) the large-scale purchase of goods from private enterprises, particularly equipment, food, and clothing for the armed forces; and (j) the support of business operations abroad by consular representation, diplomatic intervention, and, in the case of the poorer countries, imperialistic intervention through occasional military action or formal establishment of colonial controls. This often-neglected aspect of early capitalist industrialism in Europe has been aptly summed up by Karl Polanyi in *The Great Transformation:*

> The road to the free market was opened and kept open by an enormous increase in continuous, centrally organized and controlled interventionism. . . . The introduction of free markets, far from doing away with the need for control, regulation and intervention, enormously increased their range. Administrators had to be constantly on the watch to ensure the free working of the system. Thus even those who wished most ardently to free the state from all unnecessary duties, and whose whole philosophy demanded the restriction of state activities, could not but entrust the self-same state with the new powers, organs, and instruments required for the establishment of *laissez-faire*. . . . *Laissez-faire* was planned.[22]

In the United States the picture was little different. "Far from being limited, the objectives of the state in the economic field," writes Louis Hartz, "were usually so broad that

they were beyond its administrative powers to achieve." [23]

The most significant planning under capitalist industrialism, however, has been by giant corporations and military establishments. The new technologies of the industrial revolution could not have come into being without large-scale corporate planning to mobilize the necessary capital, organize the factory system, obtain and schedule the flow of raw materials, develop distribution channels, build up new markets, and mobilize the capital and political support required for this entire process. As Galbraith has pointed out in *The New Industrial State,* "from the time and capital that must be committed, the inflexibility of this commitment, the needs of large organizations and the problems of market performance under conditions of advanced technology, comes the necessity of planning." [24] Common corporate strategies for doing this have been: (a) superseding markets by including suppliers and outlets within the corporation (vertical integration), (b) controlling markets by one's large size, preferably in both buying and selling (horizontal integration), and (c) suspending market uncertainty "by entering into contracts specifying prices and amounts to be provided or brought for substantial periods of time." [25] Although Galbraith likes to give the impression that he is revealing something new, these and other methods of corporate control over markets (many of them involving trade associations and secret cartels) were fully developed in the early 20th century. It was only somewhat later that the larger corporations, as pointed out by Adolph Berle, won freedom from the capital markets by their power to generate internally (through control over "the prices and amounts to be provided or bought") the capital needed for expanding their operations.[26]

In addition, internal planning within the large corporate bureaucracies became increasingly sophisticated even before World War II. At the lower levels, Frederick Taylor and his followers developed production planning and scheduling, with initial emphasis on work study, standardization of tools and processes, the selection and training of workers, new methods of supervision, and payment in accordance with measured output. After World War I all these practices became more highly articulated. Production scheduling broadened to include cost accounting, personnel management, industrial psychology, human relations, market research, and long-term capital budgeting. At the higher levels of corporate planning, large corporations tended to follow along the lines described by Henri Fayol, the manager of a large French mining company: preparing "a series of separate plans, called forecasts, monthly, weekly, daily forecasts, long-term forecasts . . . yearly forecasts, ten yearly forecasts, special forecasts, and all merge into a single programme which operates as a guide for the whole concern." [27]

This elaborate central control process was essential to the transformation of loose combinations into highly centralized, vertically integrated, and functionally departmentalized organizations. As corporations became still larger and attempted to integrate still more diversified technological processes, however, major organizational adjustments were needed. In such huge corporations as DuPont, General Motors, Standard Oil of New Jersey, and Sears Roebuck, as Alfred D. Chandler has shown, a new breed of corporate institution builders demonstrated that greater size, profits, power, and prestige could be achieved through highly decentralized operating divisions and a central office confined to general planning and control.[28]

A major element in all such planning was carefully directed activities on behalf of any government planning that would serve corporate interests and against any government planning that would seem detrimental. This usually involved direct and indirect lobbying, institutional advertising, political action, and cooperative efforts through trade associations, local and national "peak associations," and alliances with trade unions on matters of common interest.

In pre-industrial societies, military establishments were often the largest organizations and the most involved in the planning and execution of complex operations. With industrialism, military planning became still more sophisticated. Confronted with more complex

technologies and larger theatres of operations, military officers developed more advanced theories and practices concerning planning, execution, and control—with many of these spilling over into, and sometimes dominating, civilian sectors. During peacetime, military planning required major attention to the development of corporate capabilities in such critical sectors as transportation and communication, and the procurement of military equipment and supplies from private companies. Military operations required still more intimate coordination. In the first decade of the 20th century, for example, the seven-year Belgian plan for the exploitation of the Congo was a combined military and business operation under government auspices. A still more detailed and longer-range plan was Japan's program for the penetration of Korea and the building of a base for its subsequent thrust into Manchuria. During World War I, each major power established central economic planning machinery for war mobilization. Similar developments took place during the 1920's and the 1930's under the fascist regimes in Japan, Italy, and Germany. During World War II, each of the capitalist industrial powers established economic planning machinery of unprecedented scope.

As corporate and military bureaucracies grew under mature industrialism, civilian government activities also expanded in many directions. One direction was promotion or regulation of particular sectors of enterprise; the best example is agriculture, where government research, technical assistance, and price supports, along with private production of equipment and fertilizers, has brought agro-business to unprecedented heights of productivity. Another direction was the provision of expanded public works, public education, public health services, and various forms of social security and welfare programs. Other directions included the mediation of labor-management disputes, the fostering of scientific research, and the collection and dissemination of basic statistics.

To the extent that they were effective, each of these activities involved the growth of complex bureaucracies that organized their own power alliances and often proved able and willing to resist successfully efforts at control by agencies of central government. As a whole, they constituted a bureaucratic labyrinth within which political conflict was often waged in more vigorous and deadlier styles than the market conflicts among private corporations. Efforts at central control, particularly in peacetime, tended to consist of taxation, spending, and monetary measures designed to counteract the downswings of the business cycle and maintain high aggregate levels of market demand. None of these strategies was strong enough to cope with the Great Depression that started in 1929, a depression that was successfully counteracted only by the stimulus of armaments and the coming of World War II. Since the war, however, a combination of Keynesian economic policy (liberal or conservative) with old-fashioned armaments expansion served to prevent the recurrence of serious depression in all industrial countries. This gave a socialistic or "state capitalistic" tinge to all such countries—although "evolutionary socialism" was approached only in Scandinavian countries.[29]

Socialist Industrialism. Similarly, the hammer blows of the socialist revolutions must be seen in the perspective of the transformation from agriculturalism to industrialism. The Bolshevik revolution in 1917 paved the way for the ensuing social revolution that converted incipient capitalist industrialism into socialist industrialism. After World War II, the Chinese Communists, achieving political power in a country still more agricultural than Russia of 1917, initiated a program of still more rapid industrialization. Similarly, in Eastern Europe, North Korea, North Vietnam, and Cuba, the communist regimes all aimed at developing various forms of socialist industrialism. These forms differ considerably, being affected not only by the level and kind of agriculturalism previously in existence, but also by particularistic nationalist traditions and environmental conditions.

But they all have had one major characteristic in common. As Darcy Ribeiro has put it, they have all been "authoritarian regimes of rational intervention in all aspects of social life, characterized by overall planning and total mobilization of energies to eradicate

archaic social structure and install new ways of life and work. . . ." [30] This overwhelming emphasis on some form of powerful central planning has provided one of the sharpest contrasts with the countries of capitalist industrialism.

Nonethless, if *laissez faire* was planned, as Karl Polanyi suggests, the coming of communist planning was certainly unplanned. According to both Marxian theory and communist strategy, the first socialist revolution was supposed to take place in one of the more advanced industrial countries. When the Bolsheviks seized power in Russia, a country with a very small working class, they expected their revolution to spread quickly to Western Europe. It took many years before they could adjust to the idea of "socialism in one country." Moreover, although the founders of revolutionary socialism called for rational central planning and control of a country's productive resources, they were more preoccupied with the struggle for power than with the question of what to do with power after it was obtained.

Some had the unbelievably simplistic idea that all they had to do was push the capitalist out of the driver's seat, step on the throttle, and speed away in a different direction. Thus in *State and Revolution,* Lenin (1917) saw the management of the Russian economy as a simple matter of accounting and control: "The accounting and control necessary for this have been simplified by capitalism to an extreme and reduced to the extraordinary simple operations —which any literate person can perform—of checking and recording, knowledge of the four rules of arithmetic, and issuing receipts." [31] Subsequent oversimplifications appeared in Lenin's various slogans equating socialism with electrification plus American technique plus Soviet power. He and Trotsky sponsored a state-led "scientific management" movement, based on Frederick Taylor's principles, aimed at promoting labor discipline and higher productivity.

But after the first chaotic years (euphemistically called "war communism") and the equally chaotic return to limited free enterprise under the New Economic Policy, the unforeseen complexities became more apparent. It was not until 10 years after the revolution that the first Five-Year Plan was launched. One of the reasons for the delay was that the first plans for planning were proposed by "untrustworthy people," Menshevik planners who had a taste of central planning in the war mobilization agencies of the Czarist regime. Another reason was simple fear of coping with the largest managerial task ever before attempted in history, a task for which both leaders and advisers knew they were unprepared.

The first five-year plans were based on the idea of running the entire economy like One Big Company. Many of the guiding principles of doing so were a clear adaptation of Frederick Taylor's approach to the management of labor on the factory floor. The central planning office set thousands upon thousands of targets or norms for enterprises, territorial areas, and ministries. This led to unprecedented red tape, delays, misunderstandings, distortion of data, and—as in American factories paying workers by quantity norms—reductions in quality. The consequence was decades of gigantic trials and gigantic errors, with some errors corrected soon and some being enshrined as "achievements" under the doctrine of party infallibility.

With the entry of the Eastern European countries, China, North Korea, South Vietnam, and Cuba into full-blown communist planning, and particularly after the death of Stalin, learning processes seemed to accelerate. Indeed, one communist planner has described his experiences in central planning as "learning through planning." Part of the learning has involved much greater use of controlled markets and profit and price incentives, with some tendencies toward the "market socialism" preached by Oskar Lange of Poland and practiced by the Yugoslavs. Part has involved efforts at bolstering central decision making through computerized mathematical models and operations research techniques. A large part has involved constant organizational reshuffling, with many experiments in providing the managers of enterprises and public services with greater authority. All these tendencies have been subordinated to overriding political objectives quite differ-

ent from those in the countries of capitalist industrialism—in some cases the liquidating of entire classes of people and building a new class structure. If there are tendencies toward "convergence," they stem, rather, from two other factors: on the one hand, the conservatism of tired old bureaucracies, and, on the other hand, the pressures impelling both capitalist and socialist countries toward the unexplored frontiers of post-industrialism.

Urban Planning. An interesting example of convergence, however, has been the poverty of urban planning under both capitalist and socialist industrialism. In both cases, city planning grew up in a reaction to the disorderly urban growth of early industrialism. Under capitalism, city planning was rarely as comprehensive as it had been with the planning of small colonial settlements by earlier empires. In its earlier European phases it concentrated on monumental grandeur and the transformation of medieval techniques of fortification into radial boulevards that could be dominated by modern artillery. Later, in both Europe and the United States, more attention was given to housing, park lands, transportation, water supply, sewage. The "city beautiful" and "garden city" movements, along with zoning and subdivision control, often turned out to be in reality little more than protection of the upper classes from encroachments, or indirect assistance or subsidization for real estate speculators and developers. Most efforts to integrate physical with economic planning were shattered on the rocky fact that private corporate decisions affecting the location of industry and employment were not subject to local, or even national, control.

