

THE COMING
OF
POST-INDUSTRIAL
SOCIETY

*A Venture in Social
Forecasting*

DANIEL BELL

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FOR

Jordy Bell Jacoby

AND

Stephen Jacoby

PREFACE

Since the rise of human settlements (or of our written records of these), there have been, according to Arnold Toynbee, twenty-one different civilizations, of which Western society, as a cultural unity, is one. But Western society alone is a huge historical canvas. Within Western society there has been a bewildering variety of interweaving elements, whether these be the differentiation of religions, the rise and fall of political empires, or the succession of socio-economic systems. The task for the sociologist or historian is to devise an intelligible unit of study.

One can, within a time-space frame, identify the structural features common to diverse societies and the more enduring and consistent patterns of change. Necessarily, these are on some level of abstraction.

Such an analytic approach, however, risks flattening out what may be distinctive and meaningful in the history of a particular society and generation. (Trotsky once remarked that fifty years is a short time in the life span of a social system; but it is almost the entire conscious lifetime of a particular person.) So, one can take the vicissitudes of a particular society (a territorial unit bound by a common past and ethos, and organized in a political sovereignty) and trace its rich yet idiosyncratic fate on the basis of its history, the character of its people, its “national will,” and the like.

Yet it is also obvious that while its history may be individual, every society shares elements with other societies—religion, culture, economy, technology—that cut across the particular social organization of a people and influence them in specific ways. Spanish Catholicism is like, yet different from, Irish Catholicism. For some purposes we may focus on the common elements in Catholicism, for others on the national characteristics that create the differences. American capitalism is like, yet unlike, Japanese capitalism (in such crucial dimensions as managerial practices and responsibility for the worker); one’s purpose dictates the focus of attention.

In this book, I have taken “industrial society” as my intelligible unit of study. Industrial society is a concept that embraces the experiences

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of a dozen different countries and cuts across the contrasting political systems of such antagonistic societies as the United States and the Soviet Union. Industrial society is organized around the axis of production and machinery, for the fabrication of goods; pre-industrial society is dependent on raw labor power and the extraction of primary resources from nature. In its rhythm of life and organization of work, industrial society is the defining feature of the social structure—i.e. the economy, the occupational system, and the stratification system—of modern Western society. The social structure, as I define it, is separate analytically from the two other dimensions of society, the polity and the culture.

But when used statically, the phrase “industrial society,” like “capitalism,” is deceiving, because these are not fixed social forms. Just as the corporate and managerial capitalism of the twentieth century is vastly different from the family capitalism of the eighteenth and nineteenth centuries, so the industrial society of the twentieth century, with its dependence on technology and science, is far different from the manufacturing society of the previous two centuries. No social system—or national society—has a patent on the future, and the sociological problem is to identify the character, and if possible the trajectory, of change: the initiating and resisting forces, the reinforcing and disintegrating elements.

The thesis advanced in this book is that in the next thirty to fifty years we will see the emergence of what I have called “the post-industrial society.” As I emphasize, this is primarily a change in the social structure, and its consequences will vary in societies with different political and cultural configurations. Yet as a social form it will be a major feature of the twenty-first century, in the social structures of the United States, Japan, the Soviet Union, and Western Europe. The concept of post-industrial society is on the level of abstraction.

I take the United States as my singular unit of illustration, not only because it is the one I know best, but because the processes of change are more advanced and visible here. It also allows me to deal with the particular, and gain the advantages of immediacy and recognition while retaining the context of sociological generalization.

Unlike Marx, however, who believed that the fate of England (his example of capitalist industrial society) foreshadowed the fate of all such societies, I do not believe in a deterministic trajectory. A post-industrial society is not a “substructure” initiating changes in a “superstructure.” It is one important dimension of a society whose changes pose management problems for the political system that arbitrates the society, just as changes in culture and life-style bring about confrontations with tradition, or the rise of new social groups, and the visibility

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of disadvantaged groups, raises issues of power and distribution of privilege in a society.

