CHAPTER ONE

THE REVOLUTION WE ARE IN

Revolution, *a total or radical change of circumstances or of system.*

Crisis, *a serious or decisive state of things, or the point of time when an affair must soon terminate or suffer a material change, a turning point, a critical juncture.*

WEBSTER'S UNIVERSAL DICTIONARY, 1936

The presence, if not prevalence, of crises is normal in most societies. Ours is not an exception. It does not follow, however, that our society must decline and face doom. Decline and doom are not inevitable; they can be avoided, but they may not be. Survival is not inevitable either.

Like Rome most earlier societies that rose subsequently fell, at least partway. Not too long ago Spain was the richest and most powerful nation on earth. Later both France and England won and lost this distinctive position. Before Spain's dominance Syria, Egypt, Greece, and many other societies traveled through history like shooting stars, appearing on one horizon and disappearing on the other. Survival—let alone "thrival"—of a society is not assured by any historical law. If anything, history seems to indicate that the fall of an elevated society is inevitable. But the future is not completely contained in the past; much of it has yet to be written.

Some think it is too late to do anything about the future. For example, Jacques Ellul, the French religious mystic, argues that our social order is determined by its technology, that this technology is changing in a self-determined way, and, therefore, that society is no longer controlled by man. As the eminent Dutch historian of science and technology, R. J. Forbes, put it: "Ellul seems to endow *La Technique* [the technological order] not only with anthropomorphic but with demonological attributes."

Most of us react to Ellul's thesis as Forbes did: "Technology does *not* have such internal dynamism and is wholly incapable of setting its own rules on the basis of its own logic within a completely closed circle." However, even if we maintain that technology is still susceptible to our control, it does not follow that we are controlling it. Alvin Toffler, in his widely read *Future Shock*, observed: "The horrifying truth is that, so far as technology is concerned, no one is in charge." It may not be controlling us, but we certainly are not controlling it.

If we are to design the future and improve the quality of life, we must determine how the state of our affairs differs from that of earlier societies. Because of an increasing rate of technological change, social and environmental crises are generated and come to a head more rapidly today than at any previous time. Therefore, they require societal responses that are quicker and surer than were required in the past. But our society does not provide them. Its structure and functioning does not facilitate rapid response. Its lack of responsiveness to crises generates discontent among a growing number of its members, discontent that manifests itself in disruptive protest, civil disobedience, or alienation from society. Our society responds more rapidly to disruptions than it does to the crises that produce them, and it often does so with repressive measures. These, in turn, stimulate further protest and disobedience. The cycle—protest, repression, protest—either intensifies or dissipates in indifference. Either outcome leads to social disintegration. Consider this cycle in more detail.

"The rate of social and technological change is greater today than it has been at any time in the past." This much-repeated statement is true but it does not differentiate our moment in history from others; it has been equally true at most times in the past. What does differentiate our time from previous ones is a qualitative change brought about by the rate of change we have achieved. Sir Charles P. Snow identified it in his famous lecture on *The Two Cultures:* "During all human history until this century, the rate of social change has been very slow. So slow, that it could pass unnoticed in one person's lifetime. That is no longer so. The rate of change has increased so much that our imagination can't keep up." Sir Goeffrey Vickers, the eminent British social philosopher, put it another way: "The rate of change increases at an accelerating speed, with a corresponding acceleration in the rate at

which further responses can be made; and this brings us nearer the threshold beyond which control is lost."

Accelerating technological change is widely recognized. It is the principal theme of Alvin Toffler's *Future Shock*. Toffler's central thesis is that our society's inability to adapt to the increasing rate of change—not to its content or direction—is the most critical problem of our times.

In my lifetime there has been a greater increase in the speed of travel than there was in all of history up to my birth. The rates at which information can be communicated, energy can be generated, and products can be manufactured have gone through similar accelerating increases. Such changes mean that in your lifetime and mine society has had to face larger changes than civilization as a whole has had to face from its inception up to our births. And the rate of change continues to accelerate.

Technological change has produced more wealth and affluence, more consumption, more education, more communication, and more travel in our century than was produced in all preceding centuries. It has also changed society in fundamental ways and produced such crises as are examined in Part II of this book. Society does not yet know how to respond rapidly and effectively to these crises and it may not learn how to do so in time. Therefore, there is an urgent need to change our society in ways that increase its ability to learn and adapt.