In the revolutionary socialist countries, where much greater power existed to direct urban growth, other difficulties arose: the primacy of national over local planning and the low priority given to housing and urban development, in contrast to heavy industry. Paradoxically enough, in Eastern Europe, despite clearly expressed socialist ideals of a classless distribution of the population, some of the great planning successes were in the development by State enterprises and cooperatives of residential complexes for selected social groups, particularly professional elites.[32] Probably the most significant advances in city planning—both in the adaptation of existing urban areas and the construction of new ones —were in the Scandinavian countries of evolutionary socialism.

The Emerging Service Society

The power of the term "post industrial," first used by Raymond Aron and popularized by Daniel Bell, is its modest vacuity. One wonders whether there were commentators in the 19th century who were so unsure as to what was happening that they wrote about "post-agricultural" revolution. In any case a growing number of today's commentators are searching for a more specific term. Peter Drucker writes about "the age of discontinuity," Michael Harrington the "accidental century," and Kenneth Boulding—more pessimistically — "post-civilization." More concretely, Alvin Toffler refers to the "super-industrial revolution," Zbigniew Brzezinski to the "technetronic era," and Darcy Ribeiro to the "emerging Thermonuclear Revolution." Many new terms may be expected while we are acquiring the hindsight needed to understand our rapidly changing *status quo*. My own judgment is that no single concept by itself could do more than serve as a starting point in identifying the multiple dimensions of techno-socio-cultural change in this era.

The idea of a "Service Society" is a useful starting point. While avoiding overemphasis on technology alone, it maintains continuity with the occupation-oriented concepts used to describe past societal change. Just as the industrial revolution meant more employment in industry and less in agriculture, the service revolution means much more employment in services and proportionately less in industry.

This shift is qualitatively different, however, from the agriculture-to-industry shift, inasmuch as services are quite different from goods. Consisting of activities instead of things, they are ephemeral and cannot be stocked. The more intangible services in the fields of research, education, health, and government cannot even be directly measured, and in many cases (particularly those of a controversial nature or with unseen or indi-

rect clients) cannot even be clearly identified. This leads to a serious underevaluation of service output. National economic accountants in capitalist countries consistently undervalue service output because of prejudices against too rapid an increase in public sector services (as well as for technical reasons). Under socialist industrialism a still more serious underevaluation stems from the outworn axiom of both Adam Smith and Karl Marx that no services are productive.

There are other interesting connotations of the term "service." In the United States, as in the Soviet Union, the "armed services" are the most highly organized, best financed, and most technologically advanced sectors of society. In each of these countries the emerging service society has potentialities for either leading to new forms of servitude or serving mankind's broadest and highest interests. Thus, "service" is used here in a neutral sense, encompassing self-service and "disservices" as well as more openly admired activities. This is well illustrated by an obvious question: "If this is becoming a service society, how come it's so hard to get good services?" The emergence of industrialism, it may be recalled, has usually been marked by the production of shoddy goods, as the craft and artisan traditions of an earlier period are pushed aside by mass production. Similarly, the emergence of a service society may be marked by shoddy services, as earlier professional traditions are pushed aside by mass-produced services.

Whether or not the sum total of societal changes can properly be called a revolution will undoubtedly be debated until the revolutionary period is ended. Certainly, the idea will not be easily accepted by those who are still wedded to the "present as culmination illusion" set forth by Walt Rostow, Fred Riggs, and others who have contrasted traditional or transitional "developing nations" with the modern, mass consumption societies no longer in transition to anything at all. It is also initially repugnant to those radicals who may fail to distinguish between social and political revolution and, like Norman Birnbaum, question the idea on the ground that radical improvements in income distribution and the like have not taken place.[33] Many more will resist Daniel Bell's intimation that with post-industrialism the "knowledge elites" may become a new ruling class.

Let us now look at the major elements in the thesis that a revolutionary social change is taking place: the changing technologies, the changing institutional frameworks, and the new crisis of a turbulent era.

Changing Technologies

Many efforts to analyze technological change start with such indirect indicators as the number of technologists and scientists, the expenditures for research and development, and the volume of articles, abstracts, and publications. Even if disaggregated into normal categories of statistical analysis, however, such information could not reveal the substance of technological change.

Information-Energy-Mass Matrix. As suggested earlier, all past increases in efficiency have been associated with "new and more specialized techniques of producing, changing, or moving various forms of information, energy and mass." Thus, a few of the strategic technological advances in previous eras may be listed as follows:

	Information	Energy	Mass
Pre-agricultural	Language	Fire Animals	Primitive tools
Agricultural	Writing Printing	Plant Life Gunpowder	Plough Iron
Industrial	Telegraph Telephone Phonograph Radio Cinema	Steam-engine Electricity	Steel Advanced machinery Railroads, etc.

Similarly, no genuine feel for either present or imminent technological change can be obtained by concentrating on computers and the new materials revolution *à la Drucker,* on the new communication media *à la* McCluhan, or on thermonuclear energy *à la* Ribeiro. To see how the old order is being broken into pieces by new technology, we must look at the strategic events that are already taking place—or are looming ahead—within the entire information-energy-mass matrix:

	Information	Energy	Mass
	TV and satellite transmission	Fission atomic energy	Outer space and supersonic transport
Present	Computer calculation, storage and retrieval	Electrical energy grids	New synthetic materials
	Control systems	Lasers	Prosthetics
Imminent (before 2000 A.D.)	Multipurpose information systems linked to offices and homes	Fusion atomic energy	Weather control Bio-technology (euphenics)

Each of the items in this list is a strategic node in the vaster information-energy mass matrix. Thus computers, atomic energy, and synthetics, to pick just three, are strategic in the sense that each opens up vast areas of technological change. They are nodes in the sense of their interconnections with other technologies. By themselves, any one of these might have revolutionary implications. Together, they weave together into complex synergistic patterns that tend to facilitate or promote technological change on many fronts. Even at present, they have created productive capabilities unprecedented in world history, capabilities for reshaping or moving huge parts of the nonhuman world and for communicating, storing, or processing man's symbolic representation of any part of the world. All this can be done with decreasing expenditures of human energy.

And imminent in present technological developments is an interrelated series of future technologies. First of all, as Drucker has explained, present-day computers may be compared to electricity generators before the invention of the light bulb. Six generations of generators (each far more efficient than its predecessor) were produced between 1856 and 1879. But with the introduction of the light bulb in the period after 1879, there came a huge expansion of transmission and application. Similarly, signs now point in the direction of huge information grids, with a relatively small number of giant computers and millions of receiving-sending sets (the equivalent of the light bulb) capable of providing the bulk of the services now provided separately by telephone, telegraph, teletype, the postal service, radio, TV, and—through facsimile printing—the press.[34]

Second, the growth of fission atomic reactors during the 1970's, with their radioactive wastes that are exceptionally awkward to get rid of, will probably be parallelled somewhat later by the growth of fusion reactors. Fusion processes—similar to what happens on the sun or in hydrogen bombs—will be able to provide vast amounts of energy from the deuteronium in ordinary sea water and (if the proper process is used) *with no waste products.*[35]

Third, while the synthetic development—indeed the design—of new materials is already proceeding rapidly, the control of human protoplasm is already around the corner. With the "cracking of the genetic code" through molecular biology and new techniques of genetic manipulation, it will be possible to design the growth of cells, organs, and entire bodies — as well as supplement the human organism with more sophisticated prosthetic devices. In contrast to eugenic manipulation, which depends upon the control of breeding and traditional forms of animal procreation, biologists refer to this new technology as "euphenics." [36]

Without looking so far into the future, we can already see that interrelated changes throughout the information-energy-mass matric have already resulted in what might be called "super-mechanization" and "advanced mobiletics." The mechanization processes started in the industrial revolution have now reached new levels through both automation, which combines sequences of electric-powered processing of raw materials through cybernetic control systems, and automatic data processing, which mechanizes the large-scale processing, storage, and retrieval of information. "Mobiletics" refers to the movement in space-

time of information, energy, and mass, usually referred to separately by "communication," "transmission," and "transportation." Thus far, the most dramatic of the mobiletic advances have been in the development of instantaneous worldwide communication networks and of outer-space and supersonic transportation. With the growth of superconductors, however, power transmission is beginning to move toward the time when an instantaneous supply of electrical energy can be supplied over unprecedentedly vast distances.

General Characteristics. Even without tracing these strategic nodes back into the labyrinthine complexities of the entire information-energy-mass matrix, four general characteristics of present-day technological change are becoming increasingly clear: acceleration, unevenness, closer links with science, and greater complexity.

The *acceleration* of technological change has been discussed by Drucker in terms of a qualitative discontinuity. "The growth industries of the last half century," he points out, "derived from the scientific discoveries of the middle and late nineteenth century." [37] In contrast to this technological and industrial continuity, Drucker contends that the new "knowledge industries" of the coming decades will have much less in common with the immediately preceding period. Not only are there more inventions and discoveries than ever before, but the time lags between them and their practical application and diffusion are often becoming much smaller than ever before. As the number of new technologies are increased arithmetically, the number of possible combinations—including entirely new syntheses — rises exponentially. Thus, Ribeiro confidently claims that "the current accumulation of advances in basic science and their multiplicity of technological applications are a mere preview of things to come in the next few decades." [38]

The *unevenness* is most apparent in the huge concentration—promoted by military competition among the so-called Great Powers—on technologies of destruction: atomic weapons, with new delivery systems; bacteriological warfare; destructive use of laser beams; the use of outer-space exploration and under-sea installations for military purposes; more deadly and efficient conventional weapons; and the vast computational, communication, transportation, personnel, and back-up systems needed for both the development and operational use of the above.

The other side of the coin has been an almost unbelievable lack of progress—let alone effort—in technologies bearing on education, housing, community facilities, the recycling of waste products, health and vitality (as distinguished from the treatment of disease, degeneration, and breakdown), nutrition, and mass urban transportation. In such areas, there is little or no evidence of cumulative acceleration or a decrease in the interval between invention and application. In many nonmilitary areas of technology acute imbalances are often created by a shocking overemphasis on those technologies that enhance opportunities for profit-making and aggrandizement. In all fields there are tendencies toward overemphasis on hard goods technologies at the expense of "software." In the critical and increasingly influential field of management technology (including operations research, decision theory, cybernetics, and systems analysis) there is a growing gulf between technique and needs, an irresponsible expansion of technical approaches to tactics, and a corresponding neglect of strategic decision making.[39]

The technology of the industrial revolution was rooted mainly in the slow historical increments of human inventiveness, with very little contact and interrelations between scientists and technologists. Today the two are closely linked—and the linkages are becoming increasingly important. "Science has been transformed from an abstract expression of human efforts to understand experience into the most effective agent ever known for manipulating nature, for reorganizing societies, and for shaping human personalities.[40]" Even "basic scientific research," however that may be defined, is justified and financed in terms of its probable consequences for future technological developments.

The complexity of present-day technology is one of the major characteristics highlighted in the chapter on "technology assessment" in

the 1970 report of the National Goals Research Staff.[41] This complexity stems not only from each of the three factors listed above, but also from the many specialized fields of expertise involved in any one technological development, from the large scale of operations usually needed to support such specialization, and from the intricate and long sequences for any proposed change to fruition.

