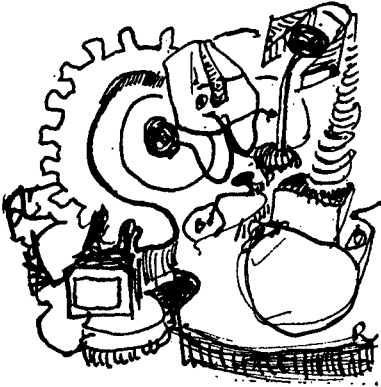


The Economics of Cybernation



MARXISM IS OFTEN UNDERSTOOD as a "theory of underconsumption" and as such is easily disproved by the empirical evidence of rising living standards in capitalist nations. It is also seen as a theory of crises and depressions. The present possibility of overcoming, even preventing, crisis conditions seems to prove Marxism doubly wrong. However, although Marx did draw attention to the limited consuming power of the laboring population, his theory was not a theory of underconsumption; and although he saw capitalism beset with crises, he had no definite crisis theory. The absence of the business-cycle would not have invalidated his theory of capital accumulation.

For the capitalism of Marx's own experience, his economic analysis was very much to the point and for this reason found such widespread adherence. This is now willingly admitted even by his critics who argue that Marxism, though dealing realistically with capitalism's unsavory past, is no longer valid because of recent changes of the capitalist system. Certain aspects of Marxian theory—the capital concentration and centralization process, for instance—have even been incorporated into modern economic theory by changing their negative connotations to positive ones. Also the need for an "industrial reserve army" to prevent wages from encroaching upon profit is still often stressed.

Although Marx experienced unemployment as a social fact and as a weapon within capital-labor relations, he believed that full employment was as possible as unemployment. It all depended on the rate of capital formation. The displacement of human labor by the machine was what capitalist industrialization was all about, and progress was measured by it. Indeed, Marx did not criticize capitalism so much for what it was and for what it could do as for its limitations and its basic inability to develop social production beyond the need to maintain social class relations. With regard to the past, capitalism was progressive; with regard to the future, it became an obstacle to the full development of production and thereby to the elimination of economic wants.

Marx addressed himself not to the capitalists but to the workers. In his opinion, they alone were able to end class relations by abolishing their own class position, thus clearing the way for a further unfolding of the social forces of production. This would result in further technological development leading toward the abolition of human labor or, at any rate, of unwanted and disagreeable human labor. Capitalism, by being socially limited through specific class relationships, was regarded by Marx as economically limited and an obstacle to technological advance.

On this last issue, too, Marx appears to have been wrong because of the so-called second industrial revolution, characterized by atomic power and "automation." Strangely enough, however, this new triumph over Marx's gloomy prognostications is rarely celebrated as a solution to current social problems. Rather it is seen as the harbinger of new and perhaps insoluble difficulties. Suspicion that there is a possible incompatibility between the new technology and the prevailing socio-economic relations runs through the growing literature on automation. While most of the difficulties of the capitalist system have seemingly been overcome, the problem Marx was least concerned with, i.e., permanent and large-scale unemployment, appears to be the last but also the most important of all capitalistic contradictions.

II

WE ARE NOT CONCERNED HERE with the far-flung ramifications of cybernetics, or the science of control, which affects natural processes as well as social and technological systems, but only with its current application to capitalist production and distribution. Although the type of economy defines the type of society, we will not deal with all the social implications of cybernetics but only with the narrower relationship between cybernetics and economics, that is to say, with the possible effects of the emerging technology upon existing economic and political relations.

From its very inception, the founder of cybernetics, Norbert Wiener, felt inclined to point to the social problems involved in its application to production processes. The automatic machine, he wrote, "is the precise economic equivalent of slave labor. Any labor which competes with slave labor must accept the economic conditions of slave labor. It is perfectly clear that this will produce an unemployment situation in comparison with which the present recession and even the depression of the thirties will seem a pleasant joke."¹ A decade later, concern with automation was quite general. There were some, to be sure, who were certain that "guided by electronics, powered by atomic energy, geared to the smooth, effortless workings of automation, the magic carpet of our free economy heads for distant and undreamed horizons."² In reality, however, "the United States is advancing rapidly into a national economy in which there will not be enough jobs of the conventional kind to go around."³ President Kennedy himself declared that finding work for men must be considered "the major domestic challenge of the Sixties."⁴

There is no dearth of data on automation. Its changing statistics appear everywhere, in the daily press as well as in labor publications. These statistics simply indicate increasing productivity, production, and profitability through the reduction of the labor force. The impact of automation differs with different industries. It is particularly noticeable in

textiles, coal mining, oil, steel, chemicals, railroading, and automobiles, but it affects in increasing measure all large-scale production as well as commercial and organizational activities and to some extent even agriculture. It does away with "white collar" and "blue collar" jobs—at present more of the latter than the former. But this may change in time.