This, then, is a view from the twenty-first century. It is an attempt, methodologically, to use a new kind of conceptual analysis, that of axial principles and axial structures, as a way of "ordering" the bewildering number of possible perspectives about macro-historical change. It is an effort, empirically, to identify the substantive character of structural changes in the society as these derive from the changing nature of the economy, and the new and decisive role of theoretical knowledge in determining social innovation and the direction of change. It is a venture into the future.

"In any experiment of thinking," John Dewey wrote in *Art As Experience*, "premises emerge only as conclusions become manifest." This was the case with the concept of the post-industrial society. The chapters that make up this book were written in the last five years, and I had been struggling with the idea for some five years before that. Since the concept is a speculative one, and deals with possibilities in the alternative futures of society, there could be no linear development of the argument but only an exploration of diverse themes. Each essay was composed on a separate occasion, yet each was thought of as part of a mosaic. I have rewritten the essays in the last two years to emphasize these interrelationships and to identify the five dimensions of the concept post-industrial society. All of this is elucidated in detail in my Introduction. In addition, I have written a forty-thousand-word Coda to explore the major questions that a post-industrial society will have to confront in the decades ahead. The purpose of this preface is to express my gratitude to the persons and institutions that made this work possible.

The original formulation of the concept of the post-industrial society was presented at a forum on technology and social change in Boston in 1962 in a long, unpublished paper. Robert Heilbroner chaired that forum, and I want to thank him for his comments at the time and for intermittent discussions over the decade.

In 1965, a small grant from the Carnegie Corporation, to explore the idea, enabled me to acquire some research materials and the part-time help for a year of Dr. Virginia Held of the Philosophy Department of Hunter College. Dr. Held prepared a number of memoranda, some of which were incorporated into the working papers of the Commission on the Year 2000, and some of which I have used in Chapter 5. The discussions with Dr. Held were important to my early formulations.

The idea of the post-industrial society became one of the "base-

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lines" of the Commission on the Year 2000, of the American Academy of Arts and Sciences, and is reflected in the five volumes of Working Papers circulated by the academy and in the book *Toward the Year 2000* (1967), a selection of materials from the commission. I am indebted to John Voss, the executive director of the American Academy of Arts and Sciences, for his generous help, and to Stephen Graubard, editor of *Daedalus* and a long-time intellectual companion, with whom I discussed many of these ideas and tested them against his broad historical knowledge.

My greatest debt, institutionally, is to the Russell Sage Foundation and its president, Orville Brim. A grant from the foundation in 1967 at first released me from one-third of my teaching schedule at Columbia and allowed me to organize an experimental graduate seminar at Columbia on modes of forecasting. The foundation also subsidized my research in the next few years. In 1969-1970 I spent a sabbatical year as a visiting fellow at the foundation, where this book began to take shape. Chapter 3, in somewhat different form and entitled "The Measurement of Knowledge and Technology," appeared in the volume *Indicators of Social Change*, edited by Eleanor Bernert Sheldon and Wilbert Moore, of the Russell Sage Foundation. I want to thank Dr. Sheldon, especially, for her editorial comments on that essay.

During the past decade I have pursued several overlapping and divergent intellectual interests: the work on the post-industrial society, the development of social indicators, the interest in long-range social forecasting and the year 2000, an assessment of theories of social change and the idea of axial structures as a way of organizing the field of macro-sociology, and a large concern with what I have called the disjunction of culture and social structure. The Russell Sage Foundation has been tolerant with me as I rattled about from one theme to another, occasionally publishing small chips from these rough-hewn blocks of manuscript. This book is the first of several, to be published in the next years, that will give these concerns coherence. I want to thank Orville Brim for his patience, and trust he will find some reward in this book.