Presumed Consequences. One of the consequences of the complexity of technological change is the growing difficulty of assessing its far-flung implications. Among these are both concomitant changes in social structure (discussed in the next section) and presumed consequences.

"As technology has increased with great rapidity," writes the National Goals Research Staff, "it has forced on us increasing unplanned social change and environmental problems we did not anticipate and do not want." [42] The staff then concentrates on those consequences that come in the form of the disruption or degradation of the physical environment. Specific references are made to the cases of DDT, supersonic airplanes, drugs, food additives, highways, airports, and power plants. Environmental disruption, it should be noted, is not a purely American or capitalist development. Reports from the U.S.S.R. and from developing nations in Asia, Africa, and the Middle East (both socialist and nonsocialist) indicate a major international convergence along these lines.[43]

Somewhat less obvious, although equally important, are four other classes of consequences, none of which are hinted at in the usual discussions of technology assessment. The first is the displacement of established interests. Every technological change threatens those individuals, groups, and organizations with a vested interest in older technologies that it might replace. Thus technological displacement threatens unskilled workers who are to be replaced by machines, skilled workers whose skills are now obsolete, experts whose expertise is out-of-date, managers who are not in tune with the new technological demands, and entire organizations that may not be able to adapt to the new conditions. Some of those who are threatened are able to protect their position by prevention or control. Others are thrown into one of the rubbish heaps of history.

The second of these less obvious consequences is a fundamental change in the texture of ordinary life. The new communication media, as Marshall McLuhan has pointed out, have had major influences on our modes of perception and concepts of space and time. The new energy and information technologies together have created sedentary life styles of physical underwork. The ancient terrors of overwork and famine are being replaced by the more insidious threats of underactivity (in terms of physical movement), over eating, and mental stress and anxiety. Even leisure and play have become increasingly sedentary.

The third is an information-ignorance explosion of staggering proportions. The informational aspects in the narrow field of documentary publication have been repeatedly demonstrated. They consist of a rising flood of publications—both publicly available and "fugitive"—that clog our limited capacities for filtering, analysis, and use. More broadly, they consist of a veritable deluge of somewhat less technical messages through the media of mass communication and education. Well-based skepticism concerning the contents of the messages has led to what has often been called "the credibility gap," although this term has been used with special reference to official government communiques. This term, however, assumes that various officials may be misleading the public by withholding good information. More serious observation leads many to suspect that the leaders of large macrosystems and bureaucracies are themselves misled by information that is one-sided, missing, distorted, misinterpreted, or unused. They themselves, there is reason to suspect, are victims of an "intelligence gap," a growing chasm between the real world and their images of it.

Still more broadly, moreover, there is reason to believe in the words with which Brzezinski opens his *Between Two Ages,* "the result of more knowledge may be more ignorance," [44] For one thing, all advances in

science and technology tend to open up new areas for future exploration—that is, new areas of "certified ignorance." These tend to multiply as new parameters and new generalizations facilitate a larger number of combinations and permutations than ever before, thereby increasing the information overload. The typical remedy is increasing specialization (including new specialties focused on previously separate fields) and increasing technical jargon. This in turn, while facilitating communication within a charmed circle, prevents communication with the uninitiated and helps to certify the depths of their growing ignorance.

The fourth consequence is the rapid growth of what might be called "R-and-D-ology," of a new faith in technology. A major principle of this new ideology—which often comes under the banner of "the end of ideology"—is that: "Any problem can be solved if the proper agency provides enough resources for research, development, testing, and evaluation." A corollary is that with enough imagination and innovation a technical solution—the "techfix"—can usually be found for any human or moral problem. Actively promulgated by resourceful elites, this new faith has widespread adherence—in part because it offers some solace for one's concern with technology's impact on the physical environment, vested interests, ways of life, and information overload.

Changing Structures

The structural concomitants of the industrial revolution, socialist as well as capitalist, have been the growth of Big Organization, an industrial (or proletarian) labor force, the industrial city, and nationalism. With the emergence of the post-industrial service society, each of these structural elements undergoes radical changes that reinforce each other.

Big organizations are being encapsulated in larger clusters or macrosystems, each one of which may be called a "complex." The proletariat is being transformed into an increasingly professionalized "salariat." The large industrial city and metropolis is being absorbed not only in the larger urban region, or megalopolis, but in a nationwide urbanism which can best be described as the "nation city." The post-industrial nation state operates far beyond its national boundaries in accelerating the emergence of the first truly worldwide society.

The Complex. The Big Organization—whether in business, government, labor, or religion—is customarily hailed or bewailed as a growing factor in American life. Yet this image of reality may soon be as out of date as the old economist's myth of business enterprises as powerless units controlled by market forces. The major institutional activities of America have transcended the legal boundaries of even the largest organizations. Both large and small organizations increasingly operate as parts of a tangled web of interweaving, overlapping clusters, constellations, or complexes. The typical complex includes business enterprises, government agencies at federal, state, and local levels, trade associations, trade unions, research institutes, and specialized law, accounting, and consulting firms, as well as strategic individuals in many of the above.

The antecedents of the complex may be found in the German cartel (which usually consisted of an interweaving of business, banking, and government bureaucracies), the American agricultural establishment (based mainly on government agencies, the Farm Bureau, and agro-business), and the large decentralized corporations like Standard Oil, General Motors, and Dupont (each of which helped design huge networks of distributors and facilitating government services).

The first quantum leap into the modern complex probably came with General Dwight D. Eisenhower's brilliant development of Operation Overlord, the joint U.S.-British opening up of the decisive Second Front in World War II. Eisenhower correctly saw that the organizational foundation of the largest military operation in history had to be a complex intertwining of two huge military bureaucracies with collaborative activities at many levels and with top monocratic command reduced to a handful of strategic elements. The potentialities for mutual adjustment and polyarchic decision making unquestionably contributed

to the power of the onslaught. Shortly thereafter, in his capacity as Chief of Staff of the U.S. Army in 1946, Eisenhower wrote a classic (although not widely known) memorandum outlining six principles for integrating military, industrial, and technological resources in a "peacetime counterpart" of wartime mobilization. As Seymour Melman has pointed out, this memorandum helped provide the guidelines for developing the very military-industrial complex whose growing power he warned against 15 long years later in his Farewell Address.[45]

In the civilian field the largest macrosystem (although possibly not as influential as the banking system) is the automobile-highway-petroleum-trucking complex. Organized under the Eisenhower Administration, this huge cluster has become the major force in determining the spatial extension of post-industrial urbanism. Other examples are the NASA-space complex, the communication system, the banking system, the educational system, and the agro-business system.

Some of these complexes are closely associated with the new corporate conglomerates and the vast new multinational corporations. Some are tightly organized, some remarkably loose. Most find ways of using public funds, contracts, or guarantees as an essential part of their operations. All of them have blurred older distinctions between "public" and "private" and have developed increased power by co-opting or incorporating as valuable appendages public regulatory agencies presumably established to control them. In all, the older practices of central monocratic hierarchy (still adhered to by some components) have been incorporated in a more flexible, polyarchic system of mutual accommodation. The request "Take me to your leader" cannot be honored. In this new style, "faceless" system no one knows his name; he does not exist.

The Salariat. In trying to grasp the profound changes now developing in the nature of work, many people have stressed the growth of "white collar" as opposed to "blue collar" employment. Daniel Bell has narrowed this focus down to the idea of a "new class" composed of engineers and technicians. John K. Galbraith has dealt a little more broadly with what he calls "the technostructure" . . . "all who bring specialized knowledge, talent or experience to group decision-making."[46] More broadly, I prefer to emphasize the relentless drive in every field of human employment toward some form of sub-, quasi-, para-, full-, or super-professionalism. This extended professionalism is rooted in the larger indirect labor costs always associated with greater productivity in the production of goods, the ancillary demands for an expansion of services in such fields as education, health, recreation, finance, research, business services, and control systems, and the needs of the new marcrosystems. Its dynamic elements include galloping specialization, university-based credentialism, continuing education (with the total learning force of the country becoming larger than the labor force), prolonged adolescence, and serial careerism. Wages are increasingly supplanted by salaries and the status aspects of salaried employment. The new "salariat" is increasingly organized into "invisible colleges," professional associations that assume functions formerly handled by trade unions, and trade unions that increasingly take on the flavor of professional associations and fight for control of certification procedures.

"If everyone is a professional," asks Corinne Gilb, "then is no one a professional?" She answers the question by pointing out a qualitative change in the nature of professionalism: from savant to specialized expert (a "knowledgeable thinkerer among other thinkerers") and from independent gentleman to a new form of hired help. "Thus demoted, and, furthermore, wrapped in modest tentativeness and supposed value neutrality of the positivistic scientific method, he becomes more susceptible to control and even to being herded."[47] As a whole, the entire new salariat, like the proletariat before it, is unquestionably an indispensable source of power. But to describe the new professionals —even the higher-status professional elites— as a new source of independent power in society is an exercise in myth making. Indeed, one might even suggest that the new "indentured experts," to use Ralph Nader's term in

describing automobile company engineers, are imprisoned in chains more powerful than those of "wage slavery." If the first proletarians were imprisoned in the narrow prison cell of the factory system, the new salariat is bound by an increasing fragmentation of social role and is moved by the new macrosystems into a "bright sunny prison courtyard" in which they may enjoy professional mobility, careerism, fringe benefits, expense accounts, and accelerated consumerism.

But of course everyone does *not* achieve this blissful state. Many of the sub-, para-, and quasi-professionals are doomed to be perpetual losers in the rat race. A still larger undereducated "underclass" is not allowed to enter even the ground floor of the new Tower of Babel, let alone ascend higher.

The Nation City. We are now increasingly aware that a large proportion of all Americans now live in about 12 metropolitan clusters that are merging into three huge megalopolitan urban regions in the Northeast, the Midwest Great Lakes area, and the West Coast. These *megalopoloi* are the new abode of the complex and the salariat. These represent huge territorial concentrations of financial, administrative, cultural, and educational resources.

What is not so readily appreciated is the role that the macrosystems and the salariat have played in transcending the older forms of urbanism centered around one particular subnational area. The complex is transurban; its operational range is nationwide and transnational. Its head office are primarily concerned with huge territorial expanses far beyond the specific territories in which they are located. The salariat is increasingly mobile, moving not only from center city to suburb and from suburb to suburb, but from one area to another. At higher elite levels residential mobility is surpassed by wide-ranging travel, with many experts and managers familiar with the nerve centers of half a dozen *megalopoloi* around the world and abysmally ignorant of the neighborhoods in which their families reside.

Above all, the statistics of residential and work location—so laboriously sweated over by Census officials in an effort to delimit urban areas—no longer reflect the realities of post-industrial urbanism. Even more than transportation and travel, modern communication facilities bring the declining farm population and the inhabitants of "rural nonfarm" America fully into the national urban culture. It is in this sense that we are becoming a "Nation City."

The World Society. In the past people tended to think of a future world society as a blissful state of rational order or some form of central regimentation through a new style *Pax Romana*. Today, unheralded and uncelebrated, a world society is painfully coming into being. "During the classic era of international politics," Brzezinski has observed, "weapons, communication, economics and ideology were all essentially national in scope. . . . All four factors are now becoming global." [48]

But the emerging One World, Global Village, or Global City hardly conforms to the vision of the past utopians. The world society includes a bewildering variety of subsystems increasingly locked together in conflict-cooperation relationships. The world economy tends to be disorderly—neither free nor planned. The world culture tends, on the one hand, to submerge national characteristics and values in a flood of homogenizing material goods and bureaucratic-professional styles.