Increases in the rate of change of technology have decreased the effectiveness of experience as a teacher. It is too slow. Trial and error require more time than is currently available between changes that require response. The lag between stimulus and response brought about by reliance on experience permits crises to develop to a point at which we are forced to respond to them with little relevant knowledge. An increasing portion of society's responses are made out of desperation, not out of deliberation. Antipoverty, antidiscrimination, anticrime, and antinarcotics measures recently taken in the United States are examples.

Donald Schon, an American authority on innovation, reflecting on our decreasing ability to solve social problems, observed: "The times required for diagnosis, for design of demonstration, or for extension to the next instance, are long enough . . . to include changes which invalidate conclusions once they are reached."

Because of the rapid and extensive distribution of news that has been made possible by advances in communication technology, the world is approaching what Marshall McCluhan called a "global village." In this village public issues and pressures build up rapidly, requiring governments to respond more quickly than they ever have in the past.

Furthermore, the highly developed societies of today are the first dominantly urban societies in history. Most of their members live in

environments that are more man-made than natural. Mismanagement of these "artificial" environments has significantly increased the rate of deterioration of the natural environment. The life-supporting capabilities of the natural environment are being reduced at an increasing rate.

But contemporary man is not restricted to use of slow means of self-destruction. He has the ability to eliminate most, if not all, of his species with one fell swoop. The destructive forces that he commands can virtually remove a possibility always previously available to society, that of making a comeback. The possibility of complete self-destruction has deep psychological effects on all of us, but particularly on the young who were born and bred in the presence of the specter it produces. These effects include widespread indifference to, alienation from, and hostility toward our society. Little wonder that George Wald, professor of biology at Harvard University and a Nobel Prize winner, believes that what is bothering students is that they are by no means sure they have a future.

Because the new instruments of destruction are so complex and expensive they are completely in the hands of a few governments. This enables these governments to prevent their being forcefully overthrown by any group in society other than the military. The possibility of popular political revolution has been virtually eliminated in many countries. Therefore, today's malcontents are restricted to disobedience, protest, harassment, and disruption. As a result, the methods of societal obstruction have been developed to a fine art. The larger, more affluent, and more complex a society the harder it is to overthrow its government, but the easier it is to disrupt. In poorly developed societies, for example, it is difficult to disrupt communication and transportation. Witness the efforts of the United States to do so in North Viet Nam. Not so in well-developed countries in which a few well-placed bombs, aircraft hijackings, and kidnappings can create widespread inconveniences and require costly and time-consuming countermeasures.

New tactics of protest have made it possible for a little activity by a few to have a large effect on many. According to Alvin Toffler: "As interdependency grows, smaller and smaller groups within society achieve greater and greater power for disruption. However, as the rate of change speeds up, the length of time in which they can be ignored shrinks to near nothingness."

Concentration of power in the hands of an unresponsive or ineffective government fertilizes the seeds of civil discontent and disobedience. Such disobedience, in turn, usually evokes repressive measures by government, which stimulates more discontent. The result is an increase in law and a decrease in order.

In the past it was possible for those who were dissatisfied with their society to go to an unsettled area and start a new one. Today, however, our planet is so occupied and organized as to make such escape impossible. There

are no unclaimed lands. New societies can only be formed within old ones and even this has become more difficult. The effect of this inability "to get away from it all" is reflected in a statement by one of the characters in George C. Chesbro's story, "Short Circuit":

> Men have lost a very special kind of freedom. . .and it can never be replaced. That freedom was the ability to go places no man had ever been, and see things no one else had. It was the freedom to *leave* a certain kind of life and know there was something else, something different. There was room to escape. . .
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> Freedom, real freedom, requires *room* to exercise it in. There isn't any more room. It's all been used up. And some of us are dying because of it.

Now, more than ever before, those who want to try new societal structures and functions are locked into societies that resist even minor change. Emigration, where permitted, makes escape possible but not the creation of a new society. Large-scale social experimentation is almost impossible.

On the other hand, no previous age has ever been as well equipped as ours is to deal with its problems. Whether we use these capabilities on the right problems in the right way is still a matter of social choice, but that choice will have to be made soon because the opportunity to make it diminishes with the passage of time.

Almost every aspect of our society appears to be in the state of crisis and to be undergoing revolutionary change. The 1967 National Conference on Public Administration identified five contemporary revolutions: the social, the technological, the political, the economic, and the administrative. One can add the revolution of the young, the sexual revolution, the colonial revolution, the educational revolution, the urban revolution, and many others.

The revolutions through which our society is going are not independent of one another. They reflect some very basic cultural changes: interrelated changes in man, his environment, and how and what he thinks about both. Although we give a great deal of attention to changes in the state and behavior of man, we tend to neglect changes in the way he views and thinks about these changes. Changes of our point of view and way of thinking not only give rise to new interpretations of what is happening but also to new ideas as to what can be done about it.

A person's ability to manage his or his society's affairs depends more on his understanding of, and attitudes toward, the world that contains him than on his problem-solving methods. Put another way, his success depends more on his view of the world and the philosophy he lives by than it does on his science and technology. The reasons for this are neither complex nor obscure.

Successful problem solving requires finding the right solution to the right problem. We fail more often because we solve the wrong problem than because we get the wrong solution to the right problem. The present worldwide concern with readjusting personal and social priorities reflects a greater and more pervasive concern with the problems we have failed to face than with those we have faced unsuccessfully.

The problems we select for solution and the way we formulate them depends more on our philosophy and world view than on our science and technology. How we go about solving them obviously depends on our science and technology, but our ability to use them effectively also depends on our philosophy and world view. These, in turn, depend on the concepts and ideas we use and how we use them to organize our perceptions of the world. Fundamental changes in these organizing concepts and ideas and the way they are used move societies from one age to another.

I believe, and will try to show, that our society is now in the early stages of a change of age that results from a radical change in our point of view, our way of thinking, and the kind of technology they are producing. We are going through an intellectual revolution that is as fundamental as that which occurred in the Renaissance. The Renaissance ushered in the Machine Age which produced the Industrial Revolution. The currently emerging intellectual revolution is bringing with it a new era that can be called the *Systems Age* which is producing the *Postindustrial Revolution*. I believe these changes give rise to most of the crises we face and simultaneously offer whatever hope there is for dealing with them effectively.

In the remainder of this chapter I described the new point of view and way of thinking that are emerging and bringing the Systems Age with them. In the following three chapters I try to show how this way of thinking raises three very general "organizing problems" of which the many problems and crises that confront us are manifestations. In the remaining chapters I try to show how the systems point of view and way of thinking can be applied to these problems and crises so as to develop more effective ways of dealing with them.

THE MACHINE AGE

Machine Age thinking was *analytical* and based on the doctrines of *reductionism* and *mechanism*.

Reductionism is a doctrine that maintains that all objects and events, their properties, and our experience and knowledge of them are made up of ultimate elements, indivisible parts. For example, the physical sciences, which ruled the scientific roost during the Machine Age, maintained that everything

was ultimately made up of indivisible particles of matter called *atoms*. Although the concept of the atom is generally believed to have been first suggested by the ancient Greek philosopher Democritus (about 420 B.C.), it languished for almost two thousand years. It was revived in the Renaissance by such important thinkers as Bruno, Francis Bacon, Descartes, and Newton; but it was revived as a philophical rather than a scientific idea. It did not emerge as an important scientific concept until the latter part of the eighteenth century. Since then the concept of the atom, which no one has ever observed directly, has undergone progressive development; for example, it was later taken to be made up of particles of energy. But it remained the ultimate particle of matter. Today some believe the atom itself has parts called "quarks" or "partons," but they do not deny the existence of some kind of ultimate particle of matter.

Atoms were taken to possess energy, and energy was conceived as the power of doing work. Work, in turn, was defined as the production of an effect on matter; for example, moving or transforming it.

Chemists reduced the different kinds of matter to different kinds of elementary substances. Biologists accepted the cell as the ultimate element of life. Liebniz (1646–1716), a major German philosopher and mathematician, postulated the existence of psychic elements, *monads*. John Locke (1632–1704), an equally distinguished British philosopher and prepsychologist, argued for the existence of ultimately simple elements of experience and knowledge, "simple ideas." Much later Sigmund Freud, the founder of psychoanalysis, reduced personality to the interaction between three ultimate elements: the *id*, *ego*, and *superego*. In addition, he and most psychologists postulated the existence of such indivisible elements of psychic energy as instincts, drives, motives, and needs.

Every science sought ultimate elements. But these elements were ranked in order of complexity. Because it was believed that what we experience directly are physical things and their properties, ultimate reality was taken to be physical. Therefore, physics was considered to be the basic experiential science. Even the basic concepts used in other sciences were taken to be derivable from those used in physics. Chemistry was taken to be based on physics, biology on chemistry, psychology on biology, and the social sciences on psychology. These dependencies were believed to be one-directional. Nature was believed to be organized hierarchically as science was.

Analytical thinking is a natural complement to the doctrine of reductionism. It is the mental process by which anything to be explained, hence understood, is broken down into its parts. Explanations of the behavior and properties of wholes were extracted from explanations of the behavior and properties of their parts. The temperature of a body, for example, was explained as a function of the velocity of the particles of matter of which it