Nevertheless, automation is still in its infancy and the existing number of unemployed may not be traceable to labor displacements through automation, even though workers clearly lose their jobs because of it. That they can find no other employment may be the result of a declining rate of capital formation rather than automation. After all, there were sixteen million unemployed in America during the Great Depression. Displacement of labor by machinery has been continuous and has not prevented a steady growth of the work force. It is feared, however, that automation is so different in degree from previous technological development as to amount to a difference in kind. The social problem it poses is thought to be unique and unanswerable by analogy with past conditions.

III

EVALUATING THE PREVIOUS IMPACT of automation upon the American economy, Donald N. Michael⁶ has recently attempted a prognosis of its possible social consequences within the next two decades. His study is based on a number of assumptions, all of which imply that trends will largely remain what they are now and what they have been during the last ten years. Michael employs the term "cybernation" to account simultaneously for "automation" and "computers," which usually go together in the application of cybernetics to production processes. We will not concern ourselves with all the wondrous existing and potential capabilities of cybernation. A large and growing literature takes care of that. We merely indicate what Michael considers to be the advantages and problems of cybernation.

The advantages for both business firms and governments are plainly to "boost output and cut costs," in order to remain successful in private and national competition. Whatever other advantages Michael mentions, such as "reducing the magnitude of management's human relation tasks; greater rationalization of managerial activities; freeing management from petty distractions; greater freedom in locating facilities," and so forth, are all aspects of, or different expressions for, the cheapening of production. Expressed in Michael's genteel fashion: "If the criteria are control, understanding, and profits, there are strong reasons why government and business should want to, and indeed would have to, expand cybernation as rapidly as they can."⁶

The advantages of cybernation may, however, be offset by the problem of unemployment which will eventually affect all occupations; the unskilled more than the skilled—Negro workers, consequently, more than white workers. The previous relocation from production to service industries will come to an end. "If people cost more than machines—either in money or because of the managerial effort involved—there will be strong incentives to replace them in one way or another in most service activities where they perform routine, predefined tasks."⁷ As technology allows fewer people to do more work, many of the intermediary middle class management jobs will also disappear. All this while "the United

States will need 13,500,000 more jobs in the Sixties merely to keep abreast of the expected growth of the labor force."⁸

There are, of course, answers to the projected dilemma, such as the retraining and upgrading of labor and the shortening of working hours for the same pay, or even price reductions leading to a larger consumers' demand and therewith to increased production and employment. But because all workers are affected by cybernation, Michael feels that such proposals will not solve the problem. His own suggestion is a large public works program, for "although the proportion of workers needed for any particular task will be reduced through the use of cybernation, the total number of tasks that need to be done could equal or exceed the absolute number of people available to do them."⁹ He thinks, however, that such a policy would run counter to the capitalist spirit. It may, therefore, be self-defeating for free enterprise to encourage cybernation.

While the consequences of cybernation may endanger the free enterprise system, the very continuance of this system compels increased cybernation. Michael sees the dilemma clearly: while the outlook is unfavorable *with* cybernation, it is just as bad *without* it. He sees only a partial solution in greater government control and national planning. Ideology and goals must change, and a required centralization of authority "would seem to imply a governing élite and a popular acceptance of such an élite." If newly evolving behavioral standards do not complement the cybernated future, frustration and pointlessness "may well evoke a war of desperation—ostensibly against some external enemy but, in fact, a war to make the world safe for human beings by destroying most of society's sophisticated technological base."¹⁰ Obviously, it would be a war in which the sophisticated technology would serve to destroy most of mankind.

IV

"NOTHING IS EATEN AS HOT AS WHEN IT IS COOKED," as the saying goes. Although it now appears that cybernation may be the end of us, some hope remains precisely because of its possible incompatibility with the capitalist system. If this system were to be changed, the curse of cybernation might well turn into a blessing. It has also occurred to Michael that the social system might be altered, but only to fit it to the facts of cybernation. Because an answer "must be found elsewhere than in a moratorium on its development," he thinks that cybernation itself will determine what the answers will be. And this explains the pessimistic undertone of his report, which ends with the sad statement that the persistence of prevailing social attitudes is "driving us more and more inexorably into a contradictory world run by (and for?) ever more intelligent, ever more versatile slaves."¹¹

Marx's fetishistic world of capital production is here narrowed down to the fetishism of technology. But both technological development and capital formation correspond to underlying social relationships and may be altered by changing these relationships. Moreover, while cybernation enhances capital development it is also limited by capital-labor relations. This is a familiar phenomenon; monopolization, for instance, is both an instrument of capital expansion and of capital contraction and the drive for profits reduces the profitability of any given amount of capital. Without going into these rather intricate matters it should be clear that any

prognosis with regard to the cybernation process must, first of all, raise the question as to how far this process is supportable by the existing economy. What is feasible technically may not be economically; and what may be feasible economically may not be socially. But this question is hardly ever raised, apparently on the assumption that capitalism has no inherent limits.

Such an assumption is justified by past developments. Even Lenin said that unless it is overthrown by political means, there is always a way out for capitalism. But this was before cybernation and the hydrogen bomb. Among various reasons for declaring capitalism the exclusive "open society" with an unlimited range of possibilities was the lack of relevant information. This lack still persists but no longer to the extent of total ignorance. Some economists begin to see society and its economy in flux and in real, instead of in symbolic, terms.