On the other hand, it includes vast value differences and vast value conflicts. The world polity no longer resembles either the bipolar system of 1945-55 or the precarious balance of power of previous decades. The new, polycentric world society seems to be becoming Quasi-Triadic, with most other countries grouped loosely or tightly around the new Big Three: the United States of America, the U.S.S.R. and the Peoples Republic of China. Each of these, particularly with the help of satellites, allies, and agents, already has the military capability of destroying one or both of the others—albeit at the risk unpredictable consequences for themselves and the rest of the world.

The Deepening Crises.

Human life is reduced to real suffering, to hell, only when two ages, two cultures and religions overlap. . . .

There are times when a whole generation is caught in this way between two ages, two modes of life, with the consequence that it loses all power to understand itself and has no standard, no security, no simple acquiescence.

Herman Hesse, *Steppenwolf*

Small ruptures and traumas are accumulating . . . that tomorrow will open into fissures extending through the whole society. . . .

Darcy Ribeiro, *The Civilizational Process*

This suffering and these ruptures would be superficial and transitory if there already existed within the emerging service society a dominant ideology and visible leadership that would provide acceptable symbols of responsible authority. In my judgment, neither of these are yet here. Nor is there yet any meaningful vision of an age to come.

Accordingly, the traumas are accumulating in a network of deepening crises that are eroding the legitimate authority of public and private officialdom, of the family, and of state and society as a whole.

The Survival Crisis. The ever-present sword of Damocles, the sudden attack like the wolf on the fold, the mass slaughter of innocents—all these have been an integral part of the human condition. But with the explosion of the atomic bombs over Hiroshima and Nagasaki, and with the continued development of far more destructive capabilities, the fear of sudden death has attained new dimensions.

In the past, as Robert Jay Lifton has pointed out, people have always cherished some sense of immortality in the face of inevitable personal death. They have felt connected with the future in one way or another—if not through a life after death, then through survival of works, institutions, and the natural environment itself. The vision of a thermonuclear or bacteriological doomsday ruptures this delicate connective tissue. Lifton suggests that this has produced not so much an age of anxiety as an age of "nuclear-induced psychic numbing." [49]

Previous military catastrophes were reversible. Survivors could rebuild their societies. While the Japanese did this brilliantly since 1945, few people believe they or anyone else could do it after detonation of the new megabombs. In previous wars there were always victors. After another nuclear war, there can be no victors. Yet the nuclear powers add to their stockpiles and multiply more complicated delivery systems. The "nuclear club" grows in membership. Precisely on the day of the 25th anniversary of the United Nations, the new Big Three, by some fateful accident of unplanned coordination, exploded test bombs.

The latest generations of young people are the first to grow up in a world in which all or most of human life may suddenly be destroyed. This ever-present possibility has been a part of the very air they started to breathe, far less subtle and far more pervasive than the traces of radiation in the milk they drank from breast or bottle. According to some, this seems to be a major factor in this era's generation gap. Yet their elders grew to maturity in the pre-atomic era. They had developed an implicit confidence in the continuity of human society, nourished by some hopes for a peaceful world order in the aftermath of World War II. For them, there is more to be ruptured. For them, the fear is still greater; it represents a sharp break with their past rather than a normal part of life.

Neither young nor old express this fear very openly. As Gunther Anders has suggested, we have lost the "courage to fear." [50] If it seems that there is nothing to be done about it, why think the unthinkable? Better to repress it. For a quarter of a century we have been developing our abilities of deep repression. "Eat, drink, and be merry," ran the old refrain, "for tomorrow you die." If tomorrow the species may be extinguished, the imperative takes many forms: eat, take drugs, strike out, freeze uptight, run faster in the careerist rat race, or join the cast of Gotterdamerung.

Although this repressed fear is a worldwide phenomenon, both the repression and its side effects are probably more acute in the United States than elsewhere. It was the United States that first conjured up the sorcerer's apprentice. Only the United States has thus far used atomic bombs in warfare. The United States is far more vulnerable—despite expensive Maginot Line-type defenses—to atomic attack than any other Great Power. This vulnerability is accentuated by the very

structure of post-industrialism and its deepening crises.

The Aspiration Crises. Back in 1930, in a little-known and less-appreciated essay, John Maynard Keynes made the following post-Keynesian observation:

> The economic problem, the struggle for subsistence, always has been hitherto the primary, most pressing problem of the human race. If the economic problem is solved, mankind will be deprived of its traditional purpose.
>
> Will this be a benefit? If one believes at all in the real values of life, the prospect at least opens up the possibility of benefit. Yet I think with dread of the readjustment of the habits and instincts of the ordinary man, bred into him for countless generations, which he may be asked to discard within a few decades. . . .[51]

While the "economic problem," however defined, has not been solved, the emergence of the post-industrialism in America has brought with it an unprecedented increase in the quantity of material goods. In terms of real income, physical and financial assets, and free public services, even the poorest strata of America have more than ever before. As a result, concepts of minimum standards have risen appreciably.

One of the first readjustments of which Keynes wrote has been a much greater rise in aspirations. When poor people go beyond the level of sheer destitution, their sense of satisfaction with such progress is more than counterbalanced by new dissatisfactions. These stem from aspirations for much more than minimum standards, for equity in the distribution of material benefits. These new aspirations are heightened by the feeling—which seem justified by available data—that the nonpoor have obtained much more and that the gap between poor and nonpoor has widened. They are fanned by the hot winds of professionalization and consumerism. They are heightened still more by the glowing rhetoric of promises of the abolition of poverty and, while we are waiting, the participation by the poor in decisions affecting their lives.

But the more widespread and deeper readjustments stem from aspirations that go far beyond either the ancient struggle for subsistence or the current struggles for equity in the distribution of material goods. Large sections of the population now aspire to freedom from historic forms of institutionalized injustice. Few Black Americans will any longer tolerate being regarded as subhuman, as biologically inferior. More important, they aspire to Black dignity, respect, and power.

Other ethnic groups in America—not only Indians, Puerto Ricans, and Chicanos, but also Slavs, Italians, Irish, Swedish, and others—have been stirred out of melting-pot somnolence by the example of Black revolts. Instead of being ashamed of their origins and knuckling under to WASP prejudice, they are reasserting ancient traditions and making new demands on the policy. Women are increasingly demanding liberation from centuries of imprisonment in social roles that presume biological inferiority, physical inability, and mental deformity. Young people are aspiring to be treated as human beings rather than as pawns in a faceless system. Moreover, far beyond these superficial ways of classifying people, more people in all walks of life are becoming interested in satisfactions that transcend the dominant materialisms of the past. They want employment that is fulfilling—not merely full or fair. They want education that liberates the imagination—not merely a certificate. They want to commit themselves to purposes beyond careerism and institutional aggrandizement. They seek new forms of community with others. Indeed, even those who most vociferously demand a larger share of the pie or a bigger piece of the action are beginning to suspect that the pie is slop and the real action elsewhere.

The high waves of aspiration, however, are often broken against the hard rocks of war, injustice, materialism, apathy, and ugliness. The result is growing frustration and alienation. In part, these are evidenced in violence, delinquency, and deviation; in greater part by the cynicism of our ablest youth and the inner despair of their elders. This process of frustration is probably self-renewing and cumulative. While expectations may be trimmed to meet the perception of what may really come, aspirations—repressed almost as deeply as the fear of nuclear holocaust—may continue to rise.

Fragmentation. From the broader point of view, we have already reviewed many forms of fragmentation in the emerging service society:

—in technology, the fragmentation of knowledge,

—in macrosystems, the fragmentation of responsibility and accountability,

—in extended professionalism, the fragmentation of social role, skills, and culture,

—in extended urbanism, the fragmentation of community life.

To this, we must now add the fragmentation of family and the individual.

Some of the most conspicuous forms of family fragmentation are indicated by all the data of illegitimacy, desertion, divorce and female-headed families which show large-scale breakdown in the Black family. But by more meaningful (albeit less statistical) indicators there is reason to believe that family fragmentation is at least as widespread, if not more so, among the larger white population. Families that are formally together may be psychologically and behaviorally uncoupled. In industrialism, this form of cleavage started with the disengagement between the nuclear family and kinfolk. With post-industrialism, it has appeared at the very heart of the nuclear family. The complex and extended professionalism absorbs the interests of male parents. The extended educational system takes the children away from the home from nursery through graduate school. Those mothers remaining at home are increasingly reduced to the role of underpaid motel managers. While this happens, family life is unquestionably longer and more highly capitalized than ever before. Many married couples face two decades of post-children life together. Annual family investing in housing, consumer durables, and family transportation are already far more sizeable than capital investment by business.[52] These expansions in formal structure probably do as much to strain, as to strengthen, human ties within the family.

The personality is directly affected by all the broader forms of fragmentation. This was seen by the first critics of industrialism, who repeatedly pointed out that man was in danger of losing his human qualities and being reduced to a cog in the industrial machine. With post-industrialism, these tendencies seem to be accelerated. In the words of Hans Morgenthau, many people have the feeling that they live in "something approaching a Kafkaesque world, insignificant and at the mercy of unchallengeable and invisible forces . . . a world of make-believe, a gigantic hoax." [53] Part of the make-believe is the premise that a person's identity or sense of meaning can be brought into being by assembling his multiple social roles. The most gigantic hoax is the use of the latest and most expensive techniques of persuasion and camouflage to build up the images of political and corporate leadership.

The Erosion of Authority. When political leaders lament the erosion of authority in present-day America, they are right. The erosion process starts in the family and spreads in ever-widening circles.

In discussing the worldwide generation gap, Margaret Mead maintains that all people born and bred before World War II are immigrants into a new era. Their past culture, feelings, and conceptions of the world are no sure guide to the present. For the new generations they are not acceptable as guides to the future.[54] It is not merely that the elders cannot serve as authorities on what is right and wrong, as models or as guides. They cannot communicate very well and in many cases do not really want to. When they succeed, the message is often rejected as irrelevant or hypocritical.

The irrelevance stems from what Charles Reich describes as Consciousness II, the liberal-rationalist planning ethic that animated both the New Deal and the conservative "Me Too'ers" who fashioned the Welfare-Warfare State, in contrast to the Consciousness I of an earlier *laissez-faire* period.[55] The Consciousness III, or counter-culture of much of the younger generation, thrives on the emotions, feelings, and hedonism that is formally rejected by bureaucratic professionalism; in turn, it rejects the culture of planning, management, and control.

The hypocrisy stems from the glaring contrast between the ideals and the behavior of their elders. While hearing parental, school, and police authorities inveigh against mari-

juana and drugs, young people see their elders "hooked" on cigarettes, alcohol, sedatives, and youth-aping cosmetics. They hear teachers, principals, and college presidents tell students to act mature, but see them treating students as children or robots. They hear cries for "law and order" raised by respectable law-breakers; slumlords who violate local building codes; police departments in collusion with organized crime; self-proclaimed defenders of morality who promote pornography and sexual depravity by regarding sex as something evil or dirty instead of natural and beautiful (and incidentally assist organized crime in maintaining its market monopoly through the present laws on prostitution, gambling, drugs, and pornography); lawless and disorderly elements who believe in the violent repression of the Black revolt and student demonstrations through paramilitary activity; land developers and speculators who undermine the Supreme Court's rulings on segregation, local government officials who wink at such law-breaking, and high-minded bankers who finance it; and the new Suburban Bourbons who talk "liberalese" but have evaded all legal and moral codes by building the lily-white suburbs that encircle our Northern cities; corporate and public executives who speak unctuously about preserving the environment and proceed with all deliberate speed to accelerate the pollution of air, water, and land.

