

TOWARD A SCIENCE OF MAN IN SOCIETY

STUDIES
IN SOCIAL LIFE
VI

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TOWARD A SCIENCE OF
MAN IN SOCIETY

A Positive Approach to the Integration of Social Knowledge

by

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To

L. L. K.

PREFACE

THIS study is concerned with the search for a new unity of social knowledge and social inquiry. As such it is addressed to all those who see in the present compartmentalization and specialization of the social sciences the reason for the bewildering proliferation of subject matters, the preoccupation with trivia and the failure to make the maximum use of our knowledge for human welfare. More specifically, I am addressing this book to those who are dealing with "interdisciplinary" problems such as the study of foreign areas, the analysis of sociocultural change, economic development of "backward" economies and the planning and teaching of "integrated" courses in the social sciences. The book suggests an answer to the question, How can our specialized knowledge about man and society be unified? As such the study reflects the conviction that all scientific knowledge, in order to make the greatest possible contribution to human welfare, must become comprehensive in character. In fact, such knowledge differs from popular and common-sense understanding precisely by the fact that it is systematically formulated and held together in terms of a few unifying conceptual frameworks. Indeed, all scientific understanding is, above all, an effort to simplify by unifying what has long appeared as unrelated and disparate. Those who believe that compartmentalization and specialization are the royal road to success in the social sciences may find this an irritating book.

I do not quite share the views of those who may argue that the integration of social knowledge must await the genius of a Newton,

an Einstein, or an Adam Smith and that pending the appearance of such an integrating master mind all we can do is to settle back to cultivate our own specialties. I believe that the integration of social inquiry is a common responsibility and depends upon the collaboration of many minds. This is necessarily a long and laborious process. What is required is a willingness to explore areas of research which are often far removed from one's specialty. This is a process of self-education in the best sense of the word – a process which presents special difficulties and few rewards except those satisfactions which may be derived from its contribution to the sought-for integration of our social knowledge. Interdepartmentalism through participation in interdisciplinary seminars and group discussions is not enough. To understand what related disciplines are doing calls for a study of their basic concepts and ultimately of the substantive content of their conclusions.

The widespread assent which efforts at interdisciplinary integration currently command is not without dangers. These dangers stem from the fact that the term integration is frequently used indiscriminately and that approval is often given uncritically. Indeed, integration has become a catchword which, in the absence of any clear definition, has remained sufficiently ambiguous to mean, if not all things to all men, at least many different things to different people. In fact, the term seems to cover a great variety of approaches which, if examined carefully, are found to have little in common. For this reason alone it seems to be important that an attempt be made to distinguish between these different approaches to integration and to give a more precise meaning to the term. In the absence of such a precise meaning critics may see in the inadequacy of one method a sufficient reason to reject the whole idea of integration.

One further word of caution may be in order. Man has always found it desirable and indeed relatively easy to integrate the totality of his experiences in terms of a unifying world view – be it animistic, religious, or secular in character. What makes these *a priori* systems of thought more than problematical as integrators of our compartmentalized knowledge is not only their unverified and unverifiable character but the fact that they easily degenerate into dogma – that is, something that is no longer open to question

and refutation. It would be a step backward if, in our effort to establish some measure of integration of our social knowledge, we were to brush aside the epistemological insight which has taught us the provisional character of all knowledge. Nothing could be further removed from our objective than to prepare the ground for the imposition of a new dogma, a new faith, or a new fanaticism. Indeed, any attempt to approach the integration of social inquiry, so to speak, from the outside either in terms of a new faith or in terms of a metaphysical superscience would be as futile as it would be ineffective in the long run.

In this spirit of caution and with these objectives in mind we explore first the reasons for the present compartmentalization of our social knowledge and advance certain proposals for an interdisciplinary synthesis in terms of common-denominator concepts or conceptual frameworks. Following the systematic analysis of social reality as distinguished from inanimate matter and living organism, we set forth in Part III our solution by elaborating two complementary conceptual frameworks: man and culture. These frameworks are based upon the findings of cultural anthropology, psychology, and sociology. Two concluding chapters endeavor to make explicit the major practical effects of an integrated science of man in society. Thus, chapter 10 deals with the effects of integration on the method and strategy of inquiry; Chapter XI explores in a more speculative spirit some of the long-run promises which an intellectual synthesis holds for social theory, social practice, and higher learning.

In so far as the book is concerned with the reasons for the disruption of our social knowledge and the search for a new unity of social inquiry, it deals with a metaphysical or philosophical subject. In so far as we are trying to show that the subject matter of the social sciences differs from that of either physics or biology, we have had to concern ourselves with some of the recent advances in the natural sciences. (We hope to have the indulgence of the experts in these fields for having undertaken the self-appointed task of interpreting the philosophical implications of recent developments in their disciplines to fellow social scientists.) Inasmuch as we proceed to elaborate the tentative conceptual frameworks of man and culture, we are dealing with concepts and findings of disciplines outside our narrow specialty. This was un-

avoidable and no one is more aware of the hazards of such an enterprise than the author.

In an intellectual enterprise of this kind it is necessary, perhaps more than in any more specialized endeavor, to acknowledge my debts. Perhaps the most fundamental debt is owed to those economists who have long criticized the relatively narrow conceptual framework of neo-classical economics. To them must be attributed my earlier preoccupation with problems that have been outside the traditional scope of economic analysis and my concern with "institutionalism" and the "humanization" of economics.

A second debt is owed to students of the history of thought and of economic analysis who have criticized the process of specialization and compartmentalization which has given rise to the present disruption of social knowledge and social inquiry. Their diagnosis of the dilemma made for a sharper awareness of the problems and the remedy.

A further debt is owed to philosophers and those physicists and biologists who, while pioneers in their respective disciplines, have been sufficiently fascinated by their new discoveries to analyze the epistemological implications of their findings for the non-expert.

Finally, my participation in the planning and teaching of interdisciplinary courses at Columbia University and Brooklyn College brought me in close contact with the findings and modes of thought of such social disciplines as cultural anthropology, psychology, and sociology. As everybody knows who has ever participated in a serious effort at "integrated education" in the social sciences, contact with the newer social disciplines establishes the first interdisciplinary bridges and lines of communication. All one has to do is to venture into the new territory. I would like to gratefully acknowledge a fellowship from The Fund for the Advancement of Education for a comparative study of social science courses at different colleges and universities. I was fortunate enough to be able to experiment with an integrated approach to the study of economic development in India during a year spent at the Gokhale Institute of Politics and Economics in Poona as a Fulbright Research Professor.

My more specific debts are greatest to my wife, who, as on

previous occasions, has shared my interest in the problems under investigation, helped in every phase of the research, and suggested many important changes in the course of the writing of the manuscript.

Professor Fred H. Blum of the University of Minnesota, read an earlier version of the manuscript and made many valuable suggestions for its improvement. Professors Norman O. Brown and J. Gomez-Ibanez of Wesleyan University, Carl E. Schorske of the University of California and Charlotte Houterman of Sarah Lawrence College read earlier drafts of individual chapters. Their critical comments are gratefully acknowledged as are also a number of suggestions for improvements of a substantive nature by Mr. Mulford Martin of New York University; Miss Janet Kahn of New York made many editorial improvements while she prepared the manuscript for the press.

Middlefield, Conn.

October 1960.

K. W. K.

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PART ONE

The Fragmentation of Social Knowledge

CHAPTER I

Specialization and Compartmentalization *Symptoms and Effects*

The failure of the social sciences to think through and to integrate their several responsibilities for the common problem of relating the analysis of parts to the analysis of the whole constitutes one of the major lags crippling their utility as human tools of knowledge.

R. S. LYND*

I. Contradictory Orientations in the Social Sciences

SYSTEMATIC scientific inquiry in the social sciences today is marked by a curious contradiction. On the one hand we are witnessing a rising demand for intellectual cooperation and integration which finds expression in various interdisciplinary endeavors and cooperative ventures by scholars from different disciplines. In these quarters the term "integration" has assumed an unequivocally positive meaning and represents an intellectual goal which calls for no further justification or methodological study. On the other hand, the traditional compartmentalization of the social sciences has continued and is vigorously defended on the ground that specialization is the prerequisite for all creative work in scientific inquiry, as indeed in all other fields of human endeavor. This is perhaps most clearly illustrated by neo-classical economics and econometrics, which have continued to single out for separate analysis the phenomena of exchange values and the equilibrating tendencies in competitive and noncompetitive markets. Indeed, there has developed a tendency toward model building not only in economics but also in political science and sociology. While neo-classical equilibrium analysis and model building in general are defended on the ground that they simplify reality by concentrating on the causal and functional relationships of a few selected variables, model builders tend to isolate these relationships by removing them from the social context in

* R. S. Lynd, *Knowledge for What?* (Princeton, Princeton University Press, 1939), p. 15.

which they occur in the real world. In fact, many models have the effect, if not the purpose, of severing the connection between the economic and the so-called noneconomic factors; they destroy the connection between the sociocultural matrix, including the political sphere and the economic process. While they may not explicitly deny the relevance of the sociopolitical environment, they proceed methodologically as if it were possible to arrive at relevant conclusions or hypotheses independently of the sociopolitical environment in which the relationships occur.*

In all these respects the builders of models and the calculators of parameters seem to ignore and implicitly deny what is precisely the point of departure of those social scientists who call for greater interdisciplinary cooperation and aim at an integration of social inquiry: the sociocultural context of human behavior and all social processes. By abstracting from the sociocultural context and by isolating particular relations between independent and dependent variables not only do we narrow the scope of analysis, but we also add new walls to the traditional separation between the disciplines. While the model builder, in his pursuit of mathematical rigor, tends to strengthen and accelerate the compartmentalization of social analysis, the integrator, in his search for greater faithfulness to the sociocultural context and greater relevance of his conclusions, tends to underestimate and minimize the borders that separate the various disciplines.

These trends and developments are not only contradictory but have the effect of destroying whatever lines of communication still existed between and within the various disciplines fifty years ago. As a result, interdisciplinary cooperation and the actual achievement of some form of integration is becoming increasingly difficult.

2. The Fragmentation of Social Knowledge

CONTRARY to Comte's positivist ideal of a unified social science the social disciplines have multiplied. In addition to such tra-

* Additional features of most models seem to be the tacit assumption that relationships between social variables remain either constant over time or that they change only in a linear fashion and that the available statistical data used in the construction of the model are sufficiently reliable to warrant the hope that calculations based upon the coefficients will yield significantly correct causal explanations and predictions.

ditional fields of social inquiry as philosophy, history, political science, and political economy there are now a host of new and hybrid fields of investigation. Social inquiry today is parcelled out into a multitude of more or less autonomous disciplines. Even sociology has become a specialized discipline using special techniques in dealing with a particular set of social problems. Under these circumstances we may well ask: What are the over-all effects of this multiplication of social disciplines? What happens to our knowledge of man and society if each discipline defines and selects special "aspects" of social problems for separate study? In short, what does it mean to be a specialist: an economist, a sociologist, a political scientist? What does it mean and where does it lead to if we are willing to study human behavior and such related social phenomena as markets, prices, and the distribution of income in isolation from the social and political context in which they occur?

To view problems from a particular point of view and in isolation from the total context is usually defended as a necessary first step toward their solution. In order to interpret, it is necessary to simplify and, so the argument runs, simplification of an initially obscure situation makes it necessary to break it down into its constituent elements. From here it is only a step to argue that the problem must be taken out of the total context in which it occurs. It must be viewed, so it is felt, at least temporarily and provisionally as a separate problem; in short, it has to be reduced to "manageable" proportions. Of course, nobody will deny the need for simplification. The whole process of scientific inquiry aims at simplification of an initially obscure and complex situation. But the scientific enterprise can succeed only in so far as it is possible to simplify without distorting the nature of the problem.

The question of wage and price determination may serve as an example to illustrate our point. To understand the factors that determine wages and prices in a market economy is an important problem of social inquiry. It is a complex question because the outcome is dependent upon many interrelated factors. For instance, the human relations that play a role are usually relations between groups which wield political influence and power. It is possible to simplify the problem by abstracting from the political,

social, and actual motivational context in which wage negotiations and price determination take place in contemporary society. By ignoring the desire for stability and the role of power in wage negotiations and the determination of prices and by viewing these processes exclusively from the perspective of the maximization principle in terms of dollars and cents we make our problems amenable to the equilibrium approach. That is to say, we are able to define levels of equilibrium which would be reached if the conditions of supply and demand were completely transparent to the participating parties and if their behavior followed exclusively one single objective: the maximization of profits or wages.

If the problem of wages and prices is viewed in such isolation, however, as it invariably is by the hypothetical model of equilibrium analysis, it turns out to be a rather different problem from what it is in reality. To abstract from the aspect of power in a modern economy may simplify the situation; but it simplifies it by the omission of an important factor without which it often not only becomes theoretically insoluble but turns out to be an exercise in pure logic with little relevance to the actual issue and the possible prediction of the outcome. As a matter of fact, viewed in isolation rather than within the context of the political power constellation, the theoretical problem of wages and prices tends to become a relatively minor and insignificant one.

At the same time – and this is the really crucial point – it can be shown that what appears to be a legitimate simplification of social problems for purposes of scientific inquiry often turns out to be, upon closer analysis, an unnecessary complication of the question at hand. Again and again it has been shown that the so-called simplified partial analysis is capable of providing only incompletely determinate solutions on the theoretical level, whereas in reality it is usually possible to find a determinate and more or less stable solution within the total political and motivational context. Again we refer to the theory of price (and wages) where the elaboration and refinement of pure models has tended to produce indeterminate solutions of particular problems which find a relatively stable and determinate solution in everyday life where economic and political factors are intimately interrelated.

After all, price and wage agreements are determinate and relatively stable solutions even under conditions which approximate those of duopoly and oligopoly. They assume their relative stability and determinacy not in a world in which the conditions of supply and demand are transparent and in which the participants are motivated solely by the desire for income maximization in accordance with a pre-established preference schedule, but in a world in which other factors such as power, stability, public opinion, and fear of antitrust prosecution under the existing machinery of social control combine with the theoretically distinguishable but actually inseparable considerations of the leading participants.*

In other words, what started out as an attempt to simplify the problem for purposes of analytical treatment ends up as a mystification of it. Isolated from its context, the problem turns out to be theoretically insolvable, as indeed it must whenever the actual situation finds a determinate and relatively stable solution only due to the presence of a whole series of factors from which we have deliberately abstracted in an attempt to reduce the problem to "manageable" proportions. Of course, the term "manageable" in this context has meaning only in relation to a particular mode of reasoning and a method of analysis which have come to determine both the selection and the formulation of the questions to be investigated.

The really important and difficult social problems are of complex origin and have far-reaching repercussions which can neither be fully analyzed nor brought to a solution in terms of the concepts of any of the specialized disciplines. Whether we deal with the problem of economic growth and development, the industrialization of "backward" areas, the reduction of juvenile delinquency, or the study of neurosis and alcoholism, we cannot make much headway as long as we choose to stay within one narrow speciality. Nobody will deny that the economist has a conceptual framework which enables him to single out some of the variables

* On this whole question of the indeterminacy of the theoretical solution of pure economics conceived as an autonomous discipline and the fact that the problem of prices and wages does find determinate solutions in the actual world of duopoly and oligopoly embedded as they are in an institutional framework, see Chamberlin (1951), Rothschild (1954) and Galbraith (1952).

(For full titles of general references of this kind see Bibliography.)

that play a role in the process of economic development. And doubtless, sociologists and psychologists have developed intellectual constructs which guide them to some of the more important factors responsible for juvenile delinquency and psychoneurosis. However, the economist who considers the problem of economic development in "backward" areas is soon up against the fact that his discipline assumes a social and cultural environment which differs from that found in the underdeveloped world. Neither the basic value orientations, the "ethos," nor the political and administrative arrangements in these areas correspond to those assumed by classical or neo-classical economic theory. As a result, the economist finds it difficult, if not impossible, to take adequate account of the sociocultural environment which has retarded economic development in the past and is likely to affect the outcome of contemporary policies (advocated on the basis of a theoretical framework which concentrates on purely economic variables) for the next few decades. Hence, the urgent need to develop a framework of analysis that relates economic development to the institutional factors which have stood in the way of economic growth. Only in this way will it be possible to formulate effective policies for economic development viewed as a part of sociocultural change. Probably all important dynamic social problems are the result of an interaction of a much greater number of variables than the specialized disciplines are prepared to consider. Practically none of these dynamic problems and none of the cumulative disturbances are confined to a particular field which corresponds clearly to the subject-matters of one or the other of the separate disciplines. The sociologist and psychologist who deals with the problem of alcoholism and psychoneurosis in modern society finds it necessary to concern himself with problems of interpersonal relations which upon closer analysis are found to have their roots again in social changes and are greatly influenced by culturally conditioned attitudes characteristic of the general system of production, distribution, and consumption of goods and services in modern industrial society.