In June 1970, Ralf Dahrendorf and I organized a small international seminar in Zurich, sponsored by the International Association for Cultural Freedom, for a discussion of the idea of the post-industrial society. Chapter 6 is the essay that formed the basis for the discussion. Subsequently, a number of critical and dissenting papers were written by Dr. Jean Floud of Nuffield College, Oxford, Professor Francois Bourricaud of the Sorbonne, Professor Giovanni Sartori, rector of the Faculty of Law at the University of Florence, Professor Peter Wiles of the London School of Economics, and Professor Ken'ichi Tominaga

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of the University of Tokyo. These papers were published in *Survey* (London), Winter 1971, and the interested reader may find them profitable.¹

More personally, I have an enduring obligation to my friend Irving Kristol who, though suspicious of all social science and particularly of large-scale generalization, brought an astringent mind to every essay and insisted on an esthetic order in their presentation.

My secretary at the Russell Sage Foundation, Vivian Kaufman, and my secretary at Harvard, Mrs. Ann Merriman, have all the virtues that writers pray their secretaries may have. Miss Mari Tavitian did the typing of the Coda. Neal Rosenthal, of the Bureau of Labor Statistics, was unflaggingly helpful in providing some of the statistical data in Chapter 2. Mrs. Judith Burbank brought some of the statistics in Chapter 3 up to date. Mrs. Anne Freedgood, both friend and former editor, read the manuscript and made useful textual suggestions. Regina Schachter of Basic Books was most patient with me as she shepherded the manuscript through galleys and page proofs.

No writer is ever a proper judge of his own prose, and my most severe yet loving critic has been my wife, Pearl Kazin Bell, who edited the manuscript in its entirety.

March 1973
Cambridge, Mass.

¹ The other participants included S. N. Eisenstadt of Hebrew University, Reinhard Bendix of Berkeley, Zbigniew Brzezinski of Columbia, Michel Crozier of Paris, Zygmunt Bauman of Tel Aviv, Helio Jaguaribe of Brazil, Juan Linz of Yale, Ota Sik of Basle, Andrew Shonfield of Chatham House, David Lockwood of Essex, Stanley Hoffmann of Harvard, and Stephen Graubard of Cambridge, Mass.

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These questions, some of them rhetorical, some of them ambiguous (as are all true questions), are presented here in the guise of "notes." Notes are often a difficult form for a reader. He wants a tidy exposition which makes its points in linear fashion (ideally with some elegance of expression) and which comes to a specific conclusion. In a curious sense, this is a peculiarly "American" demand. The presumption is usually made that every problem has a solution, and one can march toward it in direct, linear fashion. Indirection is irritating. It suggests ambiguity or complexity, which, in the American vernacular, becomes translated as evasiveness or hesitation. American life is based on experience, not sensibility; and this, too, is an aspect of the "national style."

SOCIAL CHOICE AND SOCIAL VALUES:

THE NEED FOR A NEW CALCULUS ²

"The great society"—that is, in the occurrence of the phrase—has many forebears, but none, perhaps, as startling as Adam Smith. In *The Wealth of Nations*, he wrote:

According to the system of natural liberty, the sovereign has only three duties to attend to; three duties of great importance, indeed, but plain and intelligible to common understandings: first, the duty of protecting the society from the violence and invasion of other independent societies; secondly, the duty of protecting, as far as possible, every member of the society from the injustice or oppression of every other member of it, or the duty of establishing an exact administration of justice; and thirdly, the duty of erecting and maintaining certain public works and certain public institutions, which it can never be for the interest of any individual, or small number of individuals, to erect and maintain; because the profit could never repay the expense to any individual or small number of individuals, though it may frequently do much more than repay it to a great society.³

² In this and in some of the succeeding sections I have drawn on memoranda I prepared for the National Commission on Technology, Automation and Economic Progress and for the Commission on the Year 2000 of the American Academy of Arts and Sciences.

³ Adam Smith, *The Wealth of Nations* (New York, 1937), p. 651. The phrase "the great society" appears in three places in *The Wealth of Nations* by my count (pp. 651, 681, and 747), but its meaning is to be found at the conclusion of book V, chap. 1—which deals with the revenues of the sovereign or Commonwealth—and, in context, the phrase "great society" means here the "whole society" (see p. 767). It is a point of considerable relevance for the discussion above. The capitalized phrase "The Great Society" occurs as the title of the book by Graham Wallas. That book (published in 1914) grew out of a course that Wallas gave at Harvard in 1910, and though the initial theme is the growing interdependence of peoples, and an ensuing change of social scale, the book itself is not an effort to assess the sources or consequences of this change, but an effort to use the findings of the newer social psychology for the rational pursuit of social affairs.

Social Choice and Social Planning

To encounter the phrase "a great society" in the context of what are, for Adam Smith, the legitimate functions—and indeed the limitations—of government is striking in the light of the problems of the great society today. For Adam Smith was one of the men—the other was John Locke—who "planned" the United States of America. I use the word "planned"—awkward in this context—quite deliberately. For both Smith and Locke laid down the conditions—derived from some specific philosophical assumptions—for the operation of the society that was to emerge in the United States.

The key proposition for Smith, of course, was that every individual, by pursuing his own ends, helps society as a whole. Adam Smith argued:

As every individual, therefore, endeavours as much as he can . . . to direct that industry that its produce may be of the greatest value; every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it . . . by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.⁴

To put the case briefly and baldly in the modern jargon, Smith's conditions for a free and productive society are: individualism, rationality, perfect information, and rational choice; the good of the society is the aggregate of individual utilities. In fact, Smith here laid down a proposition that was almost entirely new in the history of civil society: in a free exchange, both parties to a transaction could gain. In previous times, it was well understood that wealth was in some way acquired largely through exploitation: conquest, tax-farming, tolls, tithes, and so on. Economic life was thus a zero-sum game; one could win only at the expense of a loser. Under the conditions laid down by Smith, economic life could be a non-zero-sum game.⁵

We come to the problem raised by the two quotations from Adam Smith, for economic goods are not of one type, but two: individual goods and social goods. Individual goods are divisible and each per-

⁴ *The Wealth of Nations*, Book IV, chap. 11, p. 423.

⁵ In actual fact, it was not the existence of free exchange but the existence of technology, with its promise of rising productivity, that created the possibility of economic life remaining a non-zero-sum gain. For an instructive book on the means whereby technology has been the chief means of promoting social equality, see Jean Fourastie, *The Causes of Wealth* (Glencoe, Ill., 1960).

son or household buys particular objects and individual service on the basis of free consumer choice. Social goods are not divisible into individual items of possession but are part of a communal service (e.g. national defense, education, beautification of landscape, flood control and so on). These goods and services are not sold to individual consumers nor adjusted to individual tastes. The nature and amount of goods must be set by a single decision, applicable jointly to all persons. Social goods, therefore, are subject to communal or political, rather than individual, demand.⁶

The singular point is that in "the great society" more and more goods necessarily have to be purchased communally. Defense apart, the planning of cities and the rationalization of transit, the maintenance of open spaces and the extension of recreational areas, the elimination of air pollution and the cleaning up of the rivers, the underwriting of education and the organization of adequate medical care, all are now "public institutions" which cannot be undertaken by individuals, though their creation would "more than repay it to a great society."

Now, individuals have their own scale of values, which allow them to assess relative satisfactions against costs, and to make their purchases accordingly. Yet, as I have argued in the previous chapter, there is no mechanism which allows us to consider, in terms of costs and benefits, the varying combinations of private consumption and public purchases of goods.