In his brilliant "Reflections on Authority," John Schaar has analyzed what he calls "the underlying crisis of legitimacy in the modern State." He goes back to the epistemological, moral, and bureaucratic roots of present-day authority and finds each of them corroded. His major point: "Modern man has determined to live without collective ideals and disciplines and thus without obedience to and reliance upon the authorities that embody, defend and replenish those ideals." This situation affects not merely the youth and the elderly rebels. "Millions of men who are apparently 'insiders' know how vulnerable the system is because they know how ambiguous their own attachments to it are." [56] According to Schaar, this is one of the reasons for tendencies toward the repression of radical protest; "the slightest moral challenge exposes the fragile foundations of legitimacy" in post-industrial society.

This does not imply a general erosion of power on the part of insiders: the far-flung diverse power elites in the central guidance clusters of the new macrosystems. What they lack in accepted authority they make up in flexibility. Far from being made of clay, the feet of the establishment expertly ride the waves of change. They have already demonstrated remarkable capacity to defuse any fundamental opposition by: (1) providing both the reality and image (in shifting proportions) of genuine benefits for every segment of the population, (2) absorbing actual or potential dissidents into the system through many direct and indirect forms of co-optation, and (3) refining still further the structure of dispersed and multiple oligarchy, a structure exquisitely designed to avoid personal responsibility, replacement, destruction, or reconstruction.

Decades ago, British aristocrats rode the waves of the industrial revolution and took command of the new industry-based Empire. Similarly, the American power elites may be able to adapt themselves to the new forces of post-industrialism and prevent fundamental changes in the distribution of political power. No better example could be found of the distinction between social and political revolution or of the equally fundamental distinction between the sheer power of survival and the power to provide guidance toward a high quality of life for people living in a rapidly changing and increasingly complex system.

The Grand Alternatives of a New Era

"A faith in grand alternatives," wrote Dahl and Lindblom in 1953, "is, in one sense, obsolete. Socialism and capitalism, planning and non-planning, welfare state and *laissez faire*—these are not the alternatives open to Western societies." [57]

This style of thinking became increasingly powerful during the 1950's and 1960's. It led to *a rejection not merely of previously defined alternatives but of the search for new grand alternatives*. In both the West and the East, in both the capitalist and the communist blocs, serious debate about the future of the social order abated to almost a vanishing point. The

imagery of a cold war between "international communism" and the "free world," though losing much of its power, has not been challenged by more meaningfully formulated alternatives. Political philosophy, as a vigorous force in public debtate, has disappeared. Intellectual life has been largely dominated by the taboos of positivism and the rituals of technocratic incrementalism. Thus, at the very time when there is more sophisticated, long-range, resource-backed planning than ever before in human history, there appears to be a widely prevalent and growing sense of drift, disorder, and breakdown of societal guidance.

As this situation approaches crisis proportions, however, a new search for alternatives seems to be surfacing warily. The recent writings of Drucker, Toffler, Brzezinski, Harrington, and Ribeiro, and the "movements" dealing with futurism, social indicators, and "policy sciences"—all these are intimations of a new intellectual ferment. Many of these efforts are strictly technocratic, infused with the spirit of elite domination. Some join with Toffler in hoping for "the collapse of technocratic planning" and the invention of "a form of planning more human, more far-sighted and more democratic than any so far in use." Many more might accept his ambitious objective: "Not merely the transcendence of technocracy and the substitution of more human, more far-sighted and more democratic planning, but the *subjection of the process of evolution itself to conscious human guidance.*" [58]

One of the limitations of many of these efforts is that, thus far, they have tended to be abstracted from the reality of current changes in technology, institutions, and the nature of perceived crises. Even the futurists, in the effort to play it safe and avoid messianic or apocalyptic extremes, have not yet envisioned alternative forms of post-industrialism.

In a fumbling effort to stimulate new thinking along these lines, let us look at two broad alternatives (each of which may suggest a number of others):

—the possibility of an unproclaimed, all-enveloping, post-industrial totalitarianism, and

—the less probable reconstruction of post-industrial society along much more humanistic lines.

Let us then look at some alternatives in the form of new concepts of rationality, concepts that might be helpful in the clarification of alternative futures and the developing of new styles of planning better suited to the needs of people in an era of post-industrialism.

The Road to Serfdom Repaved

"It is now necessary to state that it is Germany whose fate we are in some danger of repeating." With these words, published in 1944 as Hitler's forces were being crushed between the Allied-Russian pincers, Friedrich Hayek launched his attack on government efforts to "plan progress" in the post-war period. The rise of fascism and Nazism, Hayek argues, was "not a reaction to the socialist trends of the preceding period, but a necessary outcome of those tendencies." Government planning (as contrasted with more passive promotion of progress through market competition) would inevitably lead to the destruction of competition, the abolition of freedom, and the rise of a facist dictatorship.[59]

The Hayek thesis was warmly applauded—and well advertised—by conservative groups whose opposition to government planning had previously been justified on the ground that "creeping socialism" would lead to a communist dictatorship. Along with the work of Von Mises, Jewkes, and others, it was used as ideological support for political opposition to government planning for post-war full employment in the United States and Britain. On the academic level it was countered by Herman Finer's *Road to Reaction* and Barbara Wootton's *Freedom under Planning;* both argued that it would be entirely possible to develop democratic government planning without any form of dictatorship. In organizing the campaign for the Full Employment Bill of 1945, I regarded Hayek's views as a major attack on the mild measures we were proposing. My counter-strategy was to stress the substantive merits of a full employment policy (while deemphasizing the planning instrumentalities) and to counter-attack by branding the opposition as willing to tolerate,

or eager to profit from, the violent ups-and-downs of the traditional business cycle.

Today, more than a quarter of a century later, many people are beginning to utter warnings strangely reminiscent of *The Road to Serfdom*. Many university students (less concerned than their elders with Hayek's tortuous efforts to explain Nazism's rise in Europe) are attracted by his attacks on centralized planning. They suggest a vague scenario for creeping totalitarianism, a scenario leading to Huxley's *Brave New World,* Orwell's *1984,* Kaffka's *The Castle,* Lasswell's *The Garrison State,* or some other form of organized reactionary repression. *Today, is it possible that the road to serfdom has been repaved by the growth of post-industrial technology and institutions?*

The Creativity of Technocratic Evil. "The Banality of Evil" is the subtitle of Hannah Arendt's book about the trial of Adolph Eichmann for his part in the organized murder of millions of European Jews.

> The trouble with Eichmann was precisely that so many were like him, and that the many were neither perverted nor sadistic, that they were, and still are, terribly and terrifyingly normal. . . . This new type of criminal . . . commits his crimes under circumstances that make it well nigh impossible for him to know or feel that he is doing wrong.

If qualms arise, the excuse is clear: he is merely a law-abiding citizen or official who obediently carries out specific orders and known policies.[60]

If Nazi evil had been only banal, it would have been much less powerful. At the Nuremburg trials Albert Speer, Nazi Minister for Armaments and War Production, stated that Hitler's "was the first dictatorship in the present period of modern technical development, a dictatorship which made complete use of all the technical means for the domination of its own country." Many years later, in *Inside the Third Reich,* Speer openly confessed that he was "the top representative of a technocracy which had without compunction used all its know-how in an assault on humanity." More important was his candid explanation of his success in boosting armament production:

> We owed the success of our program to thousands of technicians with special achievements to their credit to whom we now entrusted the responsibility for whole segments of the armaments industry. This aroused their buried enthusiasm. They also took gladly to my unorthodox style of leadership. Basically, *I exploited the phenomenon of the technician's often blind devotion to his task.* Because of what seems to be the moral neutrality of technology, these people were without any scruples about their activities. The more technical the world imposed on us by the war, the more dangerous was this indifference of the technician to the direct consequences of his anonymous activities (*emphasis added*).[61]

Speer and his thousands of associates were like Eichmann in only one respect: they felt no moral responsibility for the consequences of their acts. They were also immensely different. They were *not* blindly obedient bureaucrats operating in accordance with civil service norms. Under Speer's brilliant guidance, they established new norms of collegial rather than bureacratic decision making. They operated in an atmosphere of open discussion and debate (often referred to jokingly as "reintroducing the parliamentary system"), and of macrosystem interchange rather than closed-system hierarchy. Instead of blindly accepting orders, they opposed commands that interfered with war production and proposed new policies for all-out war mobilization, including the more efficient use of slave labor from conquered countries. *Their evil was not banal. In the "hurrah words" of modern management technology, it was creative, adaptive, and innovative.* If there had been more Speers in German society, Hitler's forces might have triumphed.

"The Hitlers and Himmlers we may get rid of," wrote the *British Observer* in 1944, "but the Speers, whatever happens to this particular special man, will long be with us."[62] With the benefit of hindsight, we may now see that the emerging service society, while far from hostile to the Eichman mentality, may provide an ideal habitat for the new Speers of the present era. I am reminded of the high offical in NASA with a beautiful semi-abstract drawing on his wall. When asked what it is, he replies with pride: "I did it myself some years ago. It's part of the tail fin of the atomic bomb. Isn't it exquisite? I take it with me wherever I go."

More frequently, however, the creative technocrat is little aware of the indirect consequences (or latent functions) of his activities. Thus after World War II Keynesian fiscal planning (both the liberal variety and the conservative version discussed by Jesse Burkhead) developed in the context of the cold war, the Korean war, and America's entry into the vacuum left by the French withdrawal from Indo-China. Economic growthmanship and the "new economics" became indispensable tools in the mobilization of resources on behalf of military expansion. In turn, increments in direct and indirect military spending had a continuing "multiplier effect" in contributing to expanding output and employment through the 1960's. Strangely, this effect has been persistently denied by those who stood steadfastly by the thesis (which my colleagues and I helped develop during the period of President Truman's Council of Economic Advisers) that "The American economy does not need military expenditures to maintain full employment." This was like saying to a drug addict, "If you follow our advice, you can get along beautifully without drugs." We felt confident that if given a chance, we could restructure things to get along without a rising military budget. But we were not given that chance. Instead, we had to devise policies for steady intake of the narcotic. Under these conditions, the thesis that military expenditures were not needed obscured the implications of the "military multiplier" policies we helped devise. With the decline of military budget commitments under the Nixon Administration, it then became easy to blame Nixon's monetary or tax policies for the resulting recession, once again blurring the consequences of military expenditures for the level of economic activity.

A similar phenomenon occurred with the development of cost-effectiveness or system analysis techniques (sometimes referred to as the planning-programming-budgeting system) in the U.S. Department of Defense. Their explicit purpose was to provide top management with more useful information on the consequences and costs of alternative weapons systems. This they did. By so doing, they augmented central power over the military budget in the hands of the Pentagon and the White House, thereby moving toward a tightening of the military-industrial complex into what Seymour Melman has called "state administration." This power was used to increase the flow of resources to military ends and vastly expand the war in Indo-China, without reference to the human costs, morality, or strategic consequences of the entire operation. Yet there is no gainsaying the creativity and adaptiveness with which the "whiz kid" Speers threw themselves into this operation. Many similar examples could be found in purely civilian fields where the immorality of secondary consequences has been far more difficult to discern—as with the huge programs of suburban expansion and central-city urban renewal and their implications for the growth of residential and educational segregation, urban slums, alienation, and crime.