Let us consider some of the further consequences of the specialized pursuit of knowledge about man and society. What happens to those problems which do not fit into the closed areas of specialization and cannot be adequately analyzed in the traditional

manner? What happens to the truly significant problems and disturbances which cannot be made intelligible within the narrow confines of any of the specialized disciplines because both their causes and their repercussions transcend any compartmentalization. The inevitable outcome seems to be either that no attention is paid to these problems or that new disciplines are established to explore these issues which otherwise would be lost in the no-man's land separating the older disciplines. Hand in hand with the emergence and multiplication of new hybrid disciplines goes the development of new conceptualizations and new specialized terminologies which compound the already existing difficulties of communication between the disciplines.

With social research divided into a multitude of specialized and largely unrelated studies, it is unavoidable that specialization becomes the model and norm of scientific research in general. Sooner or later each scientific pursuit and each particular discipline will assume the character of a value of its own, which will finally manifest itself in the conviction "that the scholar ought to devote himself to his special researches without bothering to inquire whether they serve some purpose or lead anywhere."¹ The final step of this development is reached when the specialist imposes his rationalized image of the "creative scholar" on the rest of the profession. When the reputation of the scholar depends upon the degree of his specialization which is regarded as "the royal road to efficiency in intellectual as in economic life," and when the individual who attempts to survey a whole science is looked upon as "a charlatan, and definitely not as a creative scholar,"² any preoccupation with more than a small part of a particular discipline becomes the hallmark of superficiality. This is the final stage of an intellectual development which has been described quite aptly as the "barbarism of specialization."³

We are not suggesting here that the work of the specialist is insignificant or that his conclusions are irrelevant because they apply to a relatively narrow field of investigation. After all, there

¹ E. Durkheim, *The Division of Labor in Society* (Glencoe, Ill., The Free Press, 1947), p. 357.

² G. J. Stigler, "Specialism - A Dissenting Opinion," *American Association of University Professors, Bulletin* (Winter 1951/52), 37, p. 651.

³ Ortega y Gasset, *The Revolt of the Masses* (New York, W. W. Norton, 1932), p. 107.

are many problems and disturbances which derive from local causes and do not significantly affect other spheres of society or, because of their relatively minor and technical character, do not become cumulative and are easily absorbed because the social process as a whole is still functioning smoothly. As long as the expert deals with disturbances of this kind his conclusions may be both valid and significant. This is the meaning of Heimann's *dictum* that "the validity of the social sciences is confined to cases of secondary and tertiary importance, that is to say to problems which find a solution within a limited area because they are not too difficult. Hence, the validity of the social sciences may be said to rest on an implicit 'harmony myth' even if they are concerned with strictly local disturbances."⁴

The specialist who investigates partial problems and views them in isolation from the total context is not precluded from arriving at valid interpretations and conclusions; but his explanations will apply only to partial problems. By confining themselves to those facts and issues which either are narrowly circumscribed as far as both their causes and effects are concerned, or which can be easily isolated from their context, specialized inquiry leaves unexplained the much more important problems that affect society as a whole and have their origin in the social structure as such. In fact, there never seems to emerge a coherent and complete picture of the interconnections between the various elements of human societies. The more important problems of man and human behavior in society and the causes and consequences of such behavior are actually rendered so obscure as to breed irrationalism and despair.⁵ Instead of a systematic pursuit of rational truth in harmony with established canons of scientific method, specialized research is constantly in danger of losing itself in formulations that fail to do justice to the problems at hand. Similarly social criticism tends to become ineffective because it is couched in specialized language or aphoristic and paradoxical formulations which close the matter to rational discussion. No adequate diagnosis or realistic predictions are possible when

⁴ E. Heimann, *Wirtschaftssysteme und Gesellschaftssysteme* (Tübingen, J. C. B. Mohr, 1954), p. 220 (Translation by the author).

⁵ K. W. Deutsch, "Higher Education and the Unity of Knowledge, *Goals for American Education*, Conference on Science, Philosophy and Religion. (New York, Harper and Brothers, 1950), p. 62.

events and human behavior are viewed as influenced by one factor or a particular group of factors rather than in relation to the total context. Such inquiry arrives at conclusions which provide neither substantive and significantly correct predictions nor relevant criteria for the formulation of social policy. In short, a specialization which neglects the intrinsic interdependence of social events and processes must ultimately fail as an instrument of policy designed to cope with social problems.

Nor is this all. Inquiry and knowledge which do not aim at an intelligible picture of social reality leave us in ignorance about social processes and their ultimate repercussions. Such ignorance not only renders us impotent to cope with social problems but also defeats our efforts to avoid what is destructive of human life and welfare. Social inquiry which leaves us in the dark about the causes of racial tension and discrimination, or ignores the social and human costs of production, or is unable to focus attention on the social nexus of stagnation at home and abroad, makes it impossible for us to develop practical proposals and remedies. What is more, without this knowledge we are unable to perceive the consequences of our action for the welfare of others. This inability, in turn, makes us morally blind.⁶

Moral blindness is perhaps the most destructive result of partial knowledge and narrow specialization. The expert who has only an incomplete understanding of events and whose awareness of their consequences is colored by partial and inadequate explanations has rendered himself vulnerable to all sorts of partisan pressures and political ideologies. Whether as scientist or bureaucrat, the expert is in danger of offering his services and the products of his technical skill to any political regime, no matter what ultimate ends may be pursued. As a matter of fact, it may be seriously questioned whether the pursuit of specialized knowledge and particularly the quest of precision in imitation of the natural sciences which underlies most current attempts of model-building must not ultimately end in failure and thereby undermine the belief that knowledge and reason are after all prerequisites for an improvement of our social arrangements. When the exchange of ideas becomes difficult, when generalizations, although logically correct and precise, turn out to be without substantive content

⁶ *Ibid.*, p. 62.

and irrelevant for the solution of social problems, when models permit us to withdraw from the social context, one wonders whether the fantasy of our scientific constructs is not, in reality, a measure of the intellectual disintegration of our time. Indeed, we may ask, with Boulding, whether scientific inquiry "will not grind to a stop in an assemblage of walled-in hermits each mumbling to himself words in a private language that only he can understand."⁷

To summarize, as social inquiry becomes more and more specialized, it separates itself from the context in which social and human problems arise and thereby tends to change and distort the problem under investigation. More than this, the various specialized social disciplines tend to define and formulate their questions in a special way and bring to the treatment of their subject matters a special perspective. Fundamentally it is this perspective, as we shall have occasion to show, which distinguishes the various disciplines; it defines the nature of the problems to be studied and determines the questions to be asked as well as the type of answers that are considered adequate and appropriate. To be an economist, a sociologist, or a political scientist means to view certain social issues in a particular way and more or less in isolation from the total situation in which they may arise, and to bring to bear upon them a particular technique of analysis.

3. The Fragmentation of Social Knowledge and the Modern University

THE COMPARTMENTALIZATION of social inquiry has its counterpart in a similar fragmentation of higher learning and knowledge in general. Indeed, the "house of intellect" is today marked by many cleavages and open gaps which make effective communication difficult. Perhaps the most fundamental of these cleavages is that between the humanities and the natural sciences. As long as the artist and the writer remain aloof from the sciences, the humanities are in danger of perpetuating attitudes and values

⁷ K. E. Boulding, "General Systems Theory - The Skeleton of Science," *General Systems, Yearbook of the Society of the Advancement of General Systems Theory*, Vol. I (1956), p. 12.

which may correspond to an earlier and less sophisticated and subtle world view than that which is borne out by our contemporary scientific knowledge. Such unresolved cleavages between different segments of a culture are always dangerous because they strengthen the general animus of the nonscientific part of our culture against intellect and reason.⁸

There are those who are inclined to see in intellectual cleavages and in the present fragmentation of social knowledge evidence of a healthy pluralistic rivalry, which is sometimes defended as a prerequisite to intellectual stimulation and advance. Of course, nobody will deny that alternative and even conflicting conceptualizations, and indeed open cleavages and dissent, far from being a disaster, represent challenges and opportunities for scientific inquiry, provided they are not evidence of a breakdown or complete cessation of communication between the disciplines. If they are symptoms of a breakdown they point to a serious situation, not only for the conduct of scientific research but for society in general. Closer analysis of the much-approved radical pluralism in contemporary thought reveals the existence of serious barriers to an understanding of what each of the various compartments is doing. The house of knowledge

is a world of many different knowledges, pursued in varied ways to diverse ends. These many inquiries are normally carried on with little thought for their relations to each other. The student of John Donne's poetry, the student of the learning curve, the student of Soviet economy, the student of the structure of the atom – each gives little enough attention to what the others are doing, and none at all to any total picture of anything. Each has his own goals, his own methods, his own language for talking about what he is doing and what he has discovered. Each seems happiest when left to his own devices, glad indeed if he can keep the others from treading on his toes. Each is convinced that what he himself is doing is worthwhile. But none has too much respect for the others, though he is willing enough to tolerate them. They have all little understanding of each other's pursuits – what they are trying to do, how they are doing it, and what they really mean when they talk about it. And lacking understanding and the very possibility of communication, neither they nor, it would seem, anyone else is in a position to appraise the respective importance of what each is doing.⁹

⁸ These cleavages have been analyzed with admirable impartiality by a writer and scientist who can justly claim to be one of the few who have a foothold in both camps. See C.P. Snow, "The Two Cultures and the Scientific Revolution," *Encounter* (June 1959). Vol. XII, pp. 17–24.

⁹ J. H. Randall, "The World to be Unified," in L. Leary (ed.), *The Unity of Knowledge* (New York, Doubleday and Company, 1955), p. 63. Copyright 1955 by the Trustees of Columbia University in the City of New York.

Since we are all the products and the victims of our respective intellectual specializations which have shaped our views and our vision, we cannot fully understand the intellectual gaps and inconsistencies of our education and our knowledge. Indeed, it takes the differently trained mind of an Oriental scholar to give us a notion of the intellectual dilemma in the Western university. To him, specialization and compartmentalization which the Western mind takes for granted are a never ending source of confusion:

My bewilderment and rebellion before American education were enhanced by looking back to Chinese models. Confucian education never required the study of anything but poetry.... There was no division between the critical and the creative.... It did not make for Aristotelian analysis, but it vitalized the whole field of knowledge to the creatively minded. This was the way I wanted to approach Western knowledge. And found it would not work, for there was no tradition like that in American education. I was distressed at the lack of unifying principles. I could build no bridges from one classroom to another....¹⁰

We may have our doubts about the effectiveness of the Orient's success in achieving an intellectual synthesis in terms of the creative and intuitive element in our knowledge. The resulting lack of clear-cut distinctions and the neglect of critical analysis may be too high a price to pay for such a direct and intuitive approach to inquiry, no matter how much the latter may preserve a unity of vision and contribute to a synthesis of conclusions. Nevertheless, what must impress us is the bewilderment and confusion created by our system of specialized and compartmentalized learning in the Oriental mind.

What is the impact of the fragmentation of knowledge on the process of higher learning? Let us consider the plight of the average conscientious undergraduate who has to work his way through the rudiments of several disciplines in an American university. The scholar-specialist stays in his own discipline, isolated but self-sufficient and content with his particular vocabulary. Contrariwise, the student who attempts to follow lectures in such divergent fields as nuclear physics, neo-classical economics, psychology, comparative religion, and literature is exposed to terms, concepts, and perspectives that are at best unrelated or outright contradictory.¹¹ The course in economics may conceive of eco-

¹⁰ Y. Kang, *East goes West* (New York, Charles Scribner's Sons, 1937), p. 203.

¹¹ For an account of the barrage of special terms and concepts which the

conomic processes and events as analogous to mechanical forces and counterforces (supply and demand), coming to rest at some point of stable equilibrium; the course in modern physics may show the limitations of Newtonian mechanics for the interpretation of microphysical phenomena and introduce the student to the conceptual tools of the modern theory of matter and energy; the course in biology may reject mechanism in favor of some neo-vitalism; the course in psychology may conceptualize its materials in terms of Freudian depth psychology, while the instructors in history and art may have no use for psychology whatsoever but use instead one or the other of the available philosophies of history in order to select and organize their materials. Of course, these are hypothetical and extreme examples which may convey an exaggerated picture. But they illustrate the point we are trying to make. The intelligent undergraduate who has to go from one field of inquiry to the next is likely to be left bewildered if one discipline formulates its problems in harmony with a type of reasoning whose universal validity is questioned, if not actually refuted, by the original field of inquiry from which it was borrowed. For what the student faces is not merely a variety of different conceptual frameworks and modes of reasoning, but an anachronistic correlation of subject matters in which habits of thought which may have been abandoned in one discipline still determine the formulation of problems in another. Thus, consider the plight of a college student who takes "a course in literature, in which the meaning of life is given in terms of certain concepts. Then he goes to chapel or church or synagogue and is given other concepts, such as the soul, the spirit, and immortality. However, on the following morning, in his class on psychology, he is told just the opposite: that the soul is an outmoded concept, and that stimuli and response and conditioned reflexes are most important keys to an understanding of man. The student has no way of knowing how he is to relate the concepts that he has been given in chapel to those in his psychology, biology, and physics courses – to say nothing of what happens when he comes to economics, where the concepts taught him seem to have no relation to electrons, con-

average undergraduate in an American university may encounter in an average day's exposure to academic learning, see W. Thorp, "The Well of English, Now Defiled," *Encounter* (December 1959), Vol. XIII, pp. 33-34.

ditioned reflexes, or, least of all, to the soul and its immortality."¹²

In short, contrary to what its name originally implied, the modern university provides few links between different subject matters and different disciplines. Instead, autonomous disciplines seem to pursue their particular objectives more or less in isolation from each other. Without attempting to correlate its constituent components in an effort to provide an intellectual image of an interrelated world, the modern university merely accommodates and ties together the technical administration of a number of highly specialized departments. Any idea of a unified pursuit of knowledge is as foreign to a modern university as would be the attempt to establish conceptual links between the various disciplines. While the borders between departments have remained ill-defined, the relations between different disciplines are marked by an almost complete absence of communication. Where common concepts and common assumptions are lacking, any attempt to relate the analyses, or for that matter to exchange ideas, seems to be both futile and frustrating. Hence, what is going on in each of the highly specialized disciplines is known only in the vaguest terms to the members of other departments. Consequently, the significance and bearing of new knowledge and new methods developed in one science cannot be fully appreciated by the specialist of a related discipline and still less, of course, by anybody who is still further removed from the field.

Social inquiry, in particular, is parceled out today into a multitude of more or less isolated studies. What are in reality complex phenomena with causes and repercussions extending beyond a narrow area tend to be viewed in isolation from the context in which they occur. Such compartmentalized inquiry fails to throw light on causes and effects of human action and social events and therefore cannot yield a comprehensive and coherent picture of reality. It obscures rather than illuminates the interconnections which are implicitly denied and which no amount of general education and interdepartmental cooperation is able to recapture. Before we can approach the question of whether and how any bridges leading from one field of inquiry to the next can be constructed in the social sciences, it is important to examine briefly the causes which have led to the present fragmentation of social inquiry.

¹² F. S. C. Northrop, "Toward Valid Integrative Concepts," *Main Currents in Modern Thought*, 1949, vol. 7, p. 7.

CHAPTER II

The Causes of Compartmentalization

One of the chief practical obstacles to the development of social inquiry is the existing division of social phenomena into a number of compartmentalized and supposedly independent non-interacting fields, as in the different provinces assigned, for example to economics, politics, jurisprudence, morals, anthropology etc. ... A survey from the logical point of view of the historical development of the social disciplines instructively discloses the causes of splitting up social phenomena into a number of relatively closed compartments and the injurious effects of the division. J. DEWEY*

I. Diversity of Explanations

TURNING from the consideration of the symptoms and effects of the compartmentalization of social knowledge to an analysis of the factors which have brought it about we are immediately faced with a bewildering number of explanations. One of the most commonly held views was advanced by Auguste Comte, who regarded the compartmentalization of social knowledge as the inevitable result of the division of labor which was made necessary by the complexity of the materials dealt with in the social sciences. Others attribute the breaking up of social analysis into a multitude of detailed and more or less unrelated studies to the rapid pace of technological innovation, which is said to go hand in hand with specialization of knowledge. Advances in technology are said to have given rise repeatedly to crises in the unity of our knowledge and to subsequent attempts, never completely successful, to regain some measure of over-all synthesis by means of analogical reasoning.