At the same time that Michael's report on cybernation appeared Simon Kuznets's *Capital in the American Economy*¹² was published. This work is of interest here because of Kuznets's attempt to assay prospects for the next 25 years on the basis of past trends in population, national product, and in the formation and financing of capital. Where Michael's emphasis is on technology, Kuznets's is on economics. The latter distinguishes between potential and actual technological change. Although the "concept of potential technological change is difficult to define precisely, let alone measure," Kuznets writes, "it is extremely useful, for it points to the fact that of the large flow of technological change offered, as it were, to society, only a part is embodied in the productive structure, mainly because of limitations of capital and of entrepreneurial ability."¹³

Kuznets thinks, however, that the next three decades will witness an acceleration of the rate of technological change mainly because of a quickening in the pace of scientific research. It seems certain, he says, "that the development of nonmilitary applications to nuclear physics, of electronics in automation and communications will have an immense impact upon the productive system."¹⁴ All this will give momentum to the demand for capital funds and Kuznets thinks it not unlikely that the new technology—at any rate initially—will require capital in an amount that can be brought forth only at the expense of the national product. In other words, installation of the new technology may require a larger part of total production for new material capital equipment and leave a correspondingly smaller part for immediate utilization and consumption.

So it has always been in the ascertainable past under conditions of rapid capital formation. And even though the material requirements of capital formation may be more formidable for the second industrial revolution than they have been for the first, they may be attainable, nevertheless. The more so as the new technology may, eventually, demand a smaller amount of capital to yield a greater product than has been true for the "conventional" technology. But new capital investments must be financed. The question is, then, "whether the savings patterns in the private sector [of the economy] suggest savings proportions that will match the prospective demand for capital."

The concern is with the private sector of the economy alone, for "the government sector is not likely to have net savings in the long term

prospect. Indeed, it may be forced to draw upon the savings of the private sector."¹⁵ Because of an actual decline of the private sector's savings propensity, Kuznets thinks that the previously experienced "pressure of the demand for goods upon the supply of savings will persist." He suggests, cautiously, that "during the 1948-1957 decade a combination of high-level demand for consumers goods and continued high levels of government drafts for current consumption might have kept private savings and capital formation below the proportion required to increase productivity sufficiently to offset inflationary pressures."¹⁶ Against this background, and in view of an expected growth of the non-productive population, rising government expenditures, and continued high levels of consumption, Kuznets fears that the supply of voluntary savings may not be adequate to the demand, for which reason "inflationary pressures may well continue, with the result that part of the savings needed for capital formation and government consumption will be extracted through this particular mechanism."¹⁷

This "particular mechanism" reduces total social consuming power to less than what it might have been were it absent, and the difference raises the profitability of capital and thereby the rate of its accumulation. This type of "forced savings" may, or may not, yield the capital required to increase productivity to the point where the demand for both goods and capital is fully matched by their supply—thus ending the inflationary pressure. The fact of inflation itself, however, indicates real difficulties in raising the rate of capital formation, which may—at least to some extent—arrest the cybernation process.

V

WHILE A LACK OF INVESTMENT CAPITAL may hamper cybernation, the same lack is also its *raison d'être*. The expected rise of profitability is supposed to lead to an extension of production sufficiently large to compensate for the technological displacement of labor. This is the idea behind the argument that all technological advancement, sooner or later, creates new and additional work opportunities. It is usually illustrated with reference to definite enterprises and particular situations as, for example, by Ritchie Calder, who pointed out that "in France the state-controlled Renault Company was able to undertake, after the war, the most intensive automation of any automobile factory in Europe," in consequence of



which "three times as many workers are employed now as there were before the introduction of automation." Calder thinks that this is "a good example of the repercussive effects of modern technology."¹⁸

For the Renault Company this is no doubt true, at any rate for the time being. And it may well be true for many, or even all enterprises, in the expanding West European economy which has been experiencing the same process of growth that—for a variety of reasons—occurred in America a few decades earlier. But, while the rate of capital formation is now higher in Western Europe than in America, there is no guarantee that it will remain so indefinitely. Judging by past experiences, prosperity makes room for depression, and judging by more recent experiences, periods of expansion alternate with periods of stagnation, i.e., periods characterized by insufficient capital formation. Obviously, the effects of automation will be different under conditions of capital expansion than under conditions of capital stagnation. The present American situation may be, therefore, just as much “an example of the repercussive effects of modern technology” as Calder’s experience with the Renault Company, or even with the whole of the West European economy.