The Possibility of Techno-Urban Fascism. According to William Ebenstein, European fascism was "the totalitarian way of resolving conficts within an industrially advanced society." [63] More recently, Trevor Roper explained the virulence of German facism in terms not only of its technocratic aspects but also the deep anxieties of its large lower middle class, anxieties expertly exploited by Hitler.[64] In America, with many more technocrats eager to be used and a much larger lower middle class and "underclass," could some new form of fascism arise to resolve the conflicts of post-industrialism?

Some answer this question by pointing to the more flagrant forms of police brutality and the efforts of various national political figures to whip up vigilante-style repression. For them, it has *already* happened here. Others regard the present use of the term "fascism" as mere name-calling. More conscious of America's democratic traditions, they affirm that it could *not* happen here. Both of these views, unfortunately, underestimate the possibility of a new-style fascism that might go far beyond anything in our past experience in developing highly organized foreign expansion and domestic repression.

Thinking about such a possibility is not

only unpleasant, but also extremely difficult. To visualize it, we must go beyond the superficial trappings of past fascistic regimes. We must recall Huey Long's remark that if fascism comes to America it will be under the slogan of democracy and 100 per cent Americanism. This requires an image of neo-fascism that bears no outward resemblance to the European models of a less technological and less urbanized past.

In a recent article, "Friendly Fascism: A Model for America," I have tried to set forth a specific model of American style techno-urban fascism:

> A managed society ruled by a faceless and widely-dispersed complex of Warfare-Welfare-Industrial-Communications-Police bureaucracies caught up in developing a new-style empire based on a technocratic ideology, a culture of alienation, multiple scapegoats and competing control networks.[65]

Under such a model the industrial-military complex would gain three senior partners:

—an expanded welfare establishment which would imprison millions in brotherhood (to use W. H. Whyte's phrase) and malign beneficence, with community participation carnivals to work off accumulated steam,

—the communications system, embracing the TV networks, the wire services, the AT&T, and the new cable-casting that will soon give us a "wired society," and

—an enlarged network of local, state, and national police, intelligence, and monitoring agencies.

This last point conforms to Raymond D. Gastil's scenario for 1980 (incorporated in the Kahn and Weiner book, *The Year 2,000)* concerning the new "standard practice for hotel rooms, college dormitories, and offices to be monitored through listening devices—and in some cases hidden television." This practice would be legitimated by the slogan: "No decent American should fear monitoring." [66]

Control mechanisms, however, would be far more sophisticated. To a large extent, the power of techno-urban fascism would be rooted in a technocratic ideology that would buttress faith in the system and a culture of alienation that would undermine faith in the organization of any viable alternative. There would be no one set of scapegoats—neither Jews nor Blacks. Rather, a variety of scapegoats would be developed, including young people and nonconformist intellectuals as well as the "wrong kind" of Jews and Blacks.

Direct repression, of course, as in all other forms of totalitarianism, would be a major characteristic of the new managed society. But it would be *selective repression operating through and around the established constitutional system.* Its essential principle would be the destruction of any confidence that the constitutional freedoms set forth in the U.S. Bill of Rights would be allowed to operate on behalf of any serious dissent or seriously organized opposition to the warfare-welfare-industrial-communications-police complex, to neo-imperialism, to the technological ideology, or to the culture of alienation. Preventive detention, "no-knock" and "quick-entry" practices, martial-law lawlessness, and out-and-out domestic *schrecklichkeit* would be used callously but not indiscriminately.

The economizing on direct repression would be made possible only through the sophisticated development of indirect control and manipulation. The ordinary forms of indirect control, apart from ideology and culture, would be these:

1. *Rationed welfare state benefits,* with categorical aid programs in health, housing, education, and subsistence contributions made conditional upon good behavior.
2. *Accelerated consumerism,* with new services as well as new goods held forth as carrots to reward conformity.
3. *Credentialized meritocracy,* with people moving from Marx's wage slavery to a post-Marxian form of status slavery.
4. *Market administration,* with incentive manipulation increasingly used to supplement the direct control of private corporations, mixed corporations, public authorities and ordinary public bureaucracies.

But *co-optation* would be the most powerful form of indirect control. In Phillip Selznick's older terms, co-optation was "the process of absorbing new elements into the leadership or policymaking structure of an

organization as a means of averting threats to its stability or existence." [67] Under American-style techno-urban-fascism co-optation would be *the process of absorbing new elements into the interstices of the managed society as a means not only of averting threats but of strengthening the system.*

This form of fascism would need no charismatic dictator, no one-party rule, no glorification of the State, no dissolution of legislatures, no discontinuation of elections, no distrust of reason, no military *coup d'etat.* It could come slowly as a cancerous growth within and around the White House, the Pentagon, and other parts of the political establishment.

Intimations of Humanist Reconstruction

In response to the crises of early capitalist industrialism, reformers and revolutionaries produced powerful ideas for societal reconstruction. After a century of evolution these were embodied in a variety of socialist movements that provided exciting visions of a more human future for mankind. Invariably these visions were premised on rational planning for human progress (although the details of planning goals, machinery, and methods were left extremely vague). They were backed up with organized action, strategies, and tactics on many fronts. In the developed countries, reformist socialism contributed to the acceleration of industrialism through various forms of the Welfare State, state socialism, and state capitalism. In the United States the New Freedom, New Deal, Fair Deal, and Great Society took over almost all the reforms proposed by the socialists, thereby destroying both socialist and communist parties as significant forces in domestic politics. In pre-industrial countries, both forms of socialism are alive and well—and will presumably be relevant until industrialism is more fully developed.

After a few years of emerging post-industrialism, however, there is as yet no post-industrial equivalent of industrial socialism. There is no such coherent set of ideas, no such mission-oriented organizations, no crystalized sets of alternative strategies and tactics. Socialism is today a combination of old doctrines and new gropings. The old doctrines, if followed in the future (either in their reformist or revolutionary form) would probably accelerate existing tendencies toward creeping totalitarianism. The new gropings are as yet too diffuse to provide coherent alternatives to neo-fascism or even the conceptual basis for new leadership or confident followership. They also burst the confines of older rubrics and can better be described not as post-industrial socialism but as intimations of a humanist post-industrialism.

These humanist intimations are to be found a'l around us in yearnings, behavior, prescriptions, and appeals relating to three interrelated themes: *new structures of power, new values, and a different kind of rationality.* Taken together, they constitute new premises for planning by and for individuals, families, organizations, and larger entities.

As the various currents of industrial socialism matured, they avoided blueprints for the future. Evolutionary socialism increasingly emphasized small increments of disjointed reform. Revolutionary socialism emphasized the struggle for power and the replacement of capitalist planners by proletarian planners. The great bureaucracies built by class enemies would, according to Lenin, get new masters. What the new drivers of the old machinery might do was left up in the air.

Post-industrial humanism can ill afford the luxury of either style of vagueness. Many of the old machines must be rebuilt or replaced by new ones; some can only be junked. New drivers will not be readily available, new road maps and directions will be needed. Piecemeal incrementalism could end up with society blown to pieces.

This does not imply blueprints. The very idea of blueprints is relevant only to stereotyped operations functioning in accordance with established norms. But it does imply a certain measure of idealistic specificity. The new ideals of power, values, and rationality must be idealistic enough to cope with the survival and aspiration crises, with societal and personal fragmentation, with the erosion of authority. They must be specific enough to sustain a rising level of hope, confidence, and personal commitment.

All this is immensely difficult. Meaningful alternatives to totalitarianism cannot be de-

veloped through ideas alone, whether expressed in academic documents, popular tracts, party platforms and manifestos, or day-to-day action. They will not attain coherence and power merely by formal action within the prescribed machinery for elections, pressure group operations, or participation in advisory councils, or by less conventional acts of protest, resistance, and confrontation. All these are needed—but with a combinatorial coherence than can be won only by escaping the dead hand of past approaches—industrial, agricultural, pastoral, and predatory — to power, values, and rationality. On all sides I see this escape taking place as new concepts of humanist, post-industrial planning are coming into being.

These new concepts of power, values, and rationality tend to burst conventional categories. While truly new, they draw upon large stocks of past wisdom—capitalist as well as socialist, conservative as well as radical, professional as well as amateur. They transcend the boundaries of the "Judeo-Christian ethic," drawing also upon the Eastern, African, and Oceanic traditions that industrialism almost succeeded in destroying.

Radical Restructurings of Power. The most vocal intimations of humanist post-industrialism relate to control over resources and participation in decision making.

On control of resources, it is argued that we must have a major "reordering of national priorities." In its more obvious forms, this means a drastic reduction in the power and budgets of the Pentagon, the size of the armed forces, overseas military involvements, and the influence on American life of the entire industrial-military complex. Less obviously, it also means a redirection of science-based technology toward more human ends: new construction technologies for building more liveable, as well as lower-cost, housing and community facilities; mass transportation; fusion atomic energy (nonpolluting); a health technology oriented toward promoting positive well-being, rather than focused mainly on disease and mortality; a genuine science and technology of nutrition; societal indicators based on more relevant concepts and including indicators of justice, power, and institutional change.

On participation, new demands have been arising on many fronts. Leaders of poor people, Blacks, and other ethnic groups are seeking more participation in the planning and control of various underfinanced, ineffective community uplift programs (rhetorically described "as antipoverty," "model cities," or "community health"). Low-income neighborhood groups have been trying to establish community control of public school systems. With some faculty support, students have been seeking participation in the governance of schools and universities.

Each of these themes is subject to a grotesque distortion that could destroy its essential humanism, if not contribute to creeping totalitarianism. True, a shift of resources to an industrial-social complex (as prefigured by Michael Harrington) or even to lavishly financed public service bureacracies would redress the balance that John Kenneth Galbraith has noted between opulence and poverty-stricken public services. But it could also lead to a rapid acceleration of bureaucratic deformation, technocratic careerism, and human alienation—unless there are also fundamental institutional changes in their power structure. Similarly, community, student, and faculty participation arrangements have often become window-dressing operations to give some people the illusory "feeling" of participation. Where some measure of significant power is in fact obtained, it may be exercised within an area of resource starvation. Where this happens, more and more people get control of less and less, until finally lots of them can dominate a bankrupt program, a paper tiger project, and a few paltry jobs.

In contrast, the potential vigor of these themes will materialize as they begin to blend together and reinforce each other in the *fundamental restructurings that provide new kinds of participation in the allocation and use of resources.* In a more obvious sense, this would require consideration of such fundamental changes in the structure of power as the following:

1. New group coalitions underlying political party power,
2. Major extensions of public control over

private power—through quantum leaps in taxes, public regulation, public ownership, and mixed private-public enterprise,

3. Institutional changes to eliminate the control of regulatory agencies by regulatees and the management of public agencies to serve careerist and bureaucratic rather than clientele interests,
4. Institutional reconstruction to provide for widespread participation in management planning and control by formalized joint governance arrangements that place policy-making authority in elected assemblies within the organization, by less formalized but possibly more significant use of collegial and nonhierarchical decision making at all levels and in all units, by devolution and dissolution arrangements that place many large bureaucracies (public school, public safety, and others) under community control,
5. The strengthening of public legislatures (urban as well as state and national) as more truly representative assemblies for the planning and overview of major public programs, and
6. Major breaks with nationalistic patterns through the conscious transfer of a growing portion of armaments, ocean resources, and other resources to international agencies.