A different view of the matter is advanced by those who hold with Scheler and Cassirer that the splitting up of social inquiry into a number of detailed and largely unrelated social studies is due to the loss of an "intellectual center": a general theory of man and human nature. Without such a theory, which serves as a general frame of reference to guide the study of man and society, it is argued, each author is free to develop his own, often arbi-

* J. Dewey, *Logic—The Theory of Inquiry* (New York, Henry Holt & Company, 1938), p. 508.

trary conception of man and human behavior, from which it is then possible to approach the analysis of the empirical evidence. "Nietzsche proclaims the will to power, Freud signalizes the sexual instinct, Marx enthrones the economic instinct. Each theory becomes a Procrustean bed on which the empirical facts are stretched to fit a preconceived pattern."¹

Another explanation attributes the compartmentalization to the widespread and age-old tendency in Western thought to fit the world of experience into a dualistic conceptual framework. Dichotomies that separate the economic and the political, the individual and society, the mind and the body, and so on are seen as the root of the compartmentalization of social inquiry. For obviously, if the individual and society represent fundamental dichotomies, it stands to reason that the study of these separate entities can and, in view of the real or imagined advantages of the division of labor, ought to proceed in separate disciplines. Whereas psychology studies the individual, the political or social disciplines such as political science, economics, and sociology concentrate on the study of society. "This separation was conceived not as an arbitrary division for the purpose of convenient academic specialization, but as a separation which clearly mirrored a fundamental dichotomy in nature."²

The emergence of separate and autonomous social disciplines has also been attributed to the belief in the existence of a pre-established harmony in nature. For we are justified in analyzing economic problems in isolation and in a separate autonomous discipline only if we assume that no matter how far-reaching the "disturbances" and "failures" of the economic system become, they will always remain minor problems which will find their solution by being absorbed by an essentially healthy and harmoniously functioning social system. It is considerations such as these which lead Heimann³ to view the crisis of the autonomous social sciences as the inevitable outcome and carry-over of the earlier utopian belief in harmony and order in nature, including society. Others describe the present compartmentalization of

¹ E. Cassirer, *An Essay on Man, An Introduction to A Philosophy of Human Culture* (New Haven, Yale University Press, 1944), p. 21.

² M. E. Spiro, "Culture and Personality," *Psychiatry*, Vol. 14, (1951), p. 20.

³ E. Heimann, *Wirtschaftssysteme und Gesellschaftssysteme* (Tübingen, J. C. B. Mohr, 1954), p. 220.

social inquiry as "segmentalism", and advance the thesis that we are confronted with a typical case of withdrawal from reality. By isolating himself and his discipline from the rest of social experience and by considering his subject matter as autonomous, the social scientist is able to avoid unwelcome facts and ideas and to exercise a kind of personal censorship over anxiety-generating conclusions.

It is not that sciences abstract from certain aspects of reality that is psychologically significant, but *from what* they abstract, what they exclude from their considerations. They abstract from anxiety-creating thoughts and, thus, perform a psychological function. In the social sciences abstraction serves a twofold purpose. First, it simplifies reality sufficiently to make it understandable, comprehensible, and predictable.... Second, by abstracting from disturbing and conflict-creating elements, the social institutions assume the character of a harmonious, rational mechanism. This lessens the incentive for social change. The isolating abstraction thus tends to relieve the individual from responsibility and to eliminate aggressive anxiety-creating impulses against society.⁴

Böhler likewise speaks of the insecurity of the scholar who, dimly aware of the incompleteness of his knowledge and its validation, tends to regain his security by withdrawing into the construction of models, or by surrendering to dogmatism.⁵

The tendency to withdraw into a fantasy world of constructs or "accredited make-believe," as Veblen would have called the current vogue of model-building in the social sciences with its imitation of the methods and rigor of the physical sciences, is traced by the theologian Tillich to an attitude which uses the capacity of reasoning for the purpose of defending and applying conventional forms and formal definitions without the desire to transform reality. This purely formal use of intellect ("cognitive intellect without eros," as Tillich calls it) is regarded both as a cause and a symptom of the disruption of the unity of reason "into departments, each of which is controlled by a special set of structural forms."⁶

From still another perspective the present compartmental-

⁴ W. A. Weisskopf, "Psychological Aspects of Economic Thought," *Journal of Political Economy* (1949), LVII, 4, pp. 307-308.

⁵ H. Böhler, "Zur Psychologie der Nationalökonomischen Erkenntnis" in *Wirtschaftstheorie und Wirtschaftspolitik*, Festschrift für Alfred Amonn. (Bern, Francke Verlag, 1953), pp. 125-143.

⁶ P. Tillich, *Systematic Theology* (Chicago, Chicago University Press, 1951), pp. 90-91.

ization may be attributed to, or rather associated with, a general social and cultural malaise in Western society, of which it is the most ominous expression. From the viewpoint of a general sociology of knowledge the lack of coordination and unity of social knowledge may be viewed as an expression of human isolation and "atomization." The splitting up of social analysis into numerous autonomous disciplines and the theoretical dichotomies and conceptualizations which support it correspond to prevailing modes of isolated human existence, isolated, that is, from the totality of society and culture.

We need not go into a detailed analysis of each of these interpretations of the compartmentalization of social knowledge. Nor shall we attempt to show that most – although not all – of these seemingly different explanations tend to supplement one another. Suffice it to say that most of the above interpretations view our problem from different perspectives. What appear to be different explanations are in reality hypotheses which merely stress different aspects of the problem. Instead, we propose to show that certain logical procedures of social inquiry have played a major role in the progressive disruption of the unity of social knowledge. We do not deny that these procedures and their widespread acceptance may at the same time reflect certain deep-seated ideological cleavages or serve a desire to withdraw from a disturbing reality into purely formal systems of theoretical conclusions. What we do deny explicitly is the belief that the secularization of human knowledge and the division of labor have made the disruption of knowledge inevitable and, indeed, were responsible for it.

2. Secularization and Synthesis

ASSUMING that a division of labor in scientific inquiry is essential and inevitable, must the resulting specialization of knowledge give rise to intellectual compartmentalization and fragmentation? Or, must the specialist whose competence lies in a relatively small segment of man's total experience become more and more isolated from a familiarity with the rest of knowledge concerning man and society? If this were so, one would be forced to conclude that intellectual compartmentalization is the price that

has to be paid for professional specialization. However, a little reflection will show that specialization and compartmentalization do not necessarily have to go together. In the first place, division of labor does not logically preclude coordination and cooperation. This can be amply demonstrated by illustrations from biological and economic processes. Neither the differentiation of functions in biological organisms nor the economic division of labor between different groups of human beings precludes their being fully coordinated in the achievement of common objectives. Just as the economic division of labor finds in the competitive and even in the imperfectly competitive market its coordinator which, however inadequately in practice, integrates the specialized performances of different producers into a complex system of interrelationships, so are the various specialized functions of the different parts of the healthy living organism fully and largely automatically coordinated.

But we need not base our case on a precarious analogy with the biological and the economic division of labor. The question can be answered more directly. There has always been a division of labor in the pursuit of knowledge. No single individual could ever hope to encompass completely the vast array of materials that form now the subject matters of different disciplines. The image of the universal scholar with the competence of an expert in all fields is a myth. But unlike the modern specialists in the social sciences, the scholar of the past was able to pass from one field to another, not merely because there was less that had to be learned or because there were fewer specialized vocabularies acting as barriers to communication, but because the bonds and hence the coherence between the different fields of inquiry had not been lost. There were common concepts and general theories that enabled the scholar to shift from one field to the next with relative ease. In short, there existed a measure of synthesis and meaningful coordination between the various fields, and each scholar, although not a specialist in all, could remain aware of the germinal problems and the methods of attack used for their solution in most fields. Division of labor and intellectual specialization do not necessarily have to give rise to compartmentalization of inquiry.

There is no need to deal at length with the intellectual synthe-

sis which Greek and medieval scholarship succeeded in establishing. These earlier integrated approaches to the study of the universe, human existence, and society rested upon unifying principles and a theology which encompassed man's total knowledge. In fact, the idea of separate disciplines dealing, for example, with "politics" or "economics" were explicitly denied. Political and economic concepts were first and foremost either ethical or theological categories. The classical concept of the good society rested upon a concept of the nature of man and the structure of the universe which made it inevitable that the closest relationship and indeed unity existed between what are now independent disciplines.

It is well known that the scientific revolution and the new world view which emerged during the sixteenth century never destroyed the fundamental unity of Western knowledge. As a matter of fact, in one significant respect, at least, this unity of Western knowledge was reinforced. For what appeared to the Greek and medieval schoolmen as a largely dichotomous structure and hierarchical division of the universe, each regulated by its own special laws (for example, heaven and earth), was shown to be an essentially uniform universe subject to the same regularities and governed by the same general principles of mechanics. Thus, while the scientific revolution destroyed the older world view and shattered many earlier conceptions concerning the structure of the physical universe and the nature of man and society, it laid the foundation for a new and in some respects even more fundamental unity of all Western knowledge. This was due to the fact that the scientific revolution also shaped the methods of thinking about man and society. The details of this process have been studied at length by historians of thought and there is no need to retrace the specific steps which led from, let us say, Hugo Grotius' concept of natural law and a secular science of man and human nature to the final acceptance of physics and biology as prototypes of social analysis.

THE LAPSE INTO 'NATURALISM' – Adam Smith was still sufficiently close to Grotius and the early pioneers to base the new science of national wealth and economic development on an essentially humanistic basis. His laws and generalizations still

follow from the behavior of man. For him, political science and political economy dealt with what he considered to be natural to man, not to animals and plants. Man's society and the economy of nations were still seen as parts of their political organization and their national life. That is to say, the economic sphere was still understood as intrinsically related to the cultural sphere. For Adam Smith "natural is that which is in accordance with the principles embodied in the mind of man; and the natural order is that which is in accordance with those principles. Nature in the physical [and we might add in the biological] sense was consciously excluded by Smith from the problem of wealth."⁷

While Adam Smith aimed at a political science of wealth and development based upon a humanistic foundation – the rational and moral nature of man – Malthus and Ricardo began to view the economy as subject to laws and regularities which were considered as natural in the sense of being outside the reach of man, in contrast to man-made rules such as customs and laws of the state. Instead of man as a rational and moral being and a maker and product of his culture, it is man as a biological animal dependent upon a natural environment beyond human control and subject to diminishing returns that occupies the new science of wealth and society. Relinquishing the humanistic foundations upon which Adam Smith and all his forerunners had tried to build a secular science of man and society, Malthus and Ricardo tended to view the economy as subject to natural forces. Thus, "the law of diminishing returns was a law of plant physiology. The Malthusian law of population reflected the relationship between the fertility of man and that of the soil. In both cases the forces in play were the forces of Nature, the animal instinct of sex and the growth of vegetation in a given soil.... There was a natural limit beyond which human beings could not multiply and that limit was set by the available food supply."⁸

The Malthusian law of population and the principle of diminishing returns were not simply metaphors borrowed from biology and plant physiology in order to illustrate problems which remained human and social problems and, as such, required

⁷ K. Polanyi. *The Great Transformation* (New York, Rinehart and Company, 1944), p. 112.

⁸ *Ibid.*, p. 125.

explanation in terms of social laws.⁹ They were conceived as true laws of nature believed to govern the affairs of man and society. It was from these natural laws that economists derived the iron law of wages and the tendency of the declining rate of profits, and ultimately turned their attention to problems of allocation and distribution under stationary conditions.

This new approach to economic analysis had the effect of placing the science of economics on an essentially naturalistic basis. That is to say, production and distribution were believed to be subject to regularities and necessities as inexorable as the law of gravitation and the principles of mechanics. The functioning of the emerging market economy with its interrelated set of self-regulating free markets for labor, land, and money (gold) was believed to be governed by natural laws which had to be obeyed in essentially the same manner in which man must act in accordance with the law of gravitation if he wishes to survive.

The emergence of a separate science of economics paralleled closely the ascendancy of economic life over politics for a brief period in the history of Western Europe and North America. In a self-regulating market economy, many of the most important economic problems find their solutions behind our back, so to speak. The determination of the investment-consumption ratio, the level of actual savings, the rate of employment, the level of prices and the purchasing power of money, the quantities to be imported and exported are all the outcome of the action of a multitude of individuals and not the result of deliberate choice. Hence, they appear to be similar in form and content to the emergence of such natural phenomena as the weather, the fecundity of goats, or the growth of vegetation in a given soil. Fortunately, the abandonment of the humanistic foundation in favor of the search for natural laws, which has characterized classical and neo-classical economics ever since Malthus and Ricardo, has never been complete. Elements of the humanistic

⁹ This was still the case with most earlier endeavors to explain social phenomena in terms of universal natural law. "Hobbes' geometrical bias as well as Hume's and Hartley's, Quesnay's and Helvetius' hankering after Newtonian laws in society had been merely metaphorical: they were burning to discover a law as universal in society as gravitation was in Nature, but they thought of it as a human law – for instance, a mental force such as fear with Hobbes, association in Hartley's psychology, self-interest with Quesnay, or the quest for utility with Helvetius." *Ibid.*, p. 114.

strand can even be found in Malthus and Ricardo, and attempts to reintegrate economic analysis into a science of man and culture have never ceased.

THE ROLE OF ANALOGIES – The physical and biological sciences have been able to influence the social sciences mainly as a result of the willingness of the social scientist to reason by analogy. On the whole, the transfer of concepts and general habits of thought from the natural to the social sciences followed the Newtonian model of mechanics – that branch of the physical sciences which deals with the behavior of matter in its macro-physical state under the action of force. The mechanical analogy in social thought is reflected in the transfer to the social sciences of such concepts as force, static equilibrium of forces, balance, level, inertia, velocity, elasticity, and viscosity. More recently, organismic and evolutionary analogies have played an increasing role in social thought. This borrowing of concepts and modes of thought from biology, particularly from evolutionary biology, which has permeated much of contemporary social analysis goes far beyond those social inquiries which are influenced by Freudian speculations. It is reflected in the still increasing use in social research of such concepts and metaphors as homeostasis, growth, self-regulation, cyclical behavior, and the “anatomy,” the “morbidity,” and the “sanity” of society.

The early history of economic analysis offers a particularly clear example of social inquiry based upon analogical reasoning. Concepts and theories were transferred from the natural sciences where they had yielded an impressive system of tested conclusions to a subject matter which was as yet unexplored and obscure, the emerging exchange economy. Natural order, the concept of balance of opposing forces, utilitarianism – these were some of the concepts and theories which served as stepping stones for the elaborations of classical (including socialist) and neo-classical economic theories. Starting with the division of labor and the related phenomenon of exchange, economic theory has endeavored to explain how the market “mechanism” establishes a “balance” or equilibrium between the quantities of goods and services produced and the sacrifices of real (labor) costs involved in their production. This position of equilibrium sets

the terms of exchange (prices) at which different commodities tend to be exchanged. Similarly, the level of prices is regarded as a function of the quantity times "velocity" of the amount of money in circulation. Likewise the labor market is credited with bringing about an allocation of human resources in such a fashion that labor flows to those trades and occupations the products of which are relatively in greatest demand and hence most remunerative, and therefore most attractive, to the individual worker. Similarly international trade was seen as being subject to equilibrating tendencies (comparative cost principle); movements of gold (under conditions of the gold standard) were believed to adjust price levels in different countries in a fashion which reflected their comparative cost positions and maintained the balance of payments in the long run. It would be easy to multiply these examples of a mode of reasoning which views the socio-economic process as subject to forces and counterforces analogous to those studied in mechanics.

It was largely under the influence of this mode of reasoning that economic theory became a search for the hidden (natural) order of economic life and of the forces which govern the system. To identify this hidden, natural, and hence "real" order of things as the most desirable, ideal, and just was merely the next step, which accounts for the peculiar mixture of political valuations and positive inquiry characteristic of classical and even modern economic analysis. From the very outset political economy has seemed to be able to do what no other science is capable of achieving, namely, to define the ideal (what ought to be done, what is desirable) directly on the basis of a scientific inquiry into the causal interrelationships and structure of the economy.¹⁰ In short, under the influence of the mechanical analogy and, we might add, of the general political and ideological background of antiabsolutism and antimercantilism, classical political economy became a search for natural laws in order to determine simultaneously what does and what should take place.

Nobody will deny that this vision of an underlying system of economic forces conceived in analogy to the forces of gravitation had much to commend itself to the early pioneers of a new and

¹⁰ G. Myrdal, *The Political Element in the Development of Economic Theory* (Cambridge, Mass., Harvard University Press, 1954), p. 4.

struggling social science. Above all the search for the hidden order and the equilibrium theorem seem to catch the reality of the emerging self-regulating market economy in which, as we have seen, important economic decisions are taken behind our backs or are the outcome of what has been described as the "disjointed actions of the individual participants and hence lends itself to description in terms of rational mechanics."¹¹ Furthermore, the conviction that economic and social processes were subject to equilibrating forces that actually produce some kind of natural order which could be discovered by rational inquiry provided the theorist with the emotional stimulus to scientific research, while at the same time it satisfied his desire for rationality – a sentiment which, according to Stark,¹² led even Schumpeter, at one time, to consider the equilibrium theorem the sum and substance of all economic analysis.