These are practical, political problems. But at this point a theoretical thorn intrudes. For in recent years economists and mathematicians have been able to supply a "rational proof" of the individual utility preference model, but not that of the group welfare function model. Let us turn to what might be called Adam Smith I. In the famous beginning of *The Wealth of Nations* Smith remarks that only human beings engage in truck or barter. An animal who wants attention fawns or seeks to be engaging. While human beings are sometimes equally servile, they do better by trying to strike a bargain. (" . . . it is in vain for him to expect [help of his brethren] from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour, and shew them that it is for their own advantage to do for him what he requires of them.")

In effect, one offers another man a rationally calculable advantage. But how does one make such calculations? What is the value of an object or a service to a person, and how does he compare one object to another? For a man to choose rationally, there must be some un-

⁶ For one of the first discussions of this problem, see Howard Bowen, "The Interpretation of Voting in the Allocation of Economic Resources," *Quarterly Journal of Economics*, vol. LVIII (November 1943), pp. 27-48.

derlying standard of value against which he can rate all alternatives. Money is a rough and ready measure. But the "value" of money diminishes as one's hoard of it increases. Ten dollars means much less to a millionaire than to a pauper. (This is one of the difficulties, as well, in applying a theory of equality to punishments. Two men may be fined \$100 for speeding, but for the millionaire the \$100 means much less than for a worker who pays the same fine. Is equality then the "same" punishment, or an equal ability to bear punishment?) Jeremy Bentham proposed the concept of "utility" as the unit for a model of rational choice, in which individuals would rank their preferences in an orderly way. But there was little way of comparing utilities (i.e. how much more one wanted one preference rather than another—its intensity quotient, so to speak) or of working out optimal combinations when one wants different proportions of different things. Utility, like value, came to be regarded as a metaphysical concept, and price alone was taken as the indicator of exchange and comparability.

The publication of *The Theory of Games and Economic Behavior* by von Neumann and Morgenstern, in 1944, rehabilitated the concept of utility by dealing with the conditions of choice, or decision-making under risk. One does not know for certain the consequences of a given choice, but one does know the alternatives, and a certain gamble can be built into the choices in which the value of the probability of winning is put against the probability of losing. (A simple game: under conditions of a gamble you can win a Cadillac, but if you lose you get a bicycle; if you decide not to play you get a Volkswagen. Thus, if the chances are 50-50, will you take the gamble or take the consolation prize? What if the chances are 40-60, 30-70, 20-80, 10-90? At what point will you stop taking the risk?) Under such conditions it is possible to assign numerical values to utility which allow you to scale (like a temperature gauge, rather than just rank) the preferences individuals may have.⁷ It is equally possible, using the various techniques of linear programming, to work out "optimal" solutions in the combination of resources, the maximizing of utilities and the like.

But when one turns from individual decision-making to that of groups, when one considers the problem, quoting Luce and Raiffa, "of how best to amalgamate the discordant preference patterns of the

⁷ John von Neumann and Oskar Morganstern (Princeton, N.J., 1953). For a simple mathematical proof of the possibility of scaling utilities, see Jacob Marschak, "Scaling of Utilities and Probabilities," in *Game Theory and Related Approaches to Social Behavior*, ed. Martin Shubik (New York: Wiley, 1964). For a more general discussion of utility theory, and decision-making under certainty, risk, and uncertainty, see Duncan Luce and Howard Raiffa, *Games and Decisions* (New York, 1958), chap. 2.

members of a society to arrive at a compromise preference pattern for society as a whole," we seem to be at an impasse. In the first major effort to formulate the problem, Kenneth Arrow demonstrated, in his *Social Choice and Individual Values*, written in 1951, that the five requirements of "fairness" for social welfare functions are inconsistent (i.e. no welfare function exists which satisfies all of them.)⁸ Even the principle of majority rule, which satisfies three and possibly four of the conditions, is subject to the logical contradiction, first formulated by Condorcet, of the paradox of the cyclical majority.

What is paradoxical, therefore, is that while one can now, for the first time perhaps, set up a rational "model" of the Smith-Bentham world, the basic conditions for social rationality become less and less a possibility for the "players" in the communal society.