In a more subtle and profound sense, it will be necessary to raise some questions concerning social structure.

First of all, are present concepts of class sufficiently relevant to our emerging service society? Will it not be necessary to supplant the older ideas of ruling middle and lower classes with new concepts bearing upon new kinds of social roles?

Second, if the transition from agricultural to industrial societies has been characterized by a shift from extended families to nuclear families, might not post-industrial call for new forms of family structure? What is the significance of Eugene Litwak's ideas on "family clusters"? [68] of experiments with various forms of family-like communes and communities? of "family-oriented planning"? [69]

Finally, in the reaction against technocratic elitism, is there not a danger of underestimating the importance of dynamic leadership? Will it not be necessary to develop new concepts concerning the role of what Toynbee calls "creative minorities"? How can leadership potentialities be developed on the part of many people now imprisoned within present systems of certification and credentialism?

If these themes and intimations are ever coherently developed, the result could be the replacement of democratic formalism, as embodied in present American institutions, with genuine democracy. But only if the new structure of power were guided by truly human values.

Fundamental Shifts in Values. There is no subject on which it is more difficult to be definitive than the subject of values. And yet there is none more fundamental. This is what Lewis Mumford—and, in different words, hundreds of others—tells us when he writes: "The God who saves us will not descend from the machine; he will arise once more in the human heart. . . . " [70]

According to some, this new God is already arising in the "counter culture of the young" in Consciousness III's "restoration of the nonmaterial elements of man's existence and a new capacity for working and living together." By itself, of course, such a "greening of America"—despite Charles Reich's touching faith—could not break through the concrete, the plastic, and the copper wiring of the professionalized macrosystems and thermonuclear doomsday machines. But without it, any radical restructuring of power would merely illustrate the old adage that the more things change, the more they remain the same.

I see many difficult questions. First of all, how can we avoid meaningless oversimplification in an area of such vast complexity? For example, Erich Fromm's moving discussion of "humanistic planning" carries simplification almost to the point of sloganeering. He uses such terms as "optimal functioning of the human being," "consumption that contributed to activation and discourages 'passivation,' " and "the emergence of new forms of psychospiritual orientation and devotion." [71] One can then turn to Talcott Parsons' pattern variable dichotomies: affectivity-affective neu-

trality; self-orientation-collectivity orientation; universalism-pluralism; ascription-achievement; and specificity-diffuseness.[72] Clearly oriented toward the transition from agriculturalism to industralism, these distinctions have little future applicability. To begin to come to grips with value structures, one must think more in terms of Clyde Kluckhohn's 13 value dichotomies relating to man and nature, man and man, and both man and nature. But at this point, dichotomous thinking is probably an Aristotelian trap. Are there not more than two sides to self-orientation vs. collective orientation (for Kluckhohn, "self-other")? Is there not at least a trichotomy embodied in Kluckhohn's discipline-fulfillment (for Parsons, affectivity-affective neutrality)? [73]

Second, what can any person or group do to bring about fundamental values changes in himself or others? The heritage of past values is very powerful. If this heritage includes norms of truth, goodness, beauty, and justice, it also includes predatory norms that grew stronger, not weaker, under agriculturalism and industrialism. The former tend to be quickly sacrificed or sublimated in deference to the values of domination of others and "conquering" or "mastering" Nature.

How can we move toward values of cooperation instead of mastery? This is not like building new power structures or rationality models. Here, there is much less relevance to strategy and tactics, to preaching or teaching. Are we to assume, with Reich, that more humanistic values (whatever they really are) will arise through some automatic countervailing reaction to the corporate state? or with Maslow that self-fulfillment values will spontaneously emerge as basic survival needs are satisfied? or with Marcuse that new values, including esthetic-erotic liberation, will spring up in the heat of political struggles?

Third, is there not a new role for the concept of human rights? In past periods of societal transformations, deep human desires and needs were set forth first as demands, then as putative rights, and later as legally supported rights. As human values, interests, and aspirations change, must we not see the formulation of new declarations of human rights?

Fourth, can the intimations of stronger humanist values be simply antimaterialist, antitechnological, or antiorganizational and antimanagerial? If this were to happen, the brave torchbearers of the future would be little more than New Luddites. Their fires would be quickly snuffed out. Will not the post-economic values foreseen by Keynes have to be firmly based on sustained satisfaction of material needs? Will not technocratic values have to be replaced by humanist technology? Will it not be necessary to confront directly the "managerial problems of post-industrial man," in contrast to what Elton Mayo called "the human problems of an industrial civilization"? [74] In the new structure of humanist values, must not there be a place for nonbureaucratic managerial values?

A More Rational Rationality. The unquestioned premise of industrialism, both capitalist and socialist, was that scientific rationality—as defined by Galileo, Descartes, Leibniz, Bacon, and their positivistic followers—must be rigorously applied. This has meant the enshrinement of avowedly value-free analysis as the essence of establishment rationality.

Among the most important intimations of post-industrial humanism are mounting pleas for the vigorous reconstruction of rationality. These pleas question the unquestionable. They suggest that traditional scientific methods have become façades for the building of militaristic power and blinders that prevent anything but an increasingly distorted image of the real world.

The strongest attack is on the possibility of value-free decision making. Younger rebels and their older supporters or tutors in the natural sciences, the social sciences, and the professions are increasingly asking for moral commitment. Divorced from morality, they maintain, the search for truth leads to the creation of lies; the amoral becomes immoral. Rationality must be rescued from narrow considerations of mere feasibility and consistency, and must be oriented toward what is truly desirable. This approach recognizes that organized rationality in the form of the sciences and the professions is always the servant of *some* structure of power and *some* set of values. It requires a revival of the tattered

concept of public and common interests—at the price of transcending the small areas of safe verification and replicable demonstration and entering the more dangerous domains of personal commitment and partisan combat.

If this approach is to develop significantly, it must be clearly recognized that many attacks on value-free posturing are like the protestations of the confirmed alcoholic who lectures himself and others on the evil of drink before downing another bottle. The frequent demand that values should be explicitly stated may be little more than a fancy embroidering of the positivistic notion that really rational people—particularly scientists and professionals—cannot be emotionally committed to bringing new values into being. Indeed, the "make values explicit" ploy is merely a restatement in a broader realm of applicability of the old civil service motto of subservience to established norms and legitimated orders. To break with the limitations of narrow positivism, it will be necessary to develop new models of decision making that emphasize:

—strategic rather than merely tactical problems,

—multiple, changing, and mutually modifying purposes and objectives,

—serial choice as a process of learning rather than mere adaptation.

In a recent report for the United Nations, I discussed these possibilities under the rubric of new principles for strategic decision making and used the concept of "responsible" decision making.[75] I would now supplement that discussion by suggesting that the idea of value-free or value-explicit decision making be replaced by a new concept of *value-creating decision making*.

The protest against pure operational analysis as *the* form of scientific rationality takes many forms. Negatively, it has been powerfully expressed in Lewis Mumford's life-long attack on the reductionist tradition in science. In his most recent book, Mumford charges that despite the modern physicists' revolt against mechanistic world conceptions, "the scientific world picture is still under-dimensioned, because at the outset it eliminates the living observer and the long history recorded in his genes and his culture." He then goes on to make the following statement:

> To dismiss the central fact of man's being because it is inner and subjective is to make the hugest subjective falsification possible—one that leaves out the critical half of man's nature. For without that underlying subjective flux, as experienced in floating imagery, dreams, bodily impulses, formative ideas, projectives and symbols, the world that is open to human experience can be neither described or rationally understood. . . .[76]

In more positive terms, an important major move toward a more rational rationality is now developing under the aegis of "policy studies" or "policy analysis" (sometimes flamboyantly referred to under the oversell label "policy sciences"). Yehezkel Dror, John Friedmann, and others, picking up a train of thought started many years ago by Harold Lasswell, have been calling for a major movement in the social sciences from mere behavior process analysis to the direct confrontation of major policy issues. This would involve people from many disciplines, professions, and official positions in the kind of wide-ranging public policy probes that have thus far been developed most fully only in certain narrow problems of economic policy. Attention would be focused, according to Dror, not only on policy problems as they arise at a particular time and place, but also on "megapolicies" (huge, overriding clusters of interrelated problems, such as race relations in America) and "metapolicies" aimed at improving policy-making processes themselves.[77]

A closely associated development is found in the increasing popularity of "systems approaches." These range from systems engineering and computerized management information systems to general systems theories that, in the words of Ludwig von Bertalanffy, "investigate the isomorphy of concepts, laws and models in various fields . . . and promote the unity of science through improving communication among specialists."[78] While the word "system" is the most popular fad word in the modern sciences and the variety of systems approaches is almost infinite, two aspects of some systems approaches merit attention. One is the effort to see systems as something more than the mere sum of their various parts. This effort is based on the prem-

ise, as stated by F. E. Emery in *Systems Thinking,* that "there are Gestalten qualities of living organizations that are unlikely to be revealed by the ordinary modes of scientific analysis." [79] The second is the thought, wryly expressed by Russell Ackoff, that "we must stop acting as though nature were organized into disciplines in the same way that universities are." [80] Both of these aspects of systems thinking, naturally, are of particular importance to those concerned with policy studies —simple, mega-, or meta-. Indeed, Dror has been a persistent exponent of holistic and inter- or trans-disciplinary approaches.

Here too some warnings are in order. Many recent ventures into policy studies, including most of Dror's up to this moment, is little more than old-style analysis of policy *processes* almost totally divorced from policy *substance*. Many calls for holistic and interdisciplinary approaches come from systems analysts who are themselves resolutely committed to the use of certain fixed, disciplinary tools and to the suboptimizing examination of small, deanimated slices of human and social systems. To avoid such patterns of behavior, it might be helpful to dramatize rather than understate the break that is needed with old traditions of disciplinary analysis. One way to do this might be to develop the concept of *systems synthesis*. To counterbalance the hordes of systems analysts (soon to be followed by policy analysts), we might thus begin to think of *systems synthesists* and *policy synthesists*.

Many profound and difficult questions confront those brave souls who are already daring to grapple with systems synthesis. One of the first: "Will it not be necessary to develop total resource system models?" Some systems models are entirely nonhuman, dealing either with machines or ecology in a purely physical sense. Others are entirely human and psychological. "There are advantages, however," as Eric Trist has pointed out, "in regarding and operating in organization (or larger system) as a *total resource system.*" [81] Others, including Alfred W. Jones, a humanist operations researcher, talk about man-extension, or people-nature systems. From this point of view it is no longer essential to cut up the world into a political system, an economy, a cultural system, etc. Rather, it becomes possible to see—and try to cope with—the political, economic, and cultural aspects of *any* system. Within such a framework, it would be easier to conceptualize the kinds of qualitative and quantitative societal indicators that would provide meaningful information on the changing performance, structure, and environment of any subsystem of society.