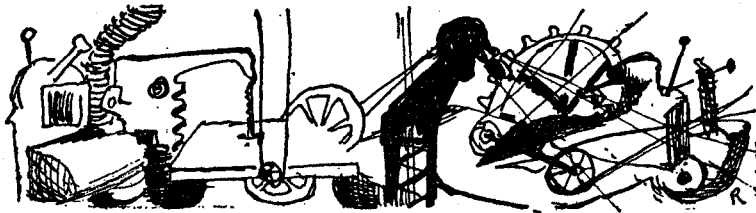
As long as production expands and markets extend, increased automation may be accompanied by full employment. Automation may also lead to larger production and new markets despite growing unemployment. The application of automation may also require the elimination of what is called “excessive demand,” i.e., wages supported by full employment which restrict the profitability of capital. It all depends on the particular situation in which an enterprise, a country, or a combination of nations find themselves. For this is a competitive world with changing opportunities. Presently, Western Europe automates with a rising, and the United States with a declining, labor force. In theory, this picture may be reversed when America arrives at a higher rate of capital formation and Europe reaches the limits of her profitable capital expansion. Or, what is more likely, here, too, Western Europe may come to emulate the United States and cybernate itself into increasing unemployment. At any rate, we may as well stick to the American scene, for as long as the West European economy does not basically differ from the American, it is bound to share the latter’s difficulties with regard to cybernation and capital formation.

This is not true for the Eastern power bloc, or for economically underdeveloped nations. Although it has been asserted from time to time that backward countries “have the advantage of being able to adapt the latest equipment without having to scrap existing equipment and without being handicapped by the existence of obsolete buildings,”¹⁹ such an advantage does not really exist. The slowly increasing industrialization of underdeveloped countries rather widens the productivity gap between “rich” and “poor” countries for the very reason that developed nations enjoy the advantages of automation. It is true, of course, that automation finds application also in underdeveloped countries—in some extractive industries, for instance—but here it supports foreign capital rather than native development. Technological development in underdeveloped nations presupposes basic social changes which are only now beginning to determine their political movements.

In the developed nations of the Eastern power bloc, as in capitalist nations generally, automation is limited by the availability of the capital necessary to install it. In distinction to the competitive Western economies, however, the centralized economies of Russia and her satellites do

not seem to fear the consequences of cybernation. Their productivity and total production are still below those of Western nations, and automation, to the degree possible under these conditions, could not lead to large-scale unemployment. Their problem is rather how to decrease human labor by a more productive capital structure. Roughly half of Russia's population, for instance, is still engaged in agriculture and—in view of the size of the country and its population—there exists a general lack of means of production, not to speak of consumers' durables or even plain consumer goods. To be sure, there also exist highly automated industries but not as yet to an extent where they can raise the social average productivity to the level of that prevailing in the West.

In principle, of course, the centralized nature of Russian capitalism allows for a wider application of cybernetics to social and production processes than is possible in the Western economies. And this, in turn, promises a quickening of automation concurrent with the general rise of productivity. Economic planning, for example, is one of the most important areas of application of cybernetics. But while in the competitive economies "planning" implies "counter-planning," in the centralized economies planning may be unitary, nation-wide, and all-comprehensive. This is why many of the Western advocates of abundance by way of cybernation emphasize the need for national planning of both production and distribution. But by this token, the Western economies would cease being capitalist economies in the traditional sense.



VI

THE AMERICAN ECONOMY IS THOUGHT TO BE "affluent" because its living standards are higher than anywhere else. They are higher because of greater productivity. Compared with scarcity economies, it is an economy of "abundance"—but only in a relative, not in an absolute sense—for, generally, even in America no one's needs are satiated. Everybody wishes for more, if not for necessities, then for luxuries. The richer the people, the greater their wants, for security lies only in accumulation. The only real defense of well-being is greater well-being; to stay affluent, affluency must be constantly increased. But here we speak only of the capitalist class; for the majority of the population, apparent luxuries have become necessities, and for a large minority many necessities are still luxuries.

That this economy of "abundance" is simultaneously an economy of scarcity is indicated by the frantic efforts to raise the profitability of capital and to increase the rate of economic growth. But what is scarce in view of the always larger national product? The answer is obvious when the economy is recognized for what it is—a vehicle for production of profit. Production of commodities is merely the necessary medium for pro-

duction of profits and the continuation of this process requires the accumulation of capital. Success or failure cannot be measured in terms of an abundance or a lack of commodities; they are revealed by the rate of capital formation which indicates the rate of profitability.

Most critics and well-wishers of the "affluent society" tend to disregard the nature of capitalism, i.e., the production of capital, even when they recognize its profit motive. They consider the profit incentive an instrument of production which has no other end than consumption. As this end can also be served by direct government decisions affecting the production process, they think that both these instrumentalities complement one another. And so it seems sheer stupidity to live in a society of abundance as if it were an economy of scarcity. It is, of course, beyond all reason and therefore difficult to understand that while surpluses of all kinds are rotting away for want of use, the economic emphasis should still be on more production by way of cybernation. It appears equally irrational that the "horn of plenty" is not utilized to liberate people from overwork, or to supply those who can no longer find work with decent living conditions.

In a capitalist economy of the Russian type, direct decisions (supposedly affecting the whole of society) are made with regard to the rate of expansion and the character of the material capital structure. Decisions are based on experience and if they go wrong they are rectified by new experience. Tempo and extent of industrial automation are determined by the available accumulation fund and the replacement requirements of the existing productive apparatus. This fund is known in a general way; it can be made smaller or larger in accordance with the decisions affecting the consumption fund. Although expressed in money terms, behind the monetary quantities are the arranged real relations of production, accumulation, and consumption.

In theory, and excluding natural and political catastrophes, the introduction and extension of cybernation could be an orderly process. Production could be increased to the point of abundance and labor time could be shortened, or both processes could be attended to simultaneously and thus slowed down. In practice, this is not possible given the fact that Russia is part of the world economy and competes with other nations striving for political and economic supremacy. But even though production and consumption cannot be geared to actual social needs exclusively, they are nonetheless subject to an over-all centralized control which also extends over the modifications necessitated by national competition. In brief, though subject to the vicissitudes of world politics which may alter or shatter all plans, Russia remains a state-controlled economy in so far as the internal scene is not affected by external occurrences. This is analogous to the single enterprise's strict capitalist rationality within the anarchic *laissez-faire* system.

It is different with the "mixed economy" of the United States. Responsibility for the state of society lies in the hands of government; private enterprise is responsible only to itself, i.e., to the profitability of the capital invested in it. There was a time when the government's responsibilities were overwhelmingly political and economic only in the sense of its support of private capital. But now it is the main function of government to secure economic and social stability. This implies in-

terventions in the economy to counteract the cyclical movement from prosperity to depression and to avoid large-scale unemployment through government expenditures on welfare, public works, subsidies, armaments, and the expansion of government itself. The economic role of government divides the whole of the economy into a "public sector" and a "private sector."

To speak of the American economy as a two-sector economy is to speak in abstract terms. In reality, it is just one economy in which government intervenes with fiscal and monetary means. Although the government owns much real estate, a considerable amount of capital equipment, and employs a great number of workers in all kinds of occupations, it does not compete with private capital. Its considerations may be economic but they are not bound to the principle of profitability. Its enterprises do not end up in bankruptcies even though they may be discontinued when superfluous or for lack of efficiency. No matter how self supporting, or even profitable, some government undertakings are, government still requires an increasingly larger portion of the privately produced national product. The private sector differs from the public sector in that the former is profitable and expands on its own accord while the latter is non-profitable and expands at the expense of the private sector. When the private sector grows faster than the public sector, the profitability of private capital may not be affected. It is otherwise when the public sector experiences more rapid growth.

It can be argued that the government enters the economic sphere only when private capital begins to slacken and for that reason its profitability remains unaffected, for business would not be any better without government interventions. This may well be so. However, though government interference consists in putting idle resources to work, the funds for that end are themselves extracted from the private sector by way of inflation, taxation, borrowings, and deficit-financing which increases the national debt. The greater national product brought forth in this manner does not imply larger but smaller profits on the existing private capital, for it is this capital which must yield the taxes necessary to cover government created demand and to finance interest on the national debt.

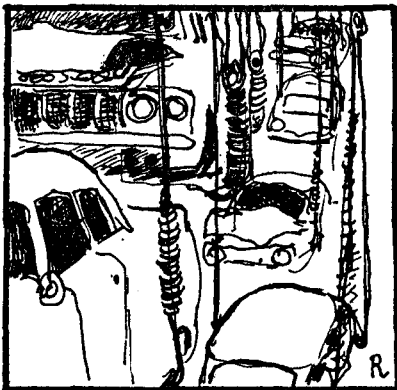
Within recent decades the increased volume of government expenditures in America has involved a rising ratio of taxes to national product, and the increase of the federal debt from \$16 billion at the end of 1930 to \$297.7 billion at the beginning of 1962. Thus far, however, the expanding role of government, whose tax take is now about a quarter of the national product, has not led to a deceleration of the rate of overall economic growth. But neither has this rate been accelerated, even though acceleration is a pre-condition for the maintenance of a given rate of profit. Stagnation and the persistence of inflation point to the difficulty of satisfying both profitable capital formation and the growing needs of government.

Since 1955 there has been no significant expansion of capital, but because government expenditures have also remained static, the ensuing decline of profitability could be covered up by false, inflationary gains. Lack of profitability can only be overcome by an increase in productivity. A mere increase in production will not do. American industry as a whole produces close to 20 per cent below capacity. It could increase

production by almost one-fifth without additional capital equipment and without exhausting the labor supply. To that extent it could at once decrease the government share of the total national product. But this unused capacity is considered obsolete because it is not competitive and therefore not profitable.

VII

AUTOMATION IN A COMPETITIVE ECONOMY means unemployment if Michael's prognosis is right. The process may be slowed down by a lack of savings if recent tendencies in this respect, as noted by Kuznets, should prevail. There is also the hope for new markets large enough to increase the number of employed despite automation, as has been true for some industries and even for some nations. But with industrialization fostered to some extent almost everywhere, with the return of Europe's competitive ability, and with the relative economic isolation of the Eastern power bloc, it cannot really be expected that greater productivity of American industry by way of automation will lead to significant enlargements of markets. Automation will go on and unemployment will grow though perhaps at a slower rate than the possible rate of technological change. The responsibilities of government will grow correspondingly.