The proof can be demonstrated by an elementary theorem. Supposing there are three voters, A, B, and C, whose preferences on issues x , y , and z are ordered in the following pattern, we find:

PREFERENCES	VOTERS		
	A	B	C
First	x	z	y
Second	y	x	z
Third	z	y	x

Clearly, x is preferred to y by a majority (voters A and B); y is preferred to z by a majority (voters A and C); from the principle of transitivity (i.e. if an individual prefers x to y , and y to z , we assume he would also prefer x to z) we should predict that x is also preferred to z , and that x , therefore, is the choice of the majority of the voters: but in fact, z is preferred to x by voters B and C, so that no single majority can be formulated on these three issues.⁹

There have been numerous attempts both to modify the original conditions Arrow put forth as necessary to organize a group welfare function and to resolve the voting paradox (by conceptions of log-rolling, bargains, or the creation of what Anthony Downs has called "passionate majorities"). But so far, at least to the extent that I can

⁸ A revised edition appeared in 1963 (New York).

⁹ The most comprehensive effort to deal with the problem is that of Duncan Black, *The Theory of Committees and Elections* (Cambridge, Eng., 1958). Further discussion can be found in James M. Buchanan and Gordon Tullock, *The Calculus of Consent* (Ann Arbor, Mich., 1962). Some earlier discussions are in Robert A. Dahl and Charles E. Lindblom, *Politics, Economics and Welfare* (New York, 1953), and Anthony Downs, *An Economic Theory of Democracy* (New York, 1957). For a symposium on Arrow's "impossibility theorem," see Sidney Hook, ed., *Human Values and Economic Policy* (New York, 1967).

follow the technical literature, no satisfactory solutions have been forthcoming.¹⁰

This problem—of seeking to produce a single social ordering of alternative social choices which would correspond to individual orderings—is academic, in the best sense of the word. In the “real” world the problem of social priorities, of what social utilities are to be maximized, of what communal enterprises are to be furthered will be settled in the political arena, by “political criteria”—i.e. the relative weights and pressures of different interest groups, balanced against some vague sense of the national need and the public interest. But it is precisely at this point that the theoretical thorn may begin to prick. For increasingly, one of the issues of a great society—one which can be defined as a society that seeks to become conscious of its goals—is the relationship, if not the clash, between “rationality” and “politics.” Much of contemporary social theory has been addressed to the rigorous formulation of rational models of man, in which optimizing, maximizing, and minimizing provide models of behavior that are rationally normative. But we seem to be unable to formulate a “group theory” of economic choice. The impasse of social theory, in regard to social welfare, is a disturbing prospect at this stage of the transition to a communal society.

I have raised a problem—the lack of an ordering mechanism to make social choices—and quickly taken it to a level of abstraction which is meaningless to practical men.¹¹ For theorists, the implications are quite drastic, for these logical conundrums strike at the assumptions of those who think that the general will will emerge out of necessity in democratic debate, and those rationalists—as we all may be—who assume that the public interest is discoverable simply by a summation of preferences. Practical men can take heart, for in all this an intuitive idea is reinforced; namely, that differences between persons are best settled, as are so many differences, by bargaining. As Robert Dahl has observed:

Many Americans are frequently dismayed by its paradoxes; indeed, few Americans who look upon our political process attentively can fail,

¹⁰ See Arrow, *op. cit.* In an appendix to a new edition of his book (New Haven, 1963) Arrow has sought to counter some discoveries of errors in his proofs by reformulating the conditions to show that the inconsistencies in the conditions still remain and that no logical foundations for a complete social welfare function are possible.

¹¹ But theory does have a way sometimes of confounding practical men. William H. Riker has illustrated the relevance of hidden voting paradoxes through an analysis of the rules for amending bills in the committees of the House of Representatives. He has shown that under a number of rules, amendments might be adopted which are not favored by a majority—without this fact ever being known! Thus,