Apart from this, the equilibrium concept and the search for levels of equilibriums in different markets induced the economist to view production and distribution in reciprocal interaction and the economy as a structure or a system of interrelated parts. In addition, the idea of a hidden order subject to self-equilibrating forces, similar to the principle of gravitation, was particularly well suited to lend support to the growing forces of economic and political liberalism. There can be hardly any doubt that it was the political aspect of the new theory of natural harmony that accounted for the widespread acceptance of the mechanical analogy during the nineteenth century.

The transfer of concepts, modes of reasoning, and substantive theories from mechanics to the new secularized sciences of man and society had far-reaching effects. On the one hand it reinforced the tendency to view the economy as distinct and separate from society and subject to inexorable laws of nature. On the other hand, the transfer of concepts and theories from the natural sciences where they had proved eminently successful to the newer social sciences seemed to give Western knowledge a new unity and an apparent universal validity. Indeed, the extension and transfer of man's empirically tested knowledge about the

¹¹ W. Stark, "The 'Classical Situation' in Political Economy," *Kyklos*, Vol. XII (1959), p. 58.

¹² *Ibid.*

physical universe to the social sciences held out the promise of an equally, if not more, solid synthesis and universality of man's total knowledge than that provided earlier by Christian ethics and revelation during the Middle Ages.

The foregoing discussion invalidates the familiar thesis that the basic cause of the compartmentalization of social inquiry is the result of the growing secularization of social life and social knowledge. For, while the separation of social science from ethics and theology destroyed the medieval synthesis, it did not preclude the elaboration of a new intellectual unity in terms of the growing knowledge about inanimate matter and organic life. On the contrary, the scientific revolution provided the basis for one of the most ambitious attempts to explain man's total experience, including himself and his social existence, in terms of a few basic concepts and theories believed to be of general applicability and validity. What is more, this attempt to establish a new intellectual synthesis based on the natural sciences was highly successful; for to this transfer of concepts, theories, and methods we owe a great deal of what the various disciplines still consider to be established truth about man and society. And yet, the new synthesis was successful only up to a certain point, for it was marked from the very outset by important weaknesses and limitations. It is to these weaknesses and limitations that we must turn if we want to understand the basic causes of the compartmentalization of social inquiry.

3. The Limitations of Earlier Syntheses

THE WEAKNESSES and limitations of the earlier synthesis are those inherent in the use of categories and modes of thought which have proved their usefulness in one field of inquiry in an entirely different field of inquiry, in which neither their validity nor their continued fruitfulness could be taken for granted. While it was perhaps difficult for the scholars of the eighteenth and nineteenth centuries to perceive these limitations of their procedures, it is relatively easy for us to discover them retrospectively.

Impressed by the successes of the science of mechanics and later biology, the political and social scientists of the eighteenth

and nineteenth centuries assumed either tacitly or explicitly the existence of similarities and resemblances between essentially different subject matters. Few of the great creative minds of that period seem to have considered it necessary to raise any questions about the nature of social reality as a distinct subject matter of social inquiry. As a result it was the preanalytic, unproved belief in basic similarities and resemblances which determined the procedures and aims of the new social sciences. Thus the way was open to what can only be called an uncritical introduction of the methods and concepts of mechanics and biology into social inquiry and social knowledge. This imitation of the methods and language of physics and biology by means of analogies based upon the tacit or explicit assumption of similarities without prior inquiry into the nature of the problem has taken different forms in different disciplines at different times. No social discipline, not even the younger psychological disciplines such as psychoanalysis, can claim to be free of this relapse into naturalism. The refusal to inquire into the special characteristics of society and the social process as distinguished from physical and biological processes perpetuates the present compartmentalization of social inquiry. For as F. Lenz has pointed out,¹³ the less we are conscious of the philosophical-historical nature of our problems, the easier it is to lose ourselves, in the course of the progressive division of scientific inquiry, in false, purely formal generalizations and in the concentration upon isolated phenomena and events viewed outside their real context. The specialized discipline becomes a compartment which abstracts from the social process. Division of labor without any corresponding cooperation becomes an end in itself and easily falls victim to inappropriate aims and methods.

Let us consider in somewhat greater detail the possible dangers and actual effects of a procedure of inquiry which uncritically transfers basic categories and modes of reasoning from one field of inquiry to another. No matter how useful the discovery of comparative resemblances or identities may be for an initial comprehension of phenomena and events, such analogies consti-

¹³ F. Lenz, "Die Einheit der Sozialwissenschaften als Grundlage der Nationalökonomie" in *"Die Einheit der Sozialwissenschaften"* Franz Eulenburg zum *Gedächtnis*, (Stuttgart, F. Enke Verlag, 1955), p. 29.

tute no proof. Even if there are significant general resemblances or identities between the materials under study and those investigated in other fields, significant differences of detail often remain. Once under way, however, the method of reasoning by analogy from the physical and biological sciences makes it difficult to discover these differences. Indeed, the initial success of the method is apt to promote the discovery of pseudo-identities and similarities by inducing us to neglect those aspects of reality which do not lend themselves to exploration by analogical reasoning. While an analogy may help to illuminate a problem, it usually illuminates it only from a particular point of view. When the problem is approached in this way, it tends to become difficult to see it from any other perspective. In fact, an indiscriminate use of the analogy may actually change the character of the problem. Instead of serving as a tool of analysis that forces us to deal systematically with the actual and troublesome details of phenomena, the analogical method seduces the analyst to disregard contradictory details and to see only those aspects of the problem which fit into the implicit or explicit models of celestial mechanics or biological evolution. In this way, the inquiring mind may "discover" identities where there are actually differences and lose the capacity to distinguish between similarities, as Rieff pointed out in his critique of Freud's use of analogies and prototypes.¹⁴

More important still is the related danger that, under the influence of the analogy, hypotheses and conclusions are made immune to rational refutation by reference to empirical data. When this is the case, we have reached the end of scientific inquiry and the beginning of what is likely to turn out to be a cumulative compartmentalization of knowledge. When some empirical data that may not fit into a preconceived theoretical framework are disregarded because they fall outside the "proper" scope of the discipline, they are likely to become the subject matter of a separate process of specialized inquiry. In order to illustrate and substantiate the foregoing account of what we consider to be a cumulative process of compartmentalization in the social sciences, let us turn to the evolution of two social disciplines: economics and psychoanalysis.

¹⁴ Ph. Rieff, "The Authority of the Past - Sickness and Society in Freud's Thought," *Social Research* (Vol. 21, 1954), pp. 428-450.

4. Economics and Compartmentalization

THROUGHOUT the nineteenth and twentieth century critics subjected classical and neo-classical economics, the dominant orthodoxy of their time, to a searching critique on the ground that its theoretical conclusions were contradicted by the empirical evidence of poverty, depressions, periodic unemployment, and other social costs. It was pointed out that the premises of economic theory were incompatible with certain facts of human behavior, notably with certain aspects of nonrationality, and that they seemed to disregard completely certain culturally conditioned value orientations as well as the role of power and politics both within and between nation-states. The more the critics, from Sismondi and Malthus, to Comte, List, Schmoller, Veblen, and many others, pressed their objections by confronting orthodox conclusions with empirical data and the greater the difficulties of maintaining the original normative conclusions in favor *laissez-faire*, the more numerous became the attempts to protect the established doctrine by introducing new simplifying assumptions. As a result economic theory became more and more abstract. Instead of revising their assumptions concerning human behavior and the economic process in the light of what the critics regarded as impressive evidence, the central theory of value and price became more and more formal. What had started out as a science of political economy became pure economics, concerned with the explication of "the mechanics of utility and self-interest,"¹⁵ or "the logical analysis of our inherent knowledge of the category of human action."¹⁶ Whereas Carl Menger, the Austrian co-founder of neo-classical economics, still had warned against any identification of the (substantive) objective side of the economic life of a given epoch with the (formal) subjective concept of economizing action ("dispositive *Tätigkeit*") and was willing to consider nonrational action and morbid needs ("krankhafte Bedürfnisse"),¹⁷ the majority of his neo-classical followers proceeded to eliminate everything from economic theory that could

¹⁵ W. St. Jevons, *The Theory of Political Economy*, 4th ed. (London, The MacMillan Company, 1911) p. 21.

¹⁶ L. von Mises, *Human Action* (New Haven, Yale University Press, 1949), p. 64.

¹⁷ C. Menger, *Grundsätze der Volkswirtschaftslehre*, 2 Aufl. (Wien, Hoelder-Pichler-Tempsky A.S., 1923), pp. 60 and 5.

not be subsumed under the formal principle of allocating means to competing ends. In fact, by identifying the rational disposition of means among competing ends with human action in general and economic behavior in particular, the stage was set for the emergence of a new and purely formal science of economics whose basic evidence and data come to the analyst from introspection. "All that is needed for the deduction of all praxeological theorems is knowledge of the essence of the human action. It is knowledge that is ours because we are men; no being of human descent that pathological conditions have not reduced to a merely vegetative existence lacks it. No special experience is needed in order to comprehend these theorems, and no experience, however rich could disclose them to a being who did not know a priori what human action is."¹⁸

We cannot concern ourselves with the fact that not all economists would wish to go as far as Mises in their insistence that the basic theorems of economic analysis are directly (i.e., introspectively) verifiable and in their disregard of evidence drawn from observation of actual human behavior. Whether the basic theorems concerning economic behavior are derived from introspection or are believed to be based upon the behavior of imagined human beings (the example of the fictitious consumer-housewife who equalizes marginal utility per dollar spent or the equally fictitious businessman who maximizes returns by equalizing marginal costs and marginal returns), the fact remains that the majority of economists tend to derive their conclusions from a concept of man which isolates one particular motif of human behavior and makes it the basis of their deductions. By using the fiction of the "economic man" we gain in precision what is lost in significance and relevance for prediction. We could view this whole development with equanimity and consider it as an illustration in one of the more advanced social sciences of what Einstein called the logically unbridgeable gulf "which separates the world of sensory experiences from the world of concepts and propositions."¹⁹ In fact, we might even conclude with the reassuring statement that it is precisely their fictitious formal con-

¹⁸ Mises, *op cit.*, p. 64.

¹⁹ A. Einstein, "Remarks on Bertrand Russell's Theory of Knowledge," in P. A. Schilpp (ed.), *The Philosophy of Bertrand Russell*, Vol. V, (Evanston, Northwestern University Press, 1944), p. 289.

cepts which enable the scientists to proceed to explanation and prediction.

There are, however, two considerations which speak against these general conclusions as far as economic and social analysis is concerned. In this first place, the widespread use of the concept of the economic man and the corresponding concentration on one aspect of human behavior viewed in isolation has the effect of eliminating from economic analysis a whole series of non-rational behavior patterns which have always been significant but which are likely to gain increasing importance as we are approaching the state of an affluent society. These non-rational patterns include actions without close awareness of the true costs or without close calculation of the expected gains or without reference to material objectives.²⁰

It is these types of action which tend to be ignored or neglected as long as one is convinced that in order to be scientific one must isolate the rational aspect of human action and define economic behavior from the perspective of self-interest and the desire for maximum gain and efficiency in the allocation of given means to competing ends. We do not throw light on an obscure social situation by concentrating merely on one aspect of human behavior. By taking refuge in the statement that the omitted aspect of human conduct fall outside the province of economic analysis proper one merely invites the elaboration of doctrines designed to rule out as illegitimate any evidence of behavior that may not fit into the predetermined scope of economic science. To shift these so-called non-economic aspects of behavior to other disciplines such as sociology, politics, or psychology does not help the economist in his task of explaining human action and predicting economic developments; nor does this omission provide any guarantee that the neglected aspects of human behavior will either be taken up by other disciplines or that these disciplines will not themselves neglect non-rational aspects of human conduct. We are thus face to face with situations and problems which are

²⁰ These three types of action have been referred to as "irrational." See I. H. Siegel, "Conditions of American Technological Progress," *American Economic Review, Papers and Proceedings*, (May 1954, Vol. XLIX, No. 2) p. 161n. We prefer the term "non-rational" and reserve the use of the term "irrational" for behavior based upon emotions and impulses. The distinction is probably difficult to make in practice.

only partly explained, and hence unexplained and still obscure.

Equally, if not more important, is the second consideration which makes it impossible to accept the reassuring conclusion that the development and increasing use of models and mathematical constructs in the social sciences are the royal road to success and prediction. This consideration is related to the special difficulties encountered in testing theories and predictions in all social sciences. These difficulties are due to the fact that our evidence is hardly ever crucial in the sense in which we speak of a "crucial experiment" in the natural sciences. The observed data and materials usually available to test predictions and implications of social theories are in most instances the result of several more or less interrelated factors; they are rarely complete and frequently indirect; that is to say, our observed data and materials are not collected for the purpose of testing a hypothesis in a similar manner as a laboratory experiment may be set up for the exclusive purpose of testing scientific hypotheses and their inferences. This also accounts for the fact that evidence for or against particular hypotheses never seems to be lacking, that we find such evidence in abundance, and that our problem is rather one of careful selection and interpretation than of paucity of data. It is this abundance of evidence and the fact that available data and materials do not speak for themselves, but that they require and permit selection and interpretation which makes them so frequently inconclusive. Much of the evidence of the social sciences therefore fails to command the relatively prompt and widespread consensus that seems to accompany many of the findings and observations of the natural sciences. Social evidence requires detailed and careful analysis designed to determine its meaning and to disentangle the various factors which in their combination have brought about the event. The outcome of this process is that, more often than not, we are left with conflicting contentions as far as the "real" meaning of our evidence is concerned.

The importance of this state of affairs and its effects on certain logical procedures in the social sciences can hardly be overestimated. For let us consider for a moment what may happen if our evidence tends to be "abundant," "indirect," and "incomplete"²¹

²¹ M. Friedman, *Essays in Positive Economics* (Chicago, Chicago University Press, 1953), pp. 10—11.

and is therefore subject to conflicting interpretations, both as to its meaning and its relative weight. Such a situation makes it particularly easy to select and neglect evidence. The central objective of scientific inquiry, namely, the discovery of error, is thus rendered extremely difficult. It is this nature of our evidence which, together with a desire for certainty and the tenacity of our wishes, accounts for the high survival rate of theories in the social sciences. The cynic may feel that social theories never die but fade into the background like fads and fancies only to be revived again when our practices need an ideological justification.²²

Nor is this all. The ambiguity of social data is also one of the reasons which account for the high survival rate of those social theories which support political objectives. It explains the difficulties encountered in detecting and eliminating errors from our knowledge, and offers us a questionable security against the disturbing effects of evidence which casts doubts upon our conclusions and our assumptions. For if our evidence seems to refute our premises, it is always possible to proceed at a still higher level of abstraction and to deny, on methodological grounds, any relevance whatsoever to such evidence as may be cast up by experience. By redefining concepts and by changing postulates, which can always be done *ad hoc* and with relative ease, much economic theorizing has become tautological. No matter how useful tautologies may be, not only do they represent the end of any substantive system of knowledge, but they are also the final step in a progressive isolation of one discipline from the substantive conclusions of all other fields of inquiry. By transforming its assumptions and concepts into postulates the discipline tends to seal itself off against any substantive evidence. The effort of securing the (tauto)logical coherence of theoretical constructs and conclusions transforms theory into a "self-sealing" system – "a system, that is, which has a way of almost automatically discounting evidence which might bear adversely on the doctrine."²³ When this point has been reached, the discipline may

²² "The denial to economics of the dramatic and direct evidence of the 'crucial' experiment ... renders the weeding out of unsuccessful hypotheses slow and difficult. They are seldom downed for good and are always cropping up again." *Ibid.*, p. 11.

²³ R. J. Oppenheimer, "Physics in the Contemporary World," *Technology Review* (February 1948), p. 238.

be said to have become a form of mathematics in disguise, neither able to nor interested in describing and predicting human action in its actual historical context.

What may have started as an attempt to attain a common scientific objective by means of a systematic division of labor between related disciplines resulted in effectively sealed systems of thought with specialized vocabularies and the end of all effective communication. Where there were formerly common concepts and common methodological procedures, there are now unbridgeable gaps and impenetrable walls. With each discipline working in special grooves, there is little chance of perceiving phenomena and events within their context. From time to time a violent struggle over methods may shake the wasteland, but it usually ends inconclusively with the compartmentalized specialist feeling more secure than ever that he need not concern himself with "metaphysical" and epistemological issues. Thus what seemed to hold the promise of a new intellectual synthesis based upon the new scientific knowledge of the seventeenth and eighteenth centuries has turned into a compartmentalization which renders all efforts at interdisciplinary cooperation more and more difficult.