In 1961, tax collections by all governments in the United States—federal, state, and local—amounted to \$143.6 billion, or 27.6 per cent of total national product. Government expenditures, in the same year, amounted to \$149.8 billion, of which \$41.2 billion went for unemployment and social welfare spending. A doubling of unemployment with its accompaniment of general misery could roughly double this sum. To that extent, profitability gained by greater productivity would be diminished. The same would be true if government expenditures for armaments, or for any other desired and politically feasible purpose could suddenly be doubled. To be sure, automation would also cheapen the products falling to government and to that extent again ease the burden of private capital. Yet this may be offset by a faster extension of government demands on the private sector of the economy.

But this, by itself, will rather hasten than hinder the automation process. As on all previous occasions of "national emergencies," the required increase in production and productivity will be brought about by government through more inflation, new borrowings, higher taxes and, perhaps, by simply commandeering the necessary improvements and enlargements of the productive apparatus. For the only real limits of production are always the actually existing productive resources. By disregarding the profitability of existing capital—if only temporarily—it is

always possible to enlarge production beyond that level which suits private capital best, i.e., which is at any particular time the most profitable.

However, on its own accord, too, private capital will always try to increase its productivity in search for extra profits, or just to maintain a given profitability. No matter what the social consequences of cybernation, if it helps the single firm or corporation, it will be utilized. A declining rate of savings will not stop the cybernation process of corporations with sufficient reserves to finance their technological innovations. While the value of their capital may remain the same, their productivity will have been enhanced. But if this, in turn, does not lead to the enlargement of capital, the process has not been productive in a capitalist sense, because capital must lead, via the production process, to even larger capital. There must be net investments to speak of capital formation. Without net investments, i.e., investments over and above capital replacement through use and obsolescence, production has increased at the expense of accumulation. Permanently undistributed profits are no profits and production without accumulation has not produced capital. The absence or low rate of net capital investments, although not necessarily halting the increase of production and productivity, involves the displacement of labor which could have been avoided, at least to some extent, by a rapid capital formation in conjunction with cybernation.

It can be said, of course, that undistributed profits are a sign of super-profits and leave the shareholders' personal incomes unimpaired. This is largely true, as indicated by the existing "affluency" in the sphere of consumption. However, the apparent "super-profits" are such only by virtue of government created demand. They merely illustrate the fact that government favors big business. Subsidies through government contracts and a higher productivity combined with price stability or even price increases allow for reserves of undistributed profits that find their way into more automation. Even so, the fact that there is not a sufficient rate of net investments shows that this is done at the expense of less privileged enterprises and of society as a whole.

All enterprises, whether small or big, clamor for lower taxes and higher depreciation quotas to increase their productivity and competitive ability through technological improvements. Automation speeds up obsolescence and smaller businesses, unable to introduce automatic machinery quickly enough, fall by the wayside. Thus cybernation is at the same time a capital concentration process—or, rather, it accentuates the concentration process inherent in capital competition. Capital concentration itself demands, and allows for, further extensions of automation. Short of an always increasing rate of capital formation, unemployment must grow. As the probability of such a rate is extremely low, the increase of profitability by way of cybernation may well be nullified, or at any rate significantly diminished, by the simultaneous and unavoidable increase of government expenditures to cope with cybernation's social consequences.

This may not be so, however, if the social conditions of the near future discourage both the growth of cybernation and that of the "public sector" of the economy—in other words, if society, by and large, "freezes" existing social conditions. But to do so necessitates a centralized control over the whole of the economy and all its various aspects which the gov-

ernment does not possess. If it had this control, it would no longer preside over a free-enterprise economy. Aside from internal difficulties of a static society, its external relations preclude the maintenance of the economic *status quo*. For automation, it is said, must overcome foreign wage advantages by enhancing America's productivity. But America must compete not only in the economic sphere but also in the military, and here weapons production already depends to a very large degree on automation technology.

Still, the process and the consequences of cybernation may not be so dramatic as Michael envisions. Many enterprises that would like to automate may not be able to do so without necessarily ceasing to exist. Subsidies may be extended to these businesses such as have been granted to sections of agriculture. This is not less likely than, or different in principle from, sustaining the unemployed out of current production. In this way, part of private enterprise (in its technologically backward form) may become a part of the "public sector" of the economy. This has long been true for sections of big business. Unless the latter's privileges, such as government contracts, tax exemptions, and extraordinary depreciation charges are cut back, the shrinking profitable sector of the economy will have to give up a still larger share of its profits to the public sector. This would reach its "logical" end when the demands of government exceed the profit sharing capacity of private enterprise.

The actual course of developments, however, determined as it is by the interaction of diverse and contrary interests, is rarely, if ever, "logical." It may be both logically and economically possible to have a highly cybernated industry with, say, 20 million unemployed—yet, in practice this is quite improbable. Unless suppressed by terroristic measures, there would arise social movements to change this situation, either by altering the nature of society, or by varying the relationship between production and employment. Similarly, the accentuation of capital concentration by way of cybernation would most likely bring political forces into play which might well arrest this development. Against real necessities, fetishistic attitudes toward the production system and its technology will lose their sway, and people will try to change the social structure rather than accommodate themselves to it indefinitely. In the end, the question of cybernation in its degree of application will be resolved by political actions regardless of what, from the economic or technological point of view, is "logical."

But even on purely economic grounds, cybernation finds its limits where it begins to contradict the profitability of capital. Its full development would be a very long process, at any rate, as it requires the displacement of the whole existing production equipment. To throw out the whole of capital based on an old technology is to throw out the congealed labor of generations necessary for current production. To create the capital of a radically new technology also requires the work of generations. Cybernation can only be applied in piecemeal fashion regardless of the nature of society, but in capitalism it is doubly hindered because it can be applied only insofar as it safeguards and promotes the growth of existing capital. In some industries, chemicals for instance, automation has raised capital equipment per production worker five and even ten fold. Even if not all industries are able to automate to the

same extent, capital investment per production worker is bound to rise and it will be this enlarged capital on which profits will be measured. If they are not equivalent to the new capital structure, there is no incentive for further automation. This will not stop specific industries and corporations from raising their productivity to gain competitive advantages, but as their profitability, too, is finally determined by that of society as a whole, their competitive advantages may still not insure their profitability.

Taking past developments into consideration, and judging present conditions realistically, the future of cybernation seems not at all promising except, perhaps, for selected industries, particularly those engaged in the production of armaments. Where entirely new installations are required that involve the application of the new sciences of nuclear physics, electronics, and cybernetics, these installations may, from the very start, and regardless of cost, exhibit the full meaning of cybernation. Indeed, it has been said that "those miraculous machines in which cybernetics could develop all its resources seem to be usable only as engines of death."²⁰

VIII

ONE METHOD OF DEALING with increased productivity by way of cybernation would be to cut the number of hours of work and provide people with more leisure time. Almost uniformly, however, this method is questioned or totally rejected not because of its opposition to the capitalist mechanism, but because society has "failed to develop meaningful leisure." Boredom is considered a very serious and even dangerous problem because "it still remains true that the happy man is very often the one who has insufficient time to worry about whether he is happy or not."²¹ All sorts of crimes and delinquencies are attributed to increased leisure, which, then, must first be "organized" by competent authorities before it can be granted.

This silly and insincere talk can be dismissed at once. The leisure class has always found the leisure of the lower classes obnoxious and dangerous to its own leisure. Looking at the wonders of the first industrial revolution, Delacroix mused about the "poor abused people, [who] will not find happiness in the disappearance of labor. Look at these idlers condemned to drag the burden of their days and not knowing what to do with their time, which the machines cut into still further."²² Yet, leisure is precisely what the majority of people need most and have the least of—that is, leisure without wants. The leisure of the starving, or the needy, is no leisure at all but a relentless activity aimed at staying alive or improving their situation. Without greater leisure there can be no betterment of the human condition.

This whole question cannot even arise under prevailing conditions. As an exception to the rule, and aided by special circumstances, one or another laboring group may succeed in cutting down its working time without diminishing its income. But to cut down working hours generally and maintain the same wage bill would turn cybernation into a senseless affair as far as the capitalists are concerned. The point of cybernation is precisely to reduce wage costs relative to overall costs of the "factors of production" and to recoup the higher capital costs by greater productivity. To be sure, real wages have increased and working hours

have been cut, but always at a rate below that of the increasing productivity. Otherwise there would have been no capital formation. Theoretically, there is no reason why this process should not continue by way of cybernation. That it does not do so, in practice, is manifested by the low rate of capital formation and the fact that the decline of the labor force is not only relative to the mass of capital but also absolute.

It can be argued, of course, that there is no longer a need for extensive capital formation and that mere replacement and modernization of the existing productive apparatus suffices to satisfy all social needs. Any increase in productivity could then immediately be translated into higher wages, shorter hours, or both. While this is possible, it is *not* possible within the capitalist system, and those who seriously propose this solution must be prepared to change the system.

The capitalist "solution" to the problem of cybernation is to be found not in higher wages and a shorter work week for the laboring population but in higher profitability expressed in increased capital. If all these things coincide, so much the better; if not, capital will try to secure its profitability at the expense of labor. Each entrepreneur, or corporation, employs the minimum of labor relative to capital investment; each, of course, tries to increase this minimum by a correspondingly larger investment. They are interested—economically speaking—not in a larger or smaller labor force but in that labor force which proves most profitable. They are not, and cannot, be concerned with the national labor force; the unemployed are the government's responsibility, although it can sustain them only with funds extracted from the whole of society. To contribute least to this fund is thus another objective of the entrepreneur or the corporation.

Because society—with respect to production—is composed of numerous independently operating and competing enterprises, each following the dictates of profitability, there is no way of sharing the available work between the total labor force. There will be overwork for some, unemployment for others. Not only the employers but the more fortunate workers, too, will insist on working hours yielding wages adequate to their accustomed mode of living. Instead of shorter hours there will be growing unemployment, and the costs of unemployment must be paid by the employed. For, in the "last analysis," the total social product is divided between the owners of capital and the productive population, no matter how the owners, or controllers, of capital redivide, or are forced to redivide, their share for purposes of accumulation and the sustenance of the non-productive population. What falls to the unemployed must be subtracted from the total share falling to capital, and what falls to the unemployed cannot be given to the employed, thereby restricting, to that extent, any possible wage increases.

While wages do not rise significantly under conditions of growing unemployment, social pressures and rising productivity may prevent them from falling. If they could be lowered under conditions of rising productivity, the profitability of capital could expand at a faster rate—provided, of course, that markets would grow simultaneously, which is not necessarily the case. All that this implies—from the viewpoint of society as a whole—is that less is consumed and more is "saved," i.e., capital accumulates. To channel increased production via increased productivity into

government created demand such as armaments and space programs would have an opposite effect, as it would increase "consumption" at the expense of "savings." This is not "consumption" in the ordinary sense, of course, but it has the same effect nevertheless. The government—being a government of private enterprise—in order not to destroy the marketability of private production any faster than has been done already, prefers to "consume" the increased production in the form of waste, rationalized as "national defense" or "scientific exploration."

Living standards already reached are difficult to undo. Except under conditions of actual warfare, any general attempt to reduce incomes to a previously existing level may lead to social strife, which, in turn, may nullify any gains made in this direction. Moreover, today's sensitive economic conditions, the dislocations of industrial production associated with a decisive shift from consumption goods to capital goods may be more detrimental to social stability than capital stagnation. This is one reason for choosing the more subtle method of gradual inflation to reduce consumption in the ordinary sense in order to "consume" more in the extraordinary sense, and yet secure the profitability of private capital.

IN SUMMARY, IT MAY BE SAID that an extensive cybernation of production seems unlikely for the very reason which makes it so attractive to capital, i.e., the prevailing insufficiency of profitability and the consequent low rate of economic growth. But even a vast increase of cybernation would lead not to an increase of consumption—to general abundance—but to an increase in waste production, the misery of unemployment, and the slow but inevitable transformation of the "mixed economy" into a state capitalist system. Meanwhile, just as underdeveloped countries live in anxiety because they are neither able to manage under the old semi-feudal conditions nor capable of entering into capitalist industrialization, so developed capitalist nations, too, live in anxiety, unable to manage under their system of production and incapable of changing their social structure to the extent necessary for a full unfolding of the social forces of production and the progressive abolition of labor.

FOOTNOTES

- 1 Norbert Wiener, *The Human Use of Human Belings*, New York, 1954, p. 162.
- 2 *Calling all Jobs*, National Association of Manufacturers, New York, October, 1957, p. 21.
- 3 W. H. Ferry, *Caught on the Horn of Plenty*, Center for the Study of Democratic Institutions, January, 1962, p. 1.
- 4 *The New York Times*, February 16, 1962.
- 5 *Cybernation: The Silent Conquest*, Center for the Study of Democratic Institutions, 1962.
- 6 *Ibid.*, p. 13.
- 7 *Ibid.*, p. 16.
- 8 *The New York Times*, April 6, 1961, p. 18.
- 9 D. N. Michael, *Cybernation*, p. 26.
- 10 *Ibid.*, p. 46.
- 11 *Ibid.*
- 12 National Bureau of Economic Research, Princeton, 1961.
- 13 S. Kuznets, *Capital in the American Economy*, p. 442.
- 14 *Ibid.*, p. 443.
- 15 *Ibid.*, p. 453.
- 16 *Ibid.*, p. 457.
- 17 *Ibid.*, p. 460.
- 18 Ritchie Calder, *Technology: Europe's Needs and Resources*, New York, 1961, p. 789.
- 19 P. Einzig, *The Economic Consequences of Automation*, New York, 1957, p. 65.
- 20 P. de Latie, *Thinking by Machine*, Boston, 1957, p. 284.
- 21 R. Theobald, *The Challenge of Abundance*, New York, 1962, p. 86.
- 22 *The Journal of Eugene Delacroix*, New York, 1961, p. 512.

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An Interview

The Mind of an Angolese Revolutionary

Introduction

AN AMERICAN STUDYING IN PARIS is soon made uncomfortably aware that the most intelligent and active of his fellow-students are all Marxists of one kind or another. But it is in his contacts with foreign students from underdeveloped nations that the American is particularly impressed both by the pervasive influence of revolutionary organizations and by a certain way of looking at the world situation which is shared by nearly every student he meets from North Africa, India, Angola, Guinea, Ghana, Latin America, etc. At the heart of this attitude is the most crucial question in world politics today—the question of whether underdeveloped countries can be effectively liberated and industrialized through social democratic reforms. The foreign student



often answers this question in the negative; he feels from personal experience that nothing short of revolution is required. As he explains his position, he invariably refers to the values and assumptions of Communist propaganda. Yet his loyalty belongs to the movement in his own country, and not to the Internationale—and the ideology he is trying to construct uses Russian doctrine only as a point of departure. The resulting world-view does not vary much from student to student; and as the American listens, and reflects that from among these voices will come the political leaders of the future in Africa, Asia, and South America, he is seized by the urgent, almost panicky apprehension that the United States, through its inability to recognize the import of their grievances, is cutting itself off from a large, increasingly hostile group of fast-changing nations.

The following interview is the result of many conversations with a 24-year-old Angolese who is in his second year at one of the great Parisian Science Faculties. This student is one of the very few Angolese Negroes who is