Another question: "What about system dynamics?" The more we explore complex systems, the greater is the tendency to get caught in the "holistic trap" of presuming stable, homeostatic systems. Yet systems come into being, grow, decay, and are assimilated or destroyed. During the industrial period the great theories of systemic change were those of the evolutionists and the Marxists. The former has been taken up gingerly by the cultural evolutionists. The latter—as Alvin Gouldner has trenchantly pointed out—has been largely neglected, particularly in countries where Marxism is an established doctrine. Such historical philosophers as Spengler and Toynbee have concentrated almost entirely on processes of decline and destruction. If we are to enter into a healthy period of regeneration and growth, would not a creative synthesis in this field be immensely helpful? If such a synthesis is to be developed, it will have to lean heavily, in my judgment, on Dror's profound critique of Charles E. Lindblom's "disjointed incrementalism." [82] While Lindblom's perceptive description helps illuminate how things usually happen under relatively stable circumstances, do we not also need a neo-Hegelian normative theory of planning as a jointed series of small steps that lead to structural transformations—in short, a theory of "jointed incrementalism"? [83]

These two questions lead unmistakably to a third: "Do we not need a revival of political philosophy?" From the early Greeks onward for many centuries, the quest for the best form of polity was one of the major preoccupations of the greatest minds of many generations. In the 20th century these creative thrusts have almost entirely disappeared from the scene. Do we not need a

major rebirth, taking full advantage of the knowledge gained by thousands of empiricists, of that form of political theory described by Sheldon Wolin as "an imaginative undertaking, with its full share of speculation, playfulness, proclivity to error, and its ability to imagine worlds as yet undreamed of . . .?" [84]

It must be recognized, however, that some political theory of this type might—in reaction to the stand-pat pluralism of established political science during the past two decades—develop into a monistic vision. If so, it would help rationalize tendencies toward techno-urban facism. The humanist alternative, in my judgment, would be a radical pluralism that clearly recognizes the diversity of individual and group values and interests.

Each of the above three questions, unfortunately, tends to suggest the supremacy of calculational rationality, the special province of certified elites. Humanistic development along all three lines might too easily help maintain the technocratic stance of regarding as rational those and only those actions that result from deliberate, articulated processes of decision making and choice. To do so would continue to elevate the role of those with conspicuous methodologies of formal calculation: the scientists and the professionals. It would continue to depreciate the significance of ordinary people's wisdom, judgment, skill, and art, of the deep rationality that may be grounded in emotions and instincts, and of the subliminal intuitive responses that are often the only rational way of handling situations that, in Chester Barnard's phrase, "cannot bear the weight of ponderous logic." It could not only continue to deny the true nature of scientific inquiry, largely based on what Michael Polanyi calls "tacit knowledge," but also serve to deepen the chasm between laymen and experts, the less educated and the more educated, the underclasses who are programmed and the new classes that rule the computer programs.

A major effort will therefore be needed to develop an *action concept of rationality,* whereby the rationality or irrationality of any action will be judged on its substantive merits rather than by the explicit calculational processes on which it may have been partly based. This is what Karl Mannheim meant by "substantial rationality" in contrast with "functional rationality." It was also intimated by Max Weber in his distinction between "substantive rationality" and "formal rationality."

Experience suggests, however, that such intimations will never be fully developed unless deliberate action is taken to demystify the sacred realms of the sciences and the professions This requires turning some of the instruments of explicit observation and calculation upon the observers and calculators themselves. Many young scientists have already started this process by beginning to examine—and publicize—the internal politics of the so-called "republic of science," its formal pressure groups, informal control networks, and frantic searches for new rationales to legitimate expanding budgetary claims. Many young lawyers have begun to bring the Bar before the bar of public opinion, many young physicians to lay the medical professions out out on the operating table. These operations, of course, should be undertaken to help the patient, not injure him. An exciting example is offered by a veteran sociologist, Alvin Gouldner, in *The Coming Crisis of Western Sociology*. Gouldner calls for a "reflexive sociology" that seeks "a transformation of the sociologist's self and of his praxis in the world." [85] Similar approaches are needed to help all the sciences and the professions attain that higher measure of maturity and responsibility that is possible only by stripping them of false pretensions, thereby contributing to the restoration of dignity and respect for those not admitted to the sacred arcana. Among the ancient Hebrews not even the high priests could look upon the face of God. Let us cleanse the temple of science by purging scientists, and all of us, of the delusion that only they can see the truth.

Above all, in an era of social revolution it would be irrational to expect too much of the True, the Good, or the Beautiful to be handed down to us from the past. Without discarding humankind's vast heritage, we must see truth as something to be striven and fought for, goodness and beauty as what we may possibly create for ourselves and others.

This implies that genuine human rationality is essentially a process of learning and that any learning process involves not only the acquisition of knowledge and skills but also the development of new values and interests. In this sense, if we are to escape the icy grip of technocratic planning, we must develop a humanist style of *learning through planning* and a theory of planning as widespread *social learning*. This is what we must learn if we are to escape the new superhighways to post-industrial serfdom and begin to release the vast potentials for humanist reconstruction.

The Post-Service Society: Civilization?

If societal change has been accelerating so rapidly, how long might it take for the service society to mature? And, above all, what might be the nature of a post-service society?

Within service occupations the beginnings of a major shift to a mature service society can already be detected. The proportion of people employed in the more tangible services—trade and transportation—has either remained stable or has fallen sharply. Large increases are already taking place in the proportion of employment in such less tangible services as government, health, education, and recreation. Thus, with the maturation of the service society, the tangible services involving the movement of things or people are going the way of manufacturing: greater output is being provided by less people. The shift of employment is toward services involving the movement, processing, and storage of information. Within this field, in turn, the more routinized information services are already on the road to becoming mechanized. Thus a mature service society would become one in which the long historic shift from hunting and gathering to agriculture and industry would culminate with the bulk of the employed population involved in nonroutinized informational activities.

Here we have a clue to the hazy outlines of a post-service society. An occupational shift toward employment in nonroutinized informational services will inevitably destroy all the older concepts of occupation itself. The old boundaries between work and education will be obliterated, with organized and unorganized learning a continuing part of all human activity. The dividing lines between work and leisure will also crumble, with lots of fun and recreation on the job and a growing proportion of unpaid work. Instead of being a painful burden (or a punishment for Original Sin), work could be transformed into a source of joy and a reward for virtue. In a still larger sense, the concept of work would fade into the background as new ways are developed to conceptualize the great variety of humankind's activities. This means, of course, the obliteration of the occupation-oriented concepts of societal change, the ending of a long historical sequence, and the opening up of entirely new perspectives. One of these perspectives would be the deceleration of rapid change as we have known it in the past, a rounding off of the exponential growth curves in population, energy conversion, technology, and marketed output.

Any such transition will involve crises far more disturbing than anything we have yet seen in the days of the early service society. Even if in the interim we move toward post-industrial humanism, the crises of the service society will inevitably deepen. The reshaping of power, values, and rationality will mean personal and institutional changes far deeper and far more tradition-shattering than those brought on by the agricultural, industrial, or post-industrial revolutions. The accommodation of human aspirations to a slowdown in change—after two generations have been bred to accept future shock as normal—may itself become the greatest change of all.

In the meantime the survival crisis, instead of merely looming in the background, will probably emerge sooner or later as a clear and present eventuality. If this comes in the form of large-scale nuclear war, the long drama is over. If it comes, as I would predict, in the form of a partial holocaust through the accidental tripping off of a few nuclear explosions or a few bacterialogical effusions, the shock could shake up old institutional structures and provide unprecedented opportunities for widespread social learning and

creative leadership. In my judgment, such a shock, regrettably, would probably be a necessary condition for societal and world reconstruction. But it would be far from a sufficient condition.

In the long course of human history, the idea of "civilization" has always rested upon some distinction between the more advanced and the less advanced. This distinction has usually been made by looking backward. Thus the *philosophes* of the French Enlightenment regarded themselves as civilized in contrast with their more feudal forebears. The leaders of empires—both agricultural and industrial—felt that they were spreading civilization as their armed forces achieved hegemony over those whom they described as barbarians, savages, and primitive tribes. Yet if truly moral instead of purely technological standards are used, the picture looks somewhat different. Indeed, we find no other animal species that has been as savagely destructive as humankind. In moral terms, civilization is something that has not yet existed. As an aftermath of the service society and the almost inevitable nuclear or bacteriological shocks, might humankind perhaps build the first civilized human society?

Notes

1. Bertram M. Gross, "The Great Vista: Nation Planning Research," *Social Sciences Information* (June 1965), p. 7.
2. The National Planning Series, Syracuse University Press. The "developing" countries covered in these volumes were Venezuela, Morocco-Tunisia, Tanganyika, and Mexico; the "developed" countries were Italy, Great Britain, West Germany, and Israel.
3. "Activating National Plans," in Bertram M. Gross (ed.), *Action Under Planning,* (New York: McGraw Hill, 1967); *Social Intelligence for America's Future* (Boston: Allyn and Bacon, 1960); and *The State of the Nation: Social Systems Accounting* (London: Tavistock, 1966), also appears as Chapter III in Raymond A. Bauer (ed.), *Social Indicators* (Boston: M.I.T. Press, 1966).
4. Bertram M. Gross, "National Planning: Findings and Fallacies," PUBLIC ADMINISTRATION REVIEW (December, 1965). This article summarizes empirical research on national planning through the following analytic-descriptive (but not prescriptive) generalizations: (1) the perception of imminent crisis is usually a necessary (although not sufficient) condition for the emergence of national planning; (2) national planning, while an alternative to unplanned market competition, is itself a form of structured competition; (3) established plans are often a serious obstacle to planning; (4) planning for resource acquisition tends to take precedence over planning for resource utilization, particularly in the earlier phases; (5) long-range planning has proved valuable mainly as a guide to *current* action; (6) entirely apart from their technical contributions, economics and econometrics play important *social* roles in planning; and (7) to the extent that it actually affects economic behavior, national planning involves the guidance of many changes in the structure and performance of social systems.
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11. Arnold J. Toynbee, *A Study of History,* abridgment by D. C. Somervell (New York: Oxford University Press, 1947), pp. 168-169.
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13. White, *op. cit.*, pp. 281-302.
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17. *Ibid.*, p. 27.
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THE PROGRESSIVES AND THE PLANNERS

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THE CONTEMPORARY PLANNING MODEL, whether it is the planned economy or the welfare state or the expectant society, is a product mainly of the 1930's and 1940's. Admittedly, the origins of planning are embedded more deeply in world history. Some of its most dramatic examples are found in ancient China, pre-Columbian America, and modern Cameralist Europe. The U.S.A. alone can trace its history of planning to the constitutional period of political planning and the Hamiltonian industrial development economics of the late 1700's and to John Quincy Adams' public domain and internal improvement plans of the early 1800's. The more intensive natural resource planning of the later 1800's which culminated in the American conservation movement in the early 1900's was presided over by Theodore Roosevelt. However, as a comprehensive system for mobilizing a nation's natural and human resources toward preconceived goals, contemporary planning budded in Soviet Russia in the 1920's, flowered in New Deal America in the 1930's (purists might prefer to say "floundered," but that would be pejorative), and fruited in Western Europe in the 1940's, sending out sprouts throughout a planning-minded and developmentally oriented world, especially in Asia, Africa, and Latin America, in the 1950's and 1960's. There were earlier distinctive illustrations of contemporary planning, as in Australasia and Scandinavia, but when the first international survey of this planned planet of ours is undertaken by the PUBLIC ADMINISTRATION REVIEW a decade

The Progressive origins of the New Deal generally, but less so of New Deal planning, is the subject of a considerable literature highlighted by Richard Hofstadter's *The Age of Reform, From Bryant to FDR* (New York: Alfred A. Knopf, 1955). The interpretation presented in this article is based upon the author's forthcoming work on the New Deal as the "Planning Decade," the research for which was carried on under a grant from Resources for the Future, Inc.