The interesting thing about this development during the nineteenth and early twentieth centuries was that it took place at a time when sociopolitical and economic reality became increasingly interrelated. The growing economic division of labor and the conscious application of measures of political control to the social process increased the interdependence between the various parts of the economy, a fact which should have made it more and more imperative to conceive of social reality as an interacting system or structure subject to human control and regulation. Instead, we are faced with the paradoxical spectacle that our knowledge has become more and more specialized at a time in history when the growing interdependence of the parts and the whole of society seemed to call for more rather than less integration between all fields of knowledge about man and society.

No wonder, therefore, that such compartmentalized theorizing becomes irrelevant for the understanding and practical solution of our contemporary problems. By striving to be precise, by singling out one or a few variables, by ultimately identifying

scientific endeavor with the logic of mathematics, by rejecting all theorizing that stays close to the "facts" and hence remains subject to checks in the light of empirical observation, economic theory, especially in the field of value and utility analysis, has lost not only its relation with but its relevance for the analysis of a reality that grows more and more interdependent and that seems to be less and less the outcome of the automatic "impersonal" forces of a competitive market.

5. Psychoanalysis and Compartmentalization

FROM economic theory we turn now to psychoanalysis, another specialized discipline which has given rise, even during the lifetime of its founder, to a variety of new approaches and new schools. This splitting up of a new discipline into more or less hostile camps may serve as an illustration of the compartmentalization of social knowledge. Here we are confronted within a relatively novel field of inquiry with a compartmentalization that has been going on in social research in general. While it is doubtless true that the various schools of psychoanalysis make use of some of the basic concepts, premises, and modes of reasoning of Freud, it is also true that there are considerable conceptual and methodological cleavages that separate Freud from his neo-Freudian successors and the latter among themselves. We are not interested in questioning the validity of one or the other tenets of Freud or in criticizing one or the other neo-Freudian movements. Our purpose is a much more limited one. We shall concern ourselves only with the question of what brought about the splitting up of psychoanalysis into a variety of more or less antagonistic schools – a process which, to all intents and purposes, seems to have all the earmarks of a beginning compartmentalization before the new field of investigation could claim full academic respectability. Here, in a microcosm, and almost before our eyes, we witness what has been going on in the social sciences during the last one hundred years.

In trying to account for this proliferation of a field of inquiry into dissident schools we enter a field outside our own specialization. This forces us to exercise special caution and exposes us to dangers of misinterpretation of which the reader should be

aware. The expert in the field of psychoanalytic theory will have to bear with an exposition which must be, at the same time, simplified and condensed in character and for this reason alone open to various inadequacies. Our attention will be focused on psychoanalysis as a method of research. What is under discussion is not psychoanalysis as therapy designed to restore mental health but as a system of inquiry that operates with and constantly lends support to a concept of human nature. We shall not concern ourselves at all with the substance of the neo-Freudian movements which are assuming increasing significance in contemporary social research.

It is no accident that the impact of psychoanalysis is felt increasingly in all disciplines dealing with man and human behavior. For psychoanalysis does not deal merely with isolated neurotic symptoms but must be understood as a theory of human personality and character structure. Psychoanalytic theory is concerned with the discovery of the factors that determine the interdependent conscious and unconscious mental life of the individual, which under certain conditions of "quantitative disharmonies", may give rise to symptoms of psychoneurosis and mechanisms of reaction which can open the way to a complete disintegration of the human personality. There can be no doubt that due to Freud's preoccupation with factors which lie outside human consciousness, psychoanalysis can claim to have made an important contribution to our understanding of the role of the unconscious in mental processes.

What we consider to be serious limitations in the logical procedures of psychoanalysis are at least in part due to the complexity of its subject matter. The emergence of the healthy human personality and particularly the misfiring of this process and the emergence of psychoneurosis are subject matters that require special techniques and methods of research. Nobody has a right to insist on statistical measurement and precision where qualitative judgment and evaluation are called for. What must be questioned, however, is the tendency of psychoanalytical theory to formulate concepts and hypotheses in such a fashion as to render their exact meaning ambiguous and vague, and consequently to make it difficult, if not impossible, to achieve a reasonably prompt consensus as to the significance of the evidence cast

up by observations. There are those who admire Freud as a "conquistador," as he spoke of himself in 1900²⁴ with an extraordinary capacity of bold speculation and theoretic daring, and we may respond sympathetically to the psychoanalyst's call for a "cognitive tolerance of ambiguity,"²⁵ particularly during the formative stages of a new discipline. And yet the more we tolerate ambiguity in concepts and lean toward theoretical daring and conjecture, the less likely are we to produce unambiguous and refutable hypotheses. Furthermore, the empirical data used to test Freudian tenets are derived from observations of neurotic patients (their overt acts, mental attitudes, dreams, fantasies, and delusions) which, according to Freud, exhibit the most far-reaching dialectical contradictions and hence call for subtle analytical interpretations. No wonder that the testing and refutation of psychoanalytical theories tends to bear an inverse relationship to their production. Indeed, in many instances no serious effort seems to have been made to validate old and new psychoanalytical propositions. In the absence of such validation (or refutation) we cannot hope for that minimum of consensus which marks our scientific knowledge. Instead of consensus there emerges a multitude of theories and schools, each of which is able to discount the evidence that seems to refute its dominant conclusions. A discipline that produces doctrines which resist refutation not only fails to meet the rigid standards of scientific theory, as a recent sympathetic critic pointed out,²⁶ but it also breaks the bonds with scientific method altogether.

Within the context of this study we cannot attempt to provide more than illustrations of the foregoing observations. The following discussion will pay only passing attention to such central aspects of Freud's logical procedures as the ready use of metaphors, analogies, and conjectured prototypes (for example, Moses viewed as a primeval father figure); the linking of a biological theory of stages of infant and human development according to the recapitulation theory which assumes that mental develop-

²⁴ E. Jones, *The Life and Work of Sigmund Freud*, Vol. I. (New York, Basic Books, 1955), p. 348.

²⁵ E. Frenkel-Brunswik, "The Meaning of Psychoanalytic Concepts and Confirmation of Psychoanalytic Theories," *Scientific Monthly* (Nov. 1954), p. 299.

²⁶ Ph. Rieff, *Freud: The Mind of the Moralist* (New York, The Viking Press, 1959), p. 26.

ment parallels the "stages" of human history; and the pervasive tendency of interpreting contemporary manifestations in the mental life of a person (such as dreams, memory, delusions) as fragments of past historical experiences. Indeed, not only past experiences in our own life, like various traumata, but fragments of experiences of a philogenetic origin (of mankind) are believed to play a role in our mental life. For Freud suggests that the mental life of the individual may carry with it an "archaic heritage," an unconscious element which includes "not only dispositions but also the ideational contents, memory traces of the experiences of former generations."²⁷

It is this axiomatic belief in the eternal return and the dominating power of the past and the primitive in the mental development of the individual and in history which accounts for two highly significant characteristics of Freudian theory: the systematic rerouting of inquiry from the immediate problem under investigation to another different level of investigation and the conservative-pessimistic bias which pervades Freudian thought. The first element is reflected in the already-mentioned frequent use of metaphors and analogies which tend to interpret one class of phenomena in terms of another; the tendency to transform the cultural and historical into the private and the psychological; the conjectural account of historical and archaic events and hence their withdrawal from empirical verification; the willingness to interpret historical and prehistorical events in terms of psychological "necessities" derived from the interpretation of neurotic man (for example, the conjectured murder of the primeval father, the preoccupation with the theme of parricide); the tendency of treating the abnormal and the neurotic as the return of the repressed and of the primitive; the identification of work and artistic creation and culture as products of psychopathology and renunciation, and finally the implicit acceptance of psychology as a master social science. The conservative pessimistic elements in Freudian theory come to light in a basic denial of the possibility of change and the emergence of novel constellations and potentialities; in Freud's belief that no transformation of society is possible that would not once again be beset by the aggressive

²⁷ Sigmund Freud, *Moses and Monotheism* (New York, Vintage Books, 1955), p. 127. (Originally published by Alfred A. Knopf, Inc., New York, 1939).

and destructive tendencies allegedly inherent in the human species, and in his fundamental doubts as to the chance of cure and success in therapy except by faith and the establishment of a quasi-authoritarian dependency relationship between patient and therapist.²⁸

Freud's theory of neurosis is based upon, and at the same time supports, a periodization of the emergence of the human personality and character structure which distinguishes between three stages: (1) the period of *infantile sexuality* marked by "an early blossoming" of human sexual life; (2) the period of *latency* during which "no further sexual development" takes place and which, as far as sexuality is concerned, actually constitutes a period of retrogression; and (3) the period of *physical maturity* which starts at puberty when "the instincts strengthened by physical maturity can again take up the battle in which at first they were defeated."²⁹ It is upon this three-fold periodization (or typology) of human growth and development that Freud erects a theory of the genesis of human neurosis which rests essentially on three closely interrelated components:

- (1) *Childhood traumata*: Experiences and impressions (heard or seen) which, by putting too much strain on the immature and weak ego, permanently damage it by forcing it into unusual and pathological responses. "Instinctual demands from within operate as 'traumas' no less than excitations from the external world, especially if they are met halfway by certain dispositions. The helpless ego fends off these problems by attempts at fight (by repressions) which turn out later to be ineffective and which involve permanent hindrances to further development."³⁰
- (2) *Infantile amnesia*: As a rule the experiences and perceptions with which the weak and immature ego was unable to cope effectively are entirely forgotten and remain inaccessible to memory.
- (3) *Sexuality and aggressiveness as important elements of childhood traumata*: The childhood traumata are related to impressions or perceptions of a sexual and aggressive nature or early injuries to the self.

²⁸ For a more detailed demonstration that the idea of an "eternal return" of the past is not confined to Freud's later writings but is deeply entrenched in the logical procedure of psychoanalytical reasoning see A. I. Hallowell, *Culture and Experience* (Philadelphia, University of Pennsylvania Press, 1955), p. 14-31. For a penetrating analysis of the logical procedures of psychoanalytical theory by an admirer of Freud the moralist rather than Freud the seeker of rational truth, see P. Rieff, *op. cit.*, 1959; and *op. cit.*, 1954. See also P. Rieff, *History, Psychoanalysis and the Social Sciences*, *Ethics*, Vol. 31, No. 2, (1952/53), pp. 107-120.

²⁹ S. Freud, *Moses and Monotheism*, *op. cit.*, pp. 94-97.

³⁰ S. Freud, *An Outline of Psychoanalysis* (New York, W. W. Norton, 1949), pp. 83-84.

Essentially psychoanalytic theory undertakes to discover what it considers to be hidden connections between these three essential elements of human neurosis. By linking these three elements (childhood traumata, infantile amnesia, and the manifestations of sexuality and aggressiveness) with each other and by incorporating them into a general typology of stages of human growth and development, Freud developed a theory of the formation of the human personality.

According to Freud, the reactions to the childhood traumata may be either "positive" or "negative." That is to say, they may take the form of a desire either to relive the trauma or to follow the opposite tendency of eliminating the experience completely. The former tendency is reflected in an unconscious desire to make the forgotten experience real – to live through it once more, to repeat it. In this case Freud speaks of a "repetition compulsion." In the opposite case the reaction to the trauma is a "negative fixation" which expresses itself in the defensive mechanism of avoiding the issue altogether, culminating in an inhibition or phobia. The common feature of the neurotic symptoms, whether they have taken the positive form of striving to relive the trauma or the negative form of avoiding it, is their compulsive character.

That is to say they possess great psychical intensity, they show a far-reaching independence of psychical processes that are adapted to the demands of the real world and obey the laws of logical thinking. They are not influenced by outer reality, or not normally so; they take no notice of real things, or the mental equivalents of these, so that they can easily come into active opposition to either ... the practical importance of the conflict is immeasurable. The inhibitions, or even inability to deal with life, of people dominated by neurosis are a very important factor in human society. The neurosis may be regarded as a direct expression of a "fixation" to an early period of their past.³¹

The outcome of these reactions to childhood trauma is said to be a compromise between the two opposite tendencies (the positive and the negative fixations to the trauma), with either one or the other predominating. This compromise, which constitutes a mechanism of defense in the child's struggle to come to terms with the world, is said to shape the organization of his whole personality. Once incorporated into the structure of the human personality, the early compromise is believed to be capable of

³¹ Freud, *Moses and Monotheism*, *op. cit.*, p. 96.

exerting a lasting influence on the adult's behavior. Indeed, the actual neurosis and its symptoms typically appear only after the period of latency has come to an end, when the defense mechanism arrived at in childhood and the resulting changes in the human personality turn out to be inadequate for coping with the world of the adults. As a result "grave conflicts arise between the demands of the outer world and those of the Ego which strives to preserve the organization it had painfully developed in its defensive struggle."³²

As pointed out before, the central core of the psychoanalytic theory of neurosis lies in the importance attributed to the past. The neurotic conflict situation with its contemporary symptoms is viewed as the outcome of a process of human development which has its origin in childhood impressions and perceptions. In fact, present modes of action dealing with contemporary problems and present demands of the individual's contemporary environment are interpreted as repetitions of reactions to childhood traumata. That the individual is not aware of this connection between the past and the present is accounted for by infantile amnesia and the period of latency. What appears as a process of human growth and development turns out to be, upon closer analysis, an unconscious reaction against repressed "libido." It is the unconscious return of the repressed that patterns our personality. In fact, after the compromise between opposite fixations to our childhood traumata have crystallized into adult patterns of behavior, the organizing principle of the human personality remains essentially static. It is as if the events after early childhood do not have any further formative influence on our personality structure and our mental life.

An adequate account of Freudian theory would require an examination of such basic concepts as the unconscious, repression, ego-id-superego, infant sexuality, Oedipus complex, libido, death instinct, pleasure principle, and reality principle. How precise and how clearly defined are these basic concepts? Do they clearly identify the empirical observations to which they refer? Can these observations be checked, and do they give rise to reasonably unambiguous results? In short, how far are psychoanalytical hypotheses and evidence empirically or clinically supported?

³² *Ibid.*, p. 97.

Obviously, the final answer to these questions must come from psychoanalysts, psychiatrists, and clinical psychologists. Nevertheless, it is possible for the social scientist to raise several questions concerning the empirical content and testing of Freudian concepts and propositions.

In the first place there is the question of the ambiguity of psychoanalytical concepts. Such fundamental concepts as the unconscious, infant sexuality, libido, and the death instinct seem to refer to a variety of phenomena and possess an elasticity which makes it exceedingly difficult, if not impossible, to define their meaning with precision. Everybody understands that concepts can be given greater precision only in the course of the development of a discipline; we may even accept the proposition that concepts must be left indefinite at first and must be "modified, corrected and more precisely determined as more experience is accumulated and sifted."³³ Indeed, all concepts must be adjusted as scientific inquiry leads to new results. However, there is a limit beyond which indefiniteness of basic concepts exposes the process of inquiry to serious dangers. If our concepts and constructs are left systematically vague and indefinite so that they border on the poetic and the artistic, it becomes impossible to say whether and when an empirical situation or event confirms or refutes a particular proposition.

This difficulty is further increased by the tendency of dissolving many of our dualistic distinctions and dichotomies. No matter how problematical our traditional way of conceptualizing experiences in terms of opposites (for example, love and hate, masochism and sadism), we make it infinitely more difficult to refute or validate our hypotheses if precise distinctions cannot be maintained. If the behavior of neurotic individuals exhibits the most far-reaching dialectical reversals as well as the interlocking of such opposites as love and hate, rebellion and dependency, and masochistic and sadistic tendencies, the available evidence may be used selectively to support a wide variety of contradictory conclusions. Indeed, if behavior patterns carry in themselves conflicting motivation, it is unlikely that we will ever be able to establish that degree of consensus in our judgments that is a prerequisite for the successful testing of hypotheses.

³³ Freud, *An Outline of Psychoanalysis*, *op. cit.*, p. 36.

This dilemma is heightened if we take into account the nature of psychoanalytical evidence and the circumstances of its collection. The communication of the life history of neurotic patients by free association usually brings to light a diffuse collection of raw data which, in their abundance and complexity, require far-reaching interpretation. Such data as are cast up in analytical situations are necessarily highly selective; they come from persons with highly effective defense mechanisms. The materials of dreams and the phenomena of resistance and transfer are such as to open the way to the most varied interpretations and imputations by different analysts. Freud himself surmised that even the exhaustive communication of several neurotic life histories "would enforce conviction only on that minority of people who have devoted their life's work to the study and practice of psychoanalysis."³⁴ Other analysts hold the view that the prerequisite for such conviction is the experience of a training analysis. All of which, if correct, seem to make the process of testing of psychoanalytical propositions dependent upon some form of psychic and mental conditioning uncomfortably similar to the process of indoctrination that usually precedes the admission to a religious or political sect. The circumstances that surround the collection of the material used as evidence likewise differ from the gathering of evidence in other disciplines. Most psychoanalytical evidence has been and necessarily had to be collected in the privacy of the analyst's office. This is in sharp contrast to the collection of data in other disciplines.³⁵

It may be argued that none of these inherent difficulties in the logical procedures of psychoanalytical theory really matters. In the last analysis, the final test of all theories and the demonstration of their relevance must be found in their ability to predict or, in this case, in the success or failure of therapy based upon the theory. However, even in this respect the validation of psychoanalytical theories encounters special difficulties. In the first place, there is Freud's own pessimistic outlook concerning the

³⁴ Freud, *Moses and Monotheism*, *op. cit.*, p. 98.

³⁵ For a recent critical evaluation of the psychoanalytical interview as a source of scientific data and for constructive suggestions for its improvements see I. L. Janis, "The Psychoanalytic Interview as an Observational Method," in G. Lindzey (ed.), *Assessment of Human Motives* (New York, Rinehart and Company, 1958), pp. 149-188.

chances of cure,³⁶ and his insistence that the decisive factors are not intellectual insight or rational argument but faith in the analyst – the successful establishment of a new dependency (transference). Secondly, the particular mode of psychoanalytical treatment makes it especially difficult to take adequate notice of the percentage of outright failures of analysis as distinguished from the merely interminable analytical treatment. And thirdly, not even success in treatment can serve as a crucial test of psychoanalytical hypotheses and the establishment of some measure of consensus in the field of psychoanalytical theory. For here we are faced immediately with the well-known dilemma that success in healing is also achieved by procedures based upon entirely different conceptualizations. Indeed, it may be said that the procedures used in healing at Lourdes may be more successful in view of the fact that more people believe in saints than in psychoanalysts.

If failure in therapy does not seem to refute the theory, success in treatment does not necessarily validate the hypothesis. When hypotheses cannot be refuted and eliminated, when in fact it is possible to protect hypotheses from such refutation by discounting the evidence that may bear adversely on them, the way is open to a dangerous proliferation of doctrines and the emergence of new schools. The fundamental reasons for these developments in psychoanalysis and for the splitting up of the psychoanalytical movement into antagonist schools must be sought in the belief that the present can be understood as a return or a recapitulation of the past; in the widespread use made of analogies and prototypes; in the ambiguity of psychoanalytical concepts; and the nature of the evidence cast up in the psychoanalytical interview and the search for hidden meanings.

In short, what causes the emergence of a multitude of theories and schools are the logical procedures of inquiry. Unless psychoanalysis and social inquiry in general are capable of refining their techniques for the detection of error and of avoiding the discounting of evidence which seems to refute the dominant doctrine, we shall see more rather than less compartmentalization in the decades ahead. Ambiguous concepts give rise to ambiguous hy-

³⁶ Freud, *Moses and Monotheism*, *op. cit.*, p. 98; see also *A General Introduction to Psychoanalysis* (New York, H. Liveright, 1920) p. 385.

potheses. Abundant and ambiguous evidence make testing difficult and contribute to the failures of establishing that minimum of consensus without which there can be no elimination of wrong hypotheses. The manner in which some social disciplines formulate their concepts and their failure to produce refutable hypotheses, as well as their refusal to adapt their methodological strategy to the nature of the problem under investigation, have produced a situation which is not self-correcting but tends to give rise to self-sealing disciplines that are effectively insulated from each other. The outcome is an increasing accumulation of unconnected theories, facts, and methods. What some have called the inherent pluralism of our social knowledge is better described as "a democracy of theories" in which any attempt at synthesis is resented as "an infringement of the civil liberties of other theories."³⁷ Indeed, the disruption of our knowledge into compartmentalized disciplines supports the radical disbelief in coherence and a denial of structure and unity which is behind the present disillusionment with all meaning and the "intentional destruction of meaning" (Kahler) which marks many contemporary movements in politics, philosophy, literature, and art. The question that must concern us is how to counteract this increasing disintegration. How can we secure a reintegration of our compartmentalized knowledge about man and society?

³⁷ E. Kahler, *The Tower and the Abyss* (New York, George Braziller, 1957), p. 262.

CHAPTER III

Approaches to Integration *A Critical Review**

It [integration] is a much abused word in science. It has acquired fetishistic value, and is often vainly claimed or hallowly forced.

A. L. KROEBER**

Five major approaches to an integration of social knowledge will be studied critically in the following pages. They are listed here for the convenience of the reader without any claim that the list represents either a complete or a fully satisfactory classification: (1) Integration by interdepartmentalism; (2) integration by historiography; (3) integration through the use of analogies; (4) logical empiricism and the unity of science movement; (5) dialectical materialism and the integration of knowledge. By showing what we consider to be the shortcomings of these approaches to the problem of integration, we hope to prepare the ground for what we regard to be its positive solution.

In *Totem and Tabu* Freud speaks of three basic "world views," all of which make it possible to comprehend the totality of the world from one point as a continuity: Animism, Religion, and Science. Of these three the animistic or mythological world view is "perhaps the most consistent and the most exhaustive and the one which explains the nature of the world in its entirety."¹ The fact that the human mind has always found it easy and desirable to provide an integrated interpretation of the totality of man's experience in terms of an over-all *a priori* system of thought

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** A. L. Kroeber, "Integration of the Knowledge of Man," in L. Leary (ed.), *The Unity of Knowledge op. cit.* p. 148

¹ S. Freud, *Totem and Tabu, The Basic Writings of Sigmund Freud* (New York, Modern Library, 1938), p. 867.

must serve as a warning against any attempt to integrate our departmentalized knowledge in terms of a unifying world view – be it animistic, religious, or secular in character. That such integrating world views are available and can be developed with great ease by the speculative mind of man provides a constant temptation for a premature unification of our inquiries and our various spheres of knowledge. The great drawbacks of these attempts to find a solution of the dilemma of intellectual compartmentalization in terms of a basic world view is precisely the fact that it is largely unverifiable. Such world views or “deeper dimensions of thought” usually are open to more than one interpretation. One and the same religious world view often provides the basis for a variety of dogmas and seems to be compatible with different norms of action. It is true that no knowledge is entirely free of deeper dimensions of thought and axioms of faith; it is also possible that such world views are, in individual instances, held tentatively and subject to change. In the great majority of cases, however, the basic world view tends to partake of the character of a dogma – of something that is no longer open to question and refutation. It would indeed be a step backward if in our effort to establish some measure of integration, we were to brush aside the epistemological insights which have taught us the provisional character of all our knowledge. A culture which is as differentiated intellectually and as lacking in a coherent and uniform view of the world as ours can only endanger itself if it attempts to unify its knowledge about man and society in terms of one or the other axioms of faith. Indeed, such a procedure can only end in the kind of fanaticism that produced and accompanied the religious warfare of earlier centuries.²

Quite apart from these dangers, however, there are other shortcomings more immediately associated with the attempt at integration in terms of basic world views. The use of such deeper dimensions of thought may give rise to an imputation of unity and continuity of experience which will not stand up under closer investigation in the light of our new knowledge of man and the universe. If there is one thing we have to guard against it is

² See E. Egner, “Wider den Positivismus in den Sozialwissenschaften,” *Hamburger Jahrbuch für Wirtschafts- und Gesellschaftspolitik*, Vol. 1. (J. C. B. Mohr, Tübingen, 1956), pp. 142–144.

the temptation to interpret the world in terms of uniform and unifying principles which may be simple and comforting but without confirmation. For the result of such unification in terms of general world views is often the imposition of integration "from the outside" and a rationalization of the preconceived unity into dogma. Nothing could be more harmful than this degeneration of intellectual integration into a dogmatically held and self-sealing system of knowledge capable of discounting evidence that tends to refute its validity. A unifying world view and a deeper dimension of thought may be the ultimate outcome of the successful integration of our knowledge of man and society; it must not be the starting point.

I. Integration by Interdepartmentalism

AMONG the many proposals advanced for the integration of social inquiry none seems to enjoy greater popularity, at the present time, than the suggestion that particular problems be investigated by a group of specialists from different disciplines. This idea of interdisciplinary research which doubtless reflects a growing awareness of common problems has given rise to a variety of devices such as interdepartmental seminars and courses in colleges and universities, and the conduct of research by committees composed of specialists from different disciplines; it has led to various forms of teamwork in field studies dealing with primitive cultures and the analysis of foreign areas.

Of course, many social scientists have long been aware of the fact that their specialized theories cannot be directly "applied" to the solution of practical problems. In one form or another these specialists have argued in favor of coordinating their theoretical findings with those of related disciplines. The whole idea of a "positive" science of economics, for example, was based upon the realization that the actual conduct of affairs could neither solely nor even primarily be based upon the general principles of a formal science of economizing. Nassau Senior, John Stuart Mill, P. H. Wicksteed, J. M. Keynes, V. Pareto, and L. Walras were all explicit on this point and called for the supplementation of the results of pure economic analysis by the findings of other social sciences. And yet it was not the insights of these early

believers in a positive science of pure economics but rather the manifest inadequacy and lack of relevance of many theoretical conclusions for the solution of the practical problems that gave rise to the present vogue of interdisciplinary research and teaching projects.

What are the relative merits and weaknesses of these interdepartmental endeavors as a means of achieving the integration of social inquiry? The great merit of most interdisciplinary research and teaching is the continuous stimulation of a general awareness of the interdependency and interrelationship between social phenomena and of the inadequacy of theoretical conclusions that view the problems under discussion from the point of view of one discipline. Interdisciplinary research also tends to cultivate in each participant a greater familiarity with the concepts and methodological procedures of other social sciences. In this way interdepartmental cooperation may yield important insights into the difficulties and obstacles which stand in the way of an effective integration. By showing, for example, that different disciplines use different levels of abstraction in their conceptualizations as well as different methods in their approaches to problems, the interdisciplinary research project may actually lead to the realization that no connection can be established between the respective fields of inquiry.

All this may be beneficial in the long run, but it obviously falls short of what is required for a genuine integration of different disciplines. Harmonious teamwork or the general awareness of common problems and obstacles to effective coordination are at best substitutes for an integration of social inquiry, which must sooner or later be established within the mind of the individual scholar. In order to achieve this it is not sufficient merely to deal with common problems or to study a common geographical area; what is required is a common focus or point of view from which the problems of the area are studied. Only a common conceptual framework which permits the investigators to cut across departmental lines can achieve this. The objective of integration is not the awareness of common problems nor the accumulation of knowledge from various related disciplines but rather the establishment of relationships between the different parts of social knowledge which can be meaningfully and systematically related.

Interdisciplinary research may offer "the most encouraging prospects both for the development of the social sciences and for the progress of historical study,"³ but the fact remains that shared work on a common task is not integration and may indeed go hand in hand with the uncritical accumulation of data, hypotheses, and theories which are neither systematically tested nor consistently interrelated.

Neither the tendency of assembling scholars from different disciplines nor the "fetish of 'interdisciplinary' projects" nor most certainly "the bureaucratization of American intellectual life"⁴ offer any assurance that specialists will realize the unitary character of social processes.

2. Integration by Historiography

FROM time to time historians have claimed that their discipline provides an effective synthesis of the subject matters of different fields. This point of view finds expression in the belief that since historiography does not aim to generalize but rather to provide the reader with a comprehensive narrative of the past in the light of contemporary thought, it must and will necessarily take account of a much greater number of factors than any other social discipline. In this sense historiography may be regarded as a kind of descriptive integration. Indeed, in their endeavor to make the narrative of the social, political, intellectual, and general cultural development of an area or a particular period as comprehensive as possible, historians have sometimes laid claims to writing "total history" by asserting to have integrated geography, sociology, and ethnography.⁵ These hopes and ambitions to use history as a kind of interpretative synthesis are shared by many historians.⁶

It must be admitted that historiography, perhaps more than any other social discipline, has maintained an awareness of the

³ See Social Science Research Council, "The Social Sciences in Historical Study," Report of the Committee on Historiography, *Bulletin*, No. 64 (1954), p. 32.

⁴ A. Schlesinger, jr., "The Statistical Soldier," *Partisan Review*, Vol. XVI, No. 8 (1949), p. 853.

⁵ See F. Braudel, *La Méditerranée et le Monde Méditerranéen à l'Époque de Philippe II* (Paris, Armand Colin, 1949).

⁶ See for instance R. F. Arragon (1949), C. J. H. Hayes (1932), and W. St. Holt (1955).

numerous factors whose interaction gives the historical process its multidimensional character. Reluctance to generalize and the desire to provide a comprehensive narrative seem to have protected historiography against some of the dangers of narrowly specialized inquiries. Not preoccupied with and impressed by particular methodologies, the historian has usually not permitted method to determine the problem to be investigated.

Indeed history has dared to seek the answers to questions which other disciplines would have declined for the lack of an adequate method. History has never held itself aloof from life or guarded its own purity by confining itself to topics for which it possessed a fully tested methodological and conceptual apparatus of attack. It has never permitted the tyranny of method to dictate the subjects which it would investigate and has never shifted its attention from man to mice because of the seductive fact that mice lend themselves to precise investigation more readily than do men. It has also been the glory of history that its professional devotees have never entirely lost communication with the intelligent layman, as the practitioners of the social sciences have almost universally done.⁷

All this is readily admitted as well as the fact that the central preoccupation of the historian has always been with the phenomena of change and development in social affairs.

And yet historiography has serious limitations as an integrator of social inquiry. These limitations are inherent in the merits which historians may claim for their approach. In the first place, historiography is necessarily interested, or so it would appear, in particulars rather than in repeatable or universal aspects of social processes. Scientific inquiry aims at knowledge in the form of generalizations concerning the repeatable aspects of social phenomena. The latter are referred to not directly but by means of especially created concepts, and the objective of the social scientist is to assert general propositions concerning the connection or co-variations between certain variables or entities under investigation. For this reason "scientific statements or propositions can be sharply distinguished from statements of history."⁸ Historical statements deal with particulars or with relationships between such particulars. They tell us what has happened and aim at a comprehensive record of observations. They provide us

⁷ D. M. Potter, *People of Plenty, Economic Abundance and the American Character* (Chicago, University of Chicago Press, 1954), p. xv. Copyright 1954 by the University of Chicago.

⁸ M. R. Cohen, *A Preface to Logic* (New York, Meridian Books, 1959), p. 171.

with an orderly account of how a particular event really or presumably happened. Such ordering of materials of history requires selection and abstraction. It calls for scientific objectivity and a critical attitude. But it does not really transcend the particular events or series of events. Generalizations are not regularly aimed at except when historiography turns into a theory of history, i.e. when particular events are not studied from the perspective of their unique but of their repeatable aspects. In fact it may be argued that the historian aims at a *post hoc* explanation of the particular event and tacitly assumes that any concatenation of similar circumstances would give rise to the same results. In this case the historian may be said to have a genuinely scientific objective. But in which sense can we expect that the concatenation of circumstances which brought about the particular event can ever repeat itself? Is the future really fully contained in the past? What about the effects of quantitative changes in the social structure? Is the process of social causation a linear process or is it not rather cumulative and discontinuous? These are questions which cannot be solved by merely giving an account of the past or by studying the documentary record. What would seem to be called for is not a direct frontal attack on the materials but a careful attempt to formulate concepts and hypotheses, a self-conscious concern for the nature of man, human behavior, society and social structures, and social causation. In short, the historian would have to deal with the stuff of history in the fashion in which the social sciences have to deal with their materials. Whereas the physical sciences have found it more and more unreliable to consider common sense experience as data and evidence and have proceeded to "dissolve away the appearance of phenomena"⁹ historiography has clung largely to a "phenomenal" approach. Moreover, historians seem to have found it unnecessary to go beyond common sense notions of human nature and human behavior. "Although history has constantly made all sorts of assumptions about the nature of man, it has never possessed any systematic method for checking these assumptions. In a sense, this is equivalent to saying that historical method has not included any means for analysis of the chief factor with which

⁹ A. L. Kroeber, "Integration of the Knowledge of Man," L. Leary (ed.) *The Unity of Knowledge op. cit.*, p. 133.

history deals."¹⁰ Like many social scientists historians often fail to see that the value and validity of all inquiries into the affairs of man and society depend to a large extent upon the investigator's theory of man.

There are other limitations which make it doubtful whether historiography can achieve an effective integration of social inquiry even though it may deal with every aspect of the social process. There is first the absence of a clearly defined terminology. Whereas all other social disciplines have found it necessary to define their concepts, history as a discipline seems to get along by utilizing nontechnical language.

This together with an almost unlimited interest in every conceivable aspect of social events and the fortunes of individuals and groups, may give the writing of history its widespread appeal and its esthetically satisfying component, but it makes it unlikely that the historian can act as an effective integrator of the knowledge that different social disciplines have formulated in terms of more or less clearly defined concepts.¹¹

Furthermore, historians seem to be constantly called upon by their subject matter to deal with the "causes" of particular events and the structure of particular societies. And yet they have rarely concerned themselves with the general nature of social causation or with the structure and functioning of the social process. The other social disciplines have found it necessary to explore the nature of social causation and of structure and process in considerable detail; yet historians, tending to ignore these basic questions, seem to indicate that historiography hopes to arrive at a comprehensive account of particular social events by means of implicit rather than explicit notions concerning social processes.

It is hardly necessary to point out that there is one branch of historiography which can be of substantial value in the integration of social knowledge. In so far as the historian is interested in the history of thought in the sense of the evolution of different branches of knowledge within the general cultural context, he may show the specific integration (or lack of integration) of

¹⁰ Potter, *op. cit.*, p. XIX.

¹¹ F. S. C. Northrop, *The Problem of Integrating Knowledge and the Method for its Solution*, "The Nature of Concepts, Their Interrelation and Role in Social Structure," *Proceedings of the Stillwater Conference*, Foundation for Integrated Education (New York, 1950), p. 28.

knowledge in a particular era. In this respect historiography is likely to show the way in which new modes of thinking in one field of intellectual endeavor have influenced other areas of thought. Such a broad historical treatment of the evolution of thought within the context of the social, political, and economic framework of the past lays the foundation for an awareness of how intellectual unity may be gained or lost. Needless to say, while such awareness of the rise and decline of intellectual synthesis in the past is important, it obviously stops short of establishing the integration of contemporary knowledge.

3. *Integration by Analogy*

THE ROLE of analogies in the evolution of a modern social science and particularly in the development of economic analysis has been discussed in the preceding chapter. Metaphors and analogies have played a major role in man's attempt to achieve some form of synthesis in his understanding of the world and of himself. Many of the earlier uses of metaphors and analogies represented a form of primitive animism, as Charles Beard called all thinking by analogy.¹² Essentially the use of analogies is an attempt to comprehend the world by discovering, or rather imputing, resemblances and identities. The problem that concerns us here is not the particular merit or defect of this or that model which has served as the basis of analogies in the history of one or the other of the social disciplines.¹³ Rather it is the general usefulness of analogies as integrators of different fields of inquiry which occupies us here. There is no doubt that reasoning by analogy gives rise to some form of integration. The whole history of Western thought bears testimony to this effect. All sciences

¹² Ch. A. Beard, *Written History as an Act of Faith*, *American Historical Review*, Vol. 39, January 1934, p. 223.

¹³ K. W. Deutsch has shown that the images which have served as a basis for metaphors and analogies have often been drawn from pictorial images of man's tools and techniques (e.g., the potter's wheel, the thread, the web, the machine). See "Mechanism, Organism and Society; Some Models in Natural and Social Science," *Philosophy of Science*, Vol. 18, No. 3 (1951), pp. 232-233. The increasing use of complicated electronic computers and feedback systems has once again led to numerous suggestions to interpret biological, social, and mental phenomena which seem to be characterized by some kind of automatic maintenance of states of equilibrium in analogy to the operation of computers and feedback mechanisms.

have made extensive use of analogies and the effect has been almost invariably to establish closer relations between different fields of inquiry by transferring concepts, methods, and modes of thinking from one discipline to another. Nor is it likely that reasoning by analogy can be avoided altogether if we consider that it is impossible to observe more than a few of the countless phenomena that require investigation. Hence it is perhaps inevitable to believe "that the relations which we are debarred from observing are analogous to those in the field which is open to our perception."¹⁴ Particularly during the formative stages of a new discipline, analogical comparisons and the exploration of likenesses are often the only procedures available for deducing tentative conclusions in a new and as yet unexplored field of research. By assuming a close resemblance between the explored and the new field the analogy may offer suggestions for new hypotheses; new problems may become more comprehensible by the assertion of an analogy between the new and the familiar problem. Moreover, since all investigators are more or less easily impressed by the concepts, models, and patterns of thought of other disciplines, especially when these have demonstrated their success by the conquest of new truth, analogical comparisons are a constant temptation. For these reasons the search for some kind of a master analogy or a kind of primary concept as a common denominator of the greatest generality is likely to continue; and it can hardly be denied that the reduction of all doctrines, concepts, and patterns of thought to those of a master pattern would indeed represent the most complete integration of man's total knowledge.

At the same time it must be clear that all reasoning by analogy carries with it serious dangers which have rarely been avoided, even by those who, like Freud, knew that it was dangerous to drag concepts out of the field where they originated and apply them in another field.¹⁵ In the first place, reasoning by analogy seems to make it possible to dispense with the need to formulate clear notions of the nature of the materials and subject matters with which one is dealing. For implicit in the use of the analogy

¹⁴ A. Arber, "Analogy in the History of Science," in M. F. Ashley Montagu (ed.), *Studies and Essays in the History of Science and Learning* (New York, Henry Schuman, 1947), p. 224.

¹⁵ Freud, *Moses and Monotheism*, *op. cit.*, p. 141.

is the assumption of a fundamental similarity (if not an actual identity, or at least a continuity) between the phenomena under discussion and those from which the analogies are drawn. Once the intellectual operation based upon the analogy is in full swing, it is usually too late to remind oneself of the imperfect character of the original analogy upon which the whole enterprise rests. As a result it becomes possible to neglect and actually withdraw from investigation those events and processes which do not fit the analogy. Collection of data, documentation, and testing tend to lose their importance to the extent to which one considers as similar and identical what actually may be heterogeneous and pertains to qualitatively different levels of organizations. Indeed, evidence that pertains to one level of organization (let us say, to inanimate matter, to organic life, or to the psyche of the individual) can be used with relative ease and without explicit recognition of any shift in the study of human history, human society, and cultural processes in general. Without ever proving the alleged or assumed similarities and identities, reasoning by analogy makes it possible to explain one level of organization in terms of another. The whole approach to inquiry can thus be rerouted from a direct investigation of the level of organization under consideration to an indirect attack upon it by simply switching from one level to another and by imposing the analogy upon the material and by drawing the necessary inferences from it. In this way it comes to pass, as we showed earlier with particular reference to psychoanalysis, that the objective-cultural is reduced to the subjective-psychological and that the social is systematically explained as a secondary elaboration of individual psychological experience.

Furthermore, the selection of particular analogies is full of hidden, normative, and "political" elements as the history of economic analysis indicates. That is to say, analogies frequently prove very convenient for what Pareto¹⁶ called the tendency to place one's conclusions into the premises and then proceed to the elaboration of the appropriate theories. Thus, under the influence of mechanical analogies, economic theory has continued to search for levels of equilibrium and has postulated human behavior as

¹⁶ V. Pareto, *Mind and Society* (New York, Harcourt, Brace and Company, 1935), p. 788.

an essentially timeless reaction to certain changes of data. In order to make this assumption plausible it was necessary to assume further that "economic" behavior occurs under conditions of complete transparency or complete knowledge of the total situation. Despite the fact that these were simplifying assumptions it has been exceedingly difficult for the theoretical economist to conceive of economic behavior as actual human responses taking place in a field of interacting factors marked by a high degree of uncertainty and capable of giving rise to all kinds of cumulative and contagious behavior movements. The mechanical analogy and the related assumption of rational human conduct as a timeless and quasi-automatic reaction to transparent changes of data has remained one of the major obstacles to viewing economic behavior in a less formal fashion than that represented by thinking in terms of mathematically formulated functions of a few variables such as income and price.

In short, we may say that while analogies facilitate the comprehension of something that is unfamiliar in terms of something that is familiar and as such may provide a measure of integration, they provide no proof. Unless based upon the actual demonstration that the phenomena and subject matters of different disciplines are continuous and homogeneous, integration by means of analogies is likely to oversimplify and misrepresent reality by falsely imputing similarities and likenesses to different phenomena which actually belong to different levels of organization marked by qualitatively different levels of complexity. The end product may be a pernicious distortion of perception and falsification of reality resulting from generalizations which are not based upon a firsthand acquaintance of the nature of the phenomena under discussion.¹⁷ For this reason the use of analogies for the integration of social inquiry must be viewed with considerable suspicion and skepticism. The greater the complexity and qualitative differences between different subject

¹⁷ "So long as they [the analogies] are allowed to retain their genuine and intrinsic character, [they] are of incalculable value; but the very essence of this character is *imperfection*... It is, indeed, their very imperfection which sets them in the boundary region of scientific thought, where they can act as connecting links with other worlds of experience.... To understand and use analogies aright, we must realize that they are in their nature artistic and creative rather than analytic and logical, and that their function is to illustrate, to suggest, and to illumine, rather than to prove." Arber, *op. cit.*, p. 233.

matters, the less room there is for the use of analogies. From this it follows, of course, that it is more dangerous to borrow habits of thought and basic concepts from subject matters which differ in complexity than it is to reason by analogy within the same general field of inquiry.

4. Positivism and the Unity of Science

BECAUSE there are certain parallels between Comte's positivism, logical empiricism, and the related unity of science movements, we shall consider these approaches together.

As we pointed out earlier, Comte looked upon the compartmentalization of knowledge in his time as the inevitable outcome of intellectual specialization. Just as the division of labor in the production of goods and services and the resulting exchange give rise to conflicts and "individual divergences," specialization in human thought, while permitting a "felicitous development of the spirit of detail otherwise impossible, ... spontaneously tends ... to snuff out the spirit of togetherness, or at least to undermine it profoundly."¹⁸ Such specialized research, particularly in the field of social inquiry, was considered by Comte as basically irrational and defective in its method and "radically sterile" as far as its outcome was concerned.¹⁹

¹⁸ Quoted from Durkheim, *The Division of Labor in Society*, (Glencoe, Ill., The Free Press, 1947), p. 357.

¹⁹ According to Comte political economy provided a particularly telling example of this situation. While Adam Smith never intended to found a new and separate science, his immediate successors, far from building upon the work of the famous philosopher, embraced a dogma of scientific isolation and specialization which prevented any real and sustained scientific progress. Instead of accumulating new knowledge and thereby proving the fertility of their scientific conceptions and hypotheses, the political economists after Adam Smith merely demonstrated the metaphysical and purely personal character of their views and dissertations by reviving old controversies and by delivering themselves of sterile disputes on the most elementary ideas such as value, utility, and production. Instead of recognizing the inconveniences and human costs caused by the introduction of machinery, "our economists can do nothing better than repeat, with pitiless pedantry, their barren aphorism of absolute industrial liberty." (Auguste Comte, *The System of Positive Philosophy* [1853]. See selections reprinted in K. Wm. Kapp and L. L. Kapp (eds.), *History of Economic Thought* [New York, Barnes and Noble, 1956], p. 205.) More specifically, Comte denied that the economic aspects of wealth, even though they may present themselves in an exchange economy as purely monetary phenomena, could be detached from their philosophical, moral, and intellectual aspects without vitiating the search for truth; "all the various general aspects of the subject are scientifically one, and rationally inseparable, so that they cannot be illustrated but by each other. Thus the economical or industrial analysis of society cannot

Instead of contemplating the elements of the social process separately as if they had an independent existence, the only correct way of studying society, according to Comte, is "to regard them [the elements] as in mutual relation, and forming a whole which compels us to treat them in combination."²⁰ This is not to say that there can be no subdivision in the study of society, but such subdivision can emerge only in the light of the requirements and methods of the science of society as a whole. Comte saw the solution in a deliberate effort designed to establish the logical relations between each of the separate disciplines; to show their continuity and if possible discover a small number of principles to which all the principles in the various disciplines can be reduced. Indeed, in order to assure the ultimate unity of all science it would be enough to unify their logical and methodological procedures.²¹

Similar to Comte's original concepts of a positive science of society and his notion of a unification of all disciplines in terms of their logical and methodological procedures the contemporary movement toward a unification of scientific language and method proposes to unify knowledge not in terms of any "metaphysical" construction outside or alongside the various special fields of knowledge but in terms of the "synthesizing glue" which the special sciences provide themselves.²² This so-called synthesizing glue is found in the logical connections between the terms and generalizations of the various disciplines. The unity of knowledge thus becomes a problem of the logic of inquiry. "When we ask

be effected in the positive method, apart from its intellectual, moral, and political analysis past and present." (*Ibid.*, p. 204.)

²⁰ *Ibid.*, p. 207.

²¹ Durkheim, *op. cit.*, (1947), p. 363. Within the context of the present discussion it is not necessary to show how the author of *The System of Positive Philosophy* finally succumbed to his personal metaphysics and permitted his "subjective synthesis" in terms of a new ethics of love and social feelings to pervert the positive philosophy into a new utopia of constraint and order organized in a positivistic church and a new "religion of humanity."

²² "Those who are active within this movement are emphatic in their insistence that instead of aiming at a synthesis of the different sciences on the basis of a prior and independent philosophy, the special sciences will themselves supply their own synthesizing glue. For appreciating the significance of this movement it is therefore necessary to keep in mind that its tendency is toward a *unified science* departmentalized into special sciences, and not toward an artificial and speculative juxtaposition of an autonomous philosophy and an autonomous group of sciences." O. Neurath, *Unified Science and its Encyclopedia, Philosophy of Science*, 1937, Vol. 4, April, p. 265.

whether there is a unity in science, we mean this as a question of logic, concerning the logical relationships between the terms and the laws of the various branches of science. Since it belongs to the logic of science, the question concerns scientists and logicians alike".²³ The practical task of integration thus becomes a matter of analyzing whether and how the terms and laws of different disciplines can be reduced and related to one another; the ultimate aim is to adapt the scientific vocabulary and to formulate the generalizations of different disciplines in such a fashion as to be able to go from one discipline to the next without fundamentally changing the scientific language.²⁴ The appropriate model or program for such a unification of scientific language is not one systematic science but an encyclopedia.²⁵

There are several reasons which in our estimation raise doubts about this approach to the integration of social inquiry by establishing the logical relationship between the terms and generalizations of the various social disciplines. In the first place, there are the practical difficulties which confront any attempt to integrate knowledge by unifying language and methods. Scientific language and methods are integral parts of the disciplines that are to be unified. They cannot be separated from a technical terminology and from the generalizations of a given discipline. Both these facts make it exceedingly difficult, if not impossible, for anyone who does not work inside several or all scientific fields to master the task of unifying the languages and procedures of several disciplines.²⁶

There remains then only the unification of language and methods from the outside by way of an outside legislation for all sciences – a kind of scientific esperanto imposed or introduced from above, as it were. But such legislation could be neither

²³ R. Carnap, *Logical Foundations of the Unity of Science*, *International Encyclopedia of Unified Science*, 1938, Vol. I, p. 49.

²⁴ C. Neurath, 1937, *op. cit.*, pp. 268–270.

²⁵ "An encyclopedia and not a system is the genuine model of science as a whole. An encyclopedic integration of scientific statements, with all the discrepancies and difficulties which appear, is the maximum of integration which we can achieve." O. Neurath, *Unified Science as Encyclopedic Integration*, *International Encyclopedia of Unified Science*, *op. cit.*, p. 20.

²⁶ "For if they [language and procedure] are immanent in the very sciences, as it is impossible to disengage them completely from the body of established truth in order to codify them separately, we can know them only if we have practised them. But it is now impossible for the same man to practise a large number of sciences." Durkheim, *op. cit.*, (1947), p. 363.

comprehensive nor effectively maintained. The unification of knowledge by legislating a unified framework of language and method cannot possibly encompass those parts of knowledge which do not fit into the framework. But what is more important, such a unification can be maintained only by force, and this would be self-defeating and inimical to the acquisition of new truths. Any attempt to integrate social inquiry and social knowledge from the outside and by a superpositivistic framework of method and language – in short, “by legislation” – would prove to be as futile and as ineffective as any unification on the basis of a metaphysical superscience has proved in the long run. For these reasons it seems that John Dewey said almost the last word on this approach when he wrote in the first volume of the *International Encyclopedia of Unified Science*: “... the needed work of coordination cannot be done mechanically or from without.... The attempt to secure unity by defining the terms of all the sciences in terms of some one science is doomed in advance to defeat.”²⁷

A second and even more fundamental weakness of the approach has to do with the dogmatic rejection of the so-called *a priori* or theoretical component of our knowledge. For it would appear that this rejection of the “metaphysical” components in our knowledge would confine the encyclopedic integration of scientific statements to only one part of our knowledge. In fact the contemplated encyclopedia of scientific language may actually have the effect of legislating into permanence the artificial barriers between the theoretical (*a priori*) components of Western knowledge and that which is more immediately apprehended, the intuitive component, to follow Northrop’s terminology. In fact, given the theoretic component of all Western knowledge, the unity-of-science movement would either erect insurmountable barriers between the two components and split our knowledge into two hostile branches, or would have to abandon its fear of a superscience and fall prey to a form of reductionism in which either the physical or biological sciences serve as a general model for social analysis. Indeed, it is this unproved belief that it is somehow possible to go from one field of inquiry to the next

²⁷ J. Dewey, “Unity of Science as a Social Problem,” *International Encyclopedia of Unified Science*, *op. cit.*, p. 34.

without changing scientific procedures, terminology, and concepts which is open to the most serious doubts. As much as one may share the positivistic rejection of system building based upon speculative conceptualization and hidden ideologies, one wonders whether the tacit assumption that there are no differences in quality between the subject matters of the different disciplines is not a new form of system building in disguise. In any event, any belief in an unqualified unity of *all* subject matters of scientific inquiry, and hence of all knowledge, can be accepted, if at all, only as a hypothesis calling for explicit demonstration and proof. Significantly, while Carnap considers it "obvious that at the present time, laws of psychology, and social science cannot be derived from biology and physics," he adds that "no scientific reason is known for the assumption that such a derivation should be in principle and forever impossible."²⁸ However, there are many reasons which, as we shall show in Part II, militate against any reduction of social science to biology or physics. The unification of science by means of logical empiricism "cannot be settled definitely on the basis of logical and semantical analysis. There remain always several possibilities for the choice of formal system."²⁹ Indeed, it is now again admitted that scientific analysis cannot be free of "speculative" preconception and that there is room for a combination of logical analysis and intuition. Logical empiricism thus supplemented and enlarged by the introduction of concepts and results from the various social sciences would offer a new and more fruitful point of departure for the unity-of-science movement.

5. *Dialectical Materialism and the Integration of Social Knowledge*

DIALECTICAL materialism has long claimed to provide a unified interpretation of society and of the mode of its transformation. For this reason the dialectical materialist will look with suspicion upon any attempt to bring into meaningful relationship the work of the various disciplines through some kind of new synthesis other than his own. He will be inclined to denounce such at-

²⁸ Carnap, *op. cit.*, p. 61.

²⁹ Ph. Frank, "Introductory Remarks, Contribution to the Analysis and Synthesis of Knowledge," *Proceedings*, American Academy, Art and Science, Vol. 80 (July 1951), p. 7.

tempts as endeavors designed either to conceal the irrationalities of contemporary society or to evade the problems caused by the loss of coherence of our knowledge of man and society. Indeed, it has been claimed that all these attempts are merely "pseudo-solutions" of the disruption of our social knowledge. A positive solution, it is argued, calls for the most rigorous application of the principles of dialectical materialism³⁰ and even their extension from the study of the evolution of society to that of inanimate nature and living organism including their evolution.

No serious student can deny that dialectical materialism offers an integrated explanation of reality which, on the basis of a general philosophy of history, sets out to interpret the dynamic interaction of economic, political, and intellectual processes. This is not the place to go into details of the manner in which the technical interpretation of "production relation" is combined with a theory of the political and intellectual "superstructure" to support a dialectical theory of history. For the purpose of our discussion it is sufficient to state what we consider to be the positive elements and the weaknesses of the integrated interpretation of social phenomena provided by dialectical materialism.

The positive elements of dialectical materialism can be listed briefly as follow: To have shown that history must be viewed as a process of development and transformation which can be interpreted and forecasted "by paying attention to the manner in which one set of theoretical assumptions underlying the economic, political, esthetic, and religious institutions of a given

³⁰ "In our contemporary society the specialized sciences are, indeed, rigorously separated from one another. Each of the various disciplines has its own formalistic methodology which is based upon non-dialectic, epistemological categories.... This is the reason why certain relationships which one or the other of these specialized sciences is perfectly capable of treating as relevant for its own investigations, can be considered by another specialized science only as irrational data. In order to overcome these speculative difficulties the social need for a unified ideology gives birth to the theory of sciences and their historical *tableau*. In contrast to the minor philosophers of the preceding epoch one aims at totality and unity. But, as we have shown, the seekers of totality and unity have chosen the wrong road. In reality, it would be perfectly possible to disentangle the common basis of all sciences through a study of the evolution of society which is itself determined by the economic factor. Now, it goes without saying that contemporary bourgeois thought cannot take this road which would lead to the recasting of all sciences in terms of the method of dialectical materialism.... Consequently the only new thing which the (contemplated) speculative synthesis could offer would be the mystification of irrational relationships." Translated from G. Lukacs, *Existentialisme ou Marxisme* (Paris, Les Editeurs Nagel, 1948), pp. 66-67.

stage of Western history is in part or wholly negated by the advent of some later, basic philosophical theory";³¹ to have shown the transitory character of all historical stages in the development of human society; to have combined this view of the essentially transitory character of existent reality with a theory of interaction and interdependence of the economic, political, intellectual-volitional aspects of culture; in fact, to have recognized the interaction between the material means of life and intellectual processes and to have placed this interaction into the center of social research. No future integrated social science is likely to disregard these important positive elements of dialectical materialism. Nor is it accidental that virtually all the younger social sciences, as for example sociology, cultural anthropology, and social psychology, have made extensive use of elements of dialectical materialism in their analyses and in the formulation of their theoretical frameworks.

What then are the limitations of dialectical materialism as an approach to the integration of social knowledge? Generally speaking these limitations are not to be found in the neglect – as is so often asserted – of the power of man to shape his own history and the scope of the volitional factor in general. Closer examination reveals this particular criticism of dialectical materialism to be based upon misinterpretation.³² The weaknesses of dialectical

³¹ F. S. C. Northrop, *The Meeting of East and West* (New York, The Macmillan Company, 1946), p. 249.

³² See e.g. Marx' famous statement "Men make their own history, but they do not make it just as they please." *The Eighteenth Brumaire of Louis Bonaparte*, (1852), (New York, International Publishers, n.d.) p. 13. Also Engels' more explicit statement on the role of the human will in history bears re-reading: "We make our history ourselves but first of all with definite premises and under given conditions. Among the totality of these conditions the determining ones are the economic conditions in the last analysis.... Second, history is made in such a fashion that the final outcome is always the result of the conflicts of a great number of individual wills of which each is conditioned by a multitude of unique conditions; in other words, we are faced with innumerable forces which are opposed to and mutually thwart one another, an infinite number of parallelograms of forces which gives rise to the historical event. The event in turn may be regarded as the product of a force which acts as a whole and in an unconscious and blind way. For that what each individual wants is prevented by every other individual and the final outcome is something which nobody had willed.... But the fact that the different wills do not succeed in realizing their objectives but are recast in a general average and a common resultant does not justify the conclusion that the significance of the human will (in producing the historical event) is equal to zero. On the contrary, each individual will contributes to, and hence is included in, the final outcome. (translated from G. Lukacs, *op. cit.*, p. 149). On the whole subject a biographer of Marx was able to write: "Marx

materialism derive rather from the fact that it has not been able to escape the danger apparently inherent in any philosophy of history: to rewrite history in line with the *a priori* conception of its pre-analytical creed or ideology. Of course, this is a weakness which dialectical materialism shares with its intellectual mentor, German idealism. Just as Hegel's idea of a philosophy of history in the end negated the history of the historians by introducing all kinds of distinctions between facts according to whether or not they were able to lend support to the theory, so does dialectical materialism threaten to absorb the rest of our knowledge by predetermining the collection and interpretation of data. Like many other systems of social thought, dialectical materialism fails the "scientific test" in as much as it is not a self-correcting system.

Dialectical materialism is not and indeed does not claim to be based upon any tested knowledge concerning the nature of man and the behavior of human groups, nor for that matter concerning the nature of society and social reality in general. As a result, it does not face a whole series of problems related to the nonrational aspects of human behavior, the interaction of social groups, and their perception of and reaction to social change and power in society. Instead, the dialectical materialistic conception of history produced a theory of class behavior in industrial society which was derived from the history of preindustrial and largely pre-democratic societies. Just as the mechanistic conception of socio-economic development gave rise to the mechanical conception of economic man motivated by the search for material gain, so did the dialectical law of historical materialism read into individual and class behavior and political action all those elements of conflict and struggle which were in harmony with the assumed properties of the historical process. Similarly, instead of deriving a theory of biological and physical reality from the tested knowledge concerning the structure of the physical universe and biological organisms, the dialectical theory of the development of

specifically recognizes the power of man to react on his environment, and he does not attempt to circumscribe the freedom of the individual will. The actions of the individual will be effectual if they are in accord with the social development of the age, ineffectual if they are directed against it." E. H. Carr, *Karl Marx* (London, J. M. Dent and Sons Ltd., 1934), p. 79.

culture tends to become the model of the concept of nature.³³

Thus the first basic weakness of dialectical materialism as a method of integration may be summarized as follows: While dialectical materialism was from the very outset a theory of social dynamics and never fell into the trap of interpreting man and society in terms of a static theory, it was not and still refuses to be based upon an explicit theory of human nature and human behavior. Hence, as a theory of the transformation and dynamic change of society, the validity of dialectical materialism suffers from the same weaknesses which affect the validity of other prematurely formulated philosophies of history: the tendency to become a self-sealing system that selects data with a view to making the evidence fit the theory.

The second major weakness of dialectical materialism as an integrating principle concerns our investigation only indirectly; nevertheless it is of sufficient importance to be mentioned in this context. It has to do with the underlying tendency to think in terms of dichotomies. In the dialectics this typical characteristic of our thinking takes the form of a dualistic theory of opposites (thesis and antithesis) which explains transformation of reality. As a result of the assimilation of this mode of thinking in terms of dichotomies, a mode of thinking which has dominated Western thought until recently, dialectical materialism tends to impute a dualistic character into the structure of historical processes and social interrelationships, which exaggerates both the tension in and the determinacy and predictability of the final outcome of social processes. More precisely, what is overlooked is the fact that there may be more than one antithesis to any given thesis and hence more than one synthesis from any juxtaposition of thesis and antithesis. In short, the logic of the dialectics, properly understood, does not support the conclusion of a determinate outcome, such as the inevitability of capitalistic

³³ For a further discussion of this "reduction of nature" to the law of cultural development and the insistence upon "making nature march through the paces of the dialectics," see F. S. C. Northrop, *op. cit.*, p. 248. Some scholars working in the tradition of dialectical materialism have pointed to the danger involved in any attempt to reduce some sciences to others; see Needham (1941), p. 254; Prenant (1933), p. 84 and B. Zavadovsky (1931). Unfortunately, the strictures which these writers advance seem to apply only to attempts to reduce biology to physics, whereas the question of the reducibility of nature to the dialectic law of cultural development is either not faced or implicitly affirmed.

crisis and the inevitable polarization into two classes, the declining tendency of the average rate of profit to which the Marxian interpretation has either given rise or lends support.³⁴

We are thus led to conclude that while dialectical materialism offers an integrated interpretation of reality, its usefulness is seriously impaired by (1) the fact that it is not based upon empirically tested knowledge concerning the nature of man (and of groups and classes) and (2) the determinacy falsely imputed to the logic of the dialectics.

After this critical analysis of various approaches to the integration of social inquiry we turn to the central question of our study: How can the various parts of our knowledge about man and society be meaningfully and systematically related with each other?

³⁴ Lenin seems to make a slight concession in the direction of indeterminacy when he writes: "History ... and particularly the history of revolution is always more varied, richer, more complex and more subtle (cunning) than even the most (class) conscious vanguards of the best parties and of the most advanced classes imagine." Quoted from Lukacs, *op. cit.*, p. 291.

PART TWO

*Levels of Organization:
Inanimate Matter, Living Organisms
and Human Society*

CHAPTER IV

Inanimate Matter

The fundamental difference between the analysis of the phenomena in classical and in quantum physics is that in the former the interaction between the objects and the measuring instruments may be neglected and compensated for, while in the latter this interaction forms an integral part of the phenomena.

N. BOHR*

IN this and the following two chapters we aim at nothing less than a systematic juxtaposition of the subject matters of the three major fields of scientific inquiry. We shall endeavor to explore some of the basic characteristics of inanimate matter, of living organisms, and of human society. We hope to throw light on the manner in which the subject matters of the physical sciences, biology, and the social sciences each represent levels of organization that are distinct and unique and in which sense they may be said to be connected and continuous with one another. We consider this inquiry necessary so that we may not be misled by unexamined preconceptions, wrong analogies, and inappropriate methods which have marred social investigations since their inception as separate disciplines. In order to achieve our objective we must view the various fields of inquiry and their respective subject matters "from the outside." With this end in mind we shall have to take account of some of the substantive conclusions of the various sciences and to derive from our present understanding of the nature of physical, biological, and social phenomena the distinctive characteristics of the inorganic, the organic, and the social. Nobody who embarks on such a venture can ever hope to provide an adequate account and interpretation of the material. We do not claim to have succeeded in presenting a faultless definition of the nature of the problems and a complete picture of reality. All we can hope is that we have

* N. Bohr, "Science and the Unity of Knowledge," in L. Leary (ed.), *The Unity of Knowledge, op. cit.* p. 52.

not misinterpreted the evidence and the findings of those disciplines which are far removed from the field of our own specialization.

In the course of the following discussion we cannot avoid dealing, however inadequately, with certain new modes of reasoning and new findings of the physical and biological sciences. That this is possible at all for someone who makes no claim to possess first-hand knowledge of theoretical physics or theoretical biology, or advanced mathematics which provides the tools for measuring and interpreting the data of modern quantum and relativity mechanics, is due to one circumstance: A number of outstanding scientists who have been pioneers in their respective disciplines have been sufficiently fascinated by the broader philosophical and epistemological implications of the new modes of thinking as to analyze them for the general reader who is neither a physicist nor a biologist. Planck, Einstein, Eddington, Whitehead, Heisenberg, Bohr, Schrödinger, Jordan, Oppenheimer, Huxley, and Haldane, to mention only a few, have all participated in this elucidation of the broader implications of what has happened at the frontiers of modern physics and biology.

Our formulations and conclusions are not guided by any ontological or cosmological commitments other than those which would deny the validity of the traditional separation of nature into discontinuous and essentially immutable, static, and timeless compartments. While we have focused attention on the continuities and interaction between the three aspects of existent reality, we have paid equal and, indeed, particular attention to the distinctive features of each.

The new modes of reasoning and the new findings to which nuclear physics has given rise are also of interest for another reason. As we have endeavored to show, man's knowledge about inorganic matter and biological processes is not without relevance to his thought in general. What we know about the processes and structures of the physical universe and of organic life, the way we view these processes and structures is bound to affect our thinking about man and society sooner or later. What is more, new ways of knowing and of acquiring knowledge in the natural sciences cannot help having an impact on our general views concerning the nature of human knowledge and understanding;

and similarly what we learn about the nature of the cosmos and of life must affect our values, that is, our norms and judgments of what is good and bad.¹ To be sure, this connection between new concepts and postulates in the physical and biological sciences and our metaphysics, our epistemology, and our ethics is neither an immediate nor a logical or necessary one. Nevertheless, sooner or later new knowledge and new ways of conceptualizing new data of experience have their effect in other fields of inquiry. In fact, as the growing interest which social scientists have shown in problems of probability, field theory, organization, system, structure, causality during the last two decades indicates the process of "cross-fertilization" is in full swing – for better or worse.

The central thesis which will finally emerge from the following discussion can be stated in relatively simple terms: Inorganic matter, living organisms, and human society, while intrinsically linked with each other, must nevertheless be regarded as essentially different and special levels of organization. While these structures are continuous both in the evolutionary sense and in the sense that the social includes the other two (the organic "envelops" the inorganic), each exhibits, at the same time, qualitative differences and is marked by different degrees of complexity. Indeed, so marked are the differences that each of the three levels of organization may actually be regarded as unique kinds of structure. For this reason also each of the three levels of organization, although connected and interrelated, raises new questions and special problems which cannot be adequately dealt with in terms of concepts and principles that may have proved suitable to the others. Just as the various parts of the universe with which physical science deals require different conceptualizations and different kinds of abstractions, so human knowledge as a whole turns out to be much less consistent and unitary than earlier generations of scholars seemed to believe. Indeed, the following statement, in which one of the leading physicists asks

¹ On this connection between the basic concepts and postulates regarding inanimate nature and living organisms and our general norms and values, see F. S. C. Northrop, *op. cit.*, 1950 pp. 30–31 and "Ethics and the Integration of Natural Knowledge," *Ibid.*, pp. 116–139. See also C. Kluckhohn, "The Philosophy of the Navaho Indians," in *Ideological Differences and World Order*, F. S. C. Northrop, (ed.), (New Haven, Yale University Press, 1949) pp. 356 ff.

for "intellectual jumps" in modern physics, applies with equal force to the attempt to use the tested results and methods of one field of inquiry in all others. "The edifice of exact science can hardly be looked upon as a consistent and coherent unit in the naive way we had hoped. Simply following the prescribed route from any given point will not lead us to all other rooms of this building.... The advance from the parts already completed to those newly discovered, or to be newly erected, demands each time an intellectual jump, which cannot be achieved through the simple development of already existing knowledge."²

One of the basic presuppositions of classical physics seems to have been that the processes we observe in the physical universe were determinate and determinable by appropriate methods of rational analysis. More than this, it was tacitly assumed that an understanding of the whole could be attained by the additive method (Veