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Beyond Left & Right

Radical Thought for Our Times

Edited and with an Introduction by
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AFTER CIVILIZATION, WHAT?

by KENNETH E. BOULDING

WE are living in what I call the second great change in the state of man. The first is the change from pre-civilized to civilized societies. The first five hundred thousand years or so of man's existence on earth were relatively uneventful. Compared with his present condition, he puttered along in an astonishingly stationary state. There may have been changes in language and culture which are not reflected in the artifacts, but if there were, these changes are lost to us. The evidence of the artifacts, however, is conclusive. Whatever changes they were, they were almost unbelievably slow. About ten thousand years ago, we begin to perceive an acceleration in the rate of change. This becomes very noticeable five thousand years ago with the development of the first civilization. The details of this first great change are probably beyond our recovery. However, we do know that it depended on two phenomena: the development of agriculture and the development of exploitation. Agriculture, that is the domestication of crops and livestock and the planting of crops in fields, gave man a secure surplus of food from the food producer. In a hunting and fishing economy it seems to take the food producer all his time to produce enough food for himself and his family. The moment we have agriculture, with its superior productivity of this form of employment of human resources, the food producer can produce more food than he and his family can eat. In some societies in these happy conditions, the food producer has simply relaxed and indulged himself with leisure. As soon, however, as we get politics, that is exploitation, we begin to get cities and civilization. Civilization, it is clear from

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the origin of the word, is what happens in cities, and the city is dependent (in its early stages, at any rate) on the existence of a food surplus from the food producer and some organization which can take it away from him. With this food surplus, the political organization feeds kings, priests, armies, architects, and builders, and the city comes into being. Political science in its earliest form is the knowledge of how to take the food surplus away from the food producer without giving him very much in return.

Now I argue that we are in the middle of the second great change in the state of man, which is as drastic and as dramatic, and certainly as large as, if not larger than, the change from pre-civilized to civilized society. This I call the change from civilization to post-civilization. It is a strange irony that just at the moment when civilization has almost completed the conquest of pre-civilized societies, post-civilization has been treading heavily upon its heels. The student of civilization may soon find himself in the unfortunate position of the anthropologist who studies pre-civilized societies. Both are like the student of ice on a hot day—the subject matter melts away almost before he can study it.

These great changes can be thought of as a change of gear in the evolutionary process, resulting in progressive acceleration of the rate of evolutionary change. Even before the appearance of man on the earth, we can detect earlier evolutionary gear-shiftings. The formation of life obviously represented one such transition, the movement from the water to the land another, the development of the vertebrates another, and so on. Man himself represents a very large acceleration of the evolutionary process. Whether he evolved from pre-existing forms or landed from a space ship and was not able to get back to where he came from, is immaterial. Once he had arrived on earth, the process of evolution could go on within the confines of the human nervous system at a greatly accelerated rate. The human mind is an enormous mutation-selection process. Instead of mutation-selection process being confined, as it were, to the flesh, it can take place within the image, and hence, very rapid changes are possible. Man seems to have been pretty slow to exploit this potentiality, but one suspects that even with primitive man, the rate of change

in the biosphere was much larger than it had been before, because of the appearance of what Teilhard de Chardin calls the noosphere, or sphere of knowledge.

Civilization represents a further acceleration of the rate of change, mainly because one of the main products of civilization is history. With the food surplus from agriculture it became possible to feed specialized scribes. With the development of writing, man did not have to depend on the uncertain memories of the aged for his records, and a great process of accumulation of social knowledge began. The past could now communicate, at least in one direction, with the present, and this enormously increased the range and possibility of enlargements of the contents of the human mind.

Out of civilization, however, comes science, which is a superior way of organizing the evolution of knowledge. We trace the first beginnings of science, of course, almost as far back as the beginning of civilization itself. Beginning about 1650, however, we begin to see the organization of science into a community of knowledge, and this leads again to an enormous acceleration of the rate of change. The world of 1650 is more remote to us than the world of ancient Egypt or Samaria would have been to the man of 1650. Already in the United States and Western Europe, in a smaller degree in Russia and in some other parts of the world, we see the beginnings of post-civilized society—a state of man as different from civilization as civilization is from savagery. What we really mean, therefore, by the anemic term “economic development” is the second great transition in the state of man. It is the movement from civilized to post-civilized society. It is nothing short of a major revolution in the human condition, and it does not represent a mere continuance and development of the old patterns of civilization.

As a dramatic illustration of the magnitude of the change, we can contemplate Indonesia. This is a country which has about the same extent, population and per capita income as the Roman Empire at its height. For all I know it is producing a literature and an art at least comparable to that of the Augustan age. It is, therefore, a very good example of a country of high civilization. Because of this fact, it is one of the poorest countries in the world. It is desperately anxious to break out of

its present condition. Jakarta is a city about the size of ancient Rome, though perhaps a little less splendid. All this points up the fact that the Roman Empire was a desperately poor and under-developed society. The Roman cities seem to have been always about three weeks away from starvation, and even at its height it is doubtful whether the Roman Empire ever had less than seventy-five to eighty per cent of its population in agriculture.

Civilization, that is, is a state of society in which techniques are so poor that it takes about eighty per cent of the population to feed the hundred per cent. But we do have about twenty per cent of the people who can be spared from food-producing to build Parthenons and cathedrals, to write literature and poetry, and fight wars. By contrast, in the United States today we are rapidly getting to the point where we can produce all our food with only ten per cent of the population and still have large agricultural surpluses. But for the blessings of agricultural policy, we might soon be able to produce all our food with five per cent of the population. It may even be that agriculture is on its way out altogether and that within another generation or so we will produce our food in a totally different way. Perhaps both fields and cows are merely relics of civilization, the vestiges of a vanishing age. This means, however, that even in our society, which is at a very early stage of post-civilization, we can now spare about ninety per cent of the people to produce bathtubs, automobiles, H-bombs and all the other conveniences of life. Western Europe and Japan are coming along behind the United States very fast. The Russians, likewise, are advancing toward post-civilization, although by a very different road. At the moment their ideology is a handicap to them in some places—especially in agriculture, which still occupies forty-five per cent of the people. And, if the Russians ever discover that super-peasants are a good deal more efficient than collective farms, they may cut away some of the ideology that hangs around their neck and move even more rapidly toward post-civilized society.

I'm not at all sure what post-civilization will look like but it will certainly be a world-wide society. Until very recently, each civilized society was a little island in a sea of barbarism which constantly threatened to overwhelm it. Civilization is

haunted by the spectre of decline and fall, though it is noteworthy that in spite of the rise and fall of particular civilizations, civilization itself expanded steadily in geographical coverage, from its very beginnings. We must face the fact, however, that post-civilized society will be world-wide, if only because of its ease of communication and transportation. I flew last year from Idlewild to Brussels, and on glimpsing the new Brussels Airport out of the corner of my eye, I thought for a moment that we had come back and landed at Idlewild again.

The characteristic institutions of civilization are, as we have seen, first agriculture, then the city, then war, in the sense of clash of organized armed forces, and finally, inequality, the sharp contrast between the rich and the poor, between the city and the country, between the urbane and the rustic. The state is based very fundamentally on violence and exploitation, and the culture tends to be spiritually monolithic.

In post-civilization all these institutions suffer radical change. Agriculture, as we have seen, diminishes until it is a small proportion of the society; the city, likewise, in the classical sense, disintegrates. Los Angeles is perhaps the first example of the post-civilization, post-urban agglomeration—under no stretch of the imagination could it be called a city. War, likewise, is an institution in process of disintegration. National defense as a social system has quite fundamentally broken down on a world scale. The ICBM and the nuclear warhead have made the nation-state as militarily obsolete as the city-state, for in no country now can the armed forces preserve an area of internal peace by pushing violence to the outskirts. Poverty and inequality, likewise, are tending to disappear, at least on their traditional scale. In civilized societies the king or the emperor could live in a Versailles and the peasant in a hovel. In post-civilized society, it is almost impossible for the rich to consume on a scale which is more, let us say, than ten times that of the poor. There is no sense in having more than ten automobiles!

Another profound change in the passage from civilization to post-civilization is the change in the expectation of life. In civilized society, birth and death rates tend to be about forty per thousand and the expectation of life at birth is twenty-five years. In post-civilized society, the expectation of life at birth

rises at least to seventy and perhaps beyond. It may be that we are on the edge of a biological revolution, just as dramatic and far-reaching as the discovery of atomic energy and that we may crack the problem of aging and prolong human life much beyond its present span. Whether or not, however, we go forward to Methuselah, the mere increase of the average age of death to seventy is a startling and far-reaching change. It means, for instance, that in an equilibrium population, the birth and death rate cannot be more than about fourteen per thousand. This unquestionably implies some form of conscious control of births. It means also that a much larger proportion of the population will be in later years.

It is perfectly possible to paint an anti-utopia in which a post-civilized society appears as universally vulgar or dull. On the whole, however, I welcome post-civilization and I have really very little affection for civilization. In most pre-civilized societies the fact that the life of man is for the most part nasty, brutish and short, does not prevent the poets and philosophers from sentimentalizing the noble savage. Similarly, we may expect the same kind of sentimentalizing of the noble Romans and civilized survivals like Winston Churchill. On the whole, though, I will not shed any tears over the grave of civilization any more than I will over pre-civilized society. The credit balance of post-civilization is large. It at least gives us a chance of a modest utopia, in which slavery, poverty, exploitation, gross inequality, war and disease—these prime costs of civilization—will fall to the vanishing point.

What we have at the moment is a chance to make a transition to this modest utopia—a chance which is probably unique in the history of this planet. If we fail, the chance will probably not be repeated in this part of the universe. Whatever experiments may be going on elsewhere, the present moment indeed is unique in the whole four billion years of the history of the planet. In my more pessimistic moments, I think the chance is a slim one, and it may be that man will be written off as an unsuccessful experiment. We must look at the traps which lie along the path of the transition, which might prevent us from making it altogether.

The most urgent trap is, of course, the trap of war. War, as

I have suggested, is an institution peculiarly characteristic of civilization. Pre-civilized societies have sporadic feuding and raiding, but they do not generally have permanent organized armed forces, and they do not generally develop conquest and empire; or if they do, they soon pass into a civilized form. An armed force is essentially a mobile city designed to throw things at another mobile or stationary city with presumably evil intent. As far as I know, not more than two or three civilizations have existed without war. The Mayans and the people of Mohenjodaro seem to have lived for fairly long periods without war, but this was an accident of their monopolistic situation and they unquestionably occupied themselves with other kinds of foolishness. If pre-civilized society, however, cannot afford war, post-civilized society can afford far too much of it, and hence will be forced to get rid of the institution because it is simply inappropriate to the technological age. The breakdown in the world social system of national defense really dates from about 1949, when the United States lost its monopoly of nuclear weapons. A system of national defense is only feasible if each nation is stronger at home than its enemies, so that it can preserve a relatively large area of peace within its critical boundaries. Such a system is only possible, however, if the range of the deadly missile is short and if the armed forces of each nation lose power rapidly as they move away from home. The technological developments of the twentieth century have destroyed these foundations of national defense, and have replaced it with another social system altogether, which is "deterrence."

"Deterrence" is a social system with properties very different from that of national defense, which it replaced. Under national defense, for instance, it is possible to use the armed forces; under "deterrence" is it not—that is, if the deterring forces are ever used, the system will have broken down. We live in a society with a positive possibility of irretrievable disaster—a probability which grows every year. Herman Kahn recently said: "All we are doing is buying time, and we are doing nothing with the time that we buy." The armed forces of the world are caught in a technological process which not only destroys their own function, but threatens all of us. Even if a few of us do crawl out of the fallout shelters, it is by no means clear that we can put the world

back together again. Even if the human race could survive one nuclear war, it is very doubtful that it could survive a second; and as the purpose of the first nuclear war would be to set up a political system which would produce the second, unless there is a radical change in attitude towards national defense, the prospects of the human race seem to be dim. Fortunately, "there is still time, brother" and evolution can still go on in the minds of men. The critical question is whether it can go on rapidly enough. The abolition of national defense, which is what we must face, is going to be a painful process, as we have come to rely on it to preserve many of the values which we hold dear. If the task can be perceived, however, by a sufficient number of people, there is at least a chance that we may avoid this trap before it is too late.

Even if we avoid the war trap, we may still fall into the population trap. Population control is an unsolved problem even for the developed areas of the world, which have moved the furthest towards post-civilization. An equilibrium of population in a stable post-civilized society may represent a fairly radical interference with ancient human institutions and freedoms. In a stable post-civilized society, as I have suggested, the birth and death rates must be of the order of fourteen per thousand, and the average number of children per family cannot much exceed two. There are many social institutions which might accomplish this end. So far, however, the only really sure-fire method of controlling population is starvation and misery.

In many parts of the world—indeed, for most of the human race for the moment—the impact on certain post-civilized techniques of civilized society has produced a crisis of growth, which may easily be fatal. In the tropics especially, with DDT and a few simple public-health measures, it is easy to reduce the death rate to nine or ten per thousand while the birth rate stays at forty per thousand. This means an annual increase of population of three per cent *per annum*, almost all of it concentrated in the lower age groups. We see dramatic examples of this phenomenon in places like the West Indies, Ceylon, and Formosa; but thanks to the activity of the World Health Organization, it is taking place rapidly all over the tropical world. Perhaps the most important key to the transition to post-civilization is heavy investment in

human resources—that is, in education. The conquest of disease and infant mortality, however, before the corresponding adjustment to the birth rate, produces enormous numbers of children in societies which do not have the resources to educate them—especially as those in the middle-age groups, who after all must do all the work of a society, come from the much smaller population of the pre-DDT era.

Even in the developed countries, population control presents a very serious problem. The United States, for instance, at the moment is increasing in population even more rapidly than India. The time when we thought that the mere increase in income would automatically solve the population problem has gone by. In the United States, and certain other societies, in the early stages of post-civilization, the child has become an object of conspicuous domestic consumption. The consumption patterns of the American spending unit seem to follow a certain "*gestalt*" in which household capital accumulates in a certain order, such as the first car, the first child, the washer and dryer, the second child, the deep freeze, the third child, the second car, the fourth child, and so on. The richer we get, the more children we can afford to have and the more children we do have. We now seem to be able to afford an average of something like four children per family, and as, in a post-civilized society, these four children all survive, the population doubles every generation. A hundred years of this and even the United States is going to find itself uncomfortably crowded. It can be argued, indeed, that from the point of view of the amenities of life we are already well beyond the optimum population.

The third trap on the road to post-civilization is the technological trap. Our present technology is fundamentally suicidal. It is based on the extraction of concentrated deposits of fossil fuels and ores, which in the nature of things are exhaustible. Even at present rates of consumption, they will be exhausted in a time span which is not very long measured against human history and which is infinitesimally small on the geological time scale. If the rest of the world advances to American standards of consumption, these resources will disappear almost overnight. On this view economic development is the process of bringing closer the evil day when everything will be gone—all the oil, the

coal, the ores—and we will have to go back to primitive agriculture and scratching in the woods.

There are indications, however, that suicidal technology is not absolutely necessary and that a permanent high-level technology is possible. Beginning in the early part of the twentieth century, it is possible to detect an anti-entropic movement in technology. This begins perhaps with the Haber process for the fixation of nitrogen from the air. A development of similar significance is the Dow process for the extraction of magnesium from the sea. Both these processes take the diffuse and concentrate it, instead of taking the concentrated and diffusing it, as do most processes of mining and economic production. These anti-entropic processes foreshadow a technology in which we shall draw all the materials we need from the virtually inexhaustible reservoirs of the sea and the air and draw our energy from controlled fusion—either artificially produced on the earth or from the sun.

This is why I so much resent spending half the world's income on armaments—because the more we do this, the less chance we have of making the transition to a stable, high-level society. The human race is in a precarious position on its planet and it should act accordingly. It has a chance, never to be repeated, of making its great transition, and if it fails, at least one good experiment in intelligence will have gone to waste. I suppose there are similar experiments of this nature going on in other parts of the universe; but I must confess to a hopelessly anthropocentric prejudice in favor of planet earth. It's a nice planet, and I'm in favor of it and I have no desire to see its principal inhabitant blow it up or starve it out.

When we look at the nature of possible remedies for our immediate problems, it seems clear that we all are engulfed in a profound and appallingly dangerous misallocation of our intellectual resources. The misallocation lies in the fact that although all our major problems are in social systems, we persist in regarding them as if they were essentially problems in physical or biological systems. We persist in regarding agricultural problems, for instance, as one of crops, whereas it is clearly fundamentally a problem of farmers. We persist in regarding the flood-control problem as a problem of the river and we even turn it over to army engineers, who treat the river as an enemy. A flood, how-

ever, is no problem at all to a river. It is a perfectly normal part of its way of life. The flood, essentially, is a problem of people and of social institutions, of architecture and zoning. Professor Gilbert White, of the University of Chicago, suggests that after spending over four billion dollars on flood control in this country, we are more in danger of major disasters than we were before. What we really mean by flood control is the substitution of a major disaster every fifty or one hundred years for minor inconveniences every five or ten.

In national defense we have fallen into exactly the same trap. We regard this as a problem in physical systems and in hardware, whereas it is essentially a problem in social systems. Here again, we are building into our societies the eventual certainty of total disaster. In face of the fact that war and peace is the major problem of our age, we are putting practically nothing into peace research; even when we do put money into arms control and disarmament research we spend sixty million dollars for Project Vela, which deals wholly with physical systems, and one hundred and fifty thousand on Project Vulcan, which deals with social systems and with unanswerable questions at that. When we look at biological and medical research, and still more, research into population, the disparity is just as striking. We persist in regarding disease as a biological problem, whereas it is fundamentally a bio-social system. Yet the number of sociologists in our medical schools can be counted almost on the fingers of one hand.

Nevertheless, in spite of the dangers, it is a wonderful age to live in, and I would not wish to be born in any other time. The wonderful and precious thing about the present moment is that there is still time—the Bomb hasn't gone off, the population explosion may be caught, the technological problem can, perhaps, be solved. If the human race is to survive, however, it will have to change more in its ways of thinking in the next twenty-five years than it has done in the last twenty-five thousand. There is hope, however, in the fact that we are very far from having exhausted the capacity of this extraordinary organism that we call man. I once calculated the capacity of the human nervous system in terms of the number of different states it might assume, which is a very rough measure. This comes to two to the ten billionth power, assuming that each of our ten

billion neurons is capable of only two states. This is a very large number. It would take you ninety years to write it down at the rate of one digit a second. If you want a standard of comparison, the total number of neutrinos, which are the smallest known particles, which could be packed into the known astronomical universe (this is the largest physical number I could think of) could easily be written down in three minutes. I find it hard to believe, therefore, that the capacity of the human organism has been exhausted.

What we have to do now, however, is to develop almost a new form of learning. We have to learn from rapidly changing systems. Ordinarily we learn from stable systems. It is because the world repeats itself that we catch on to the law of repetition. Learning from changing systems is perhaps another step in the acceleration of evolution that we have to take. I have been haunted by a remark which Norman Meier, the psychologist, made in a seminar a few months ago, when he said that a cat who jumps on a hot stove never jumps on a cold one. This seems precisely to describe the state we may be in today. We have jumped on a lot of hot stoves and now perhaps the cold stove is the only place on which to jump. In the rapidly changing system it is desperately easy to learn things which are no longer true. Perhaps the greatest task of applied social science at the moment is to study the conditions under which we learn from rapidly changing systems. If we can answer this question, there may still be hope for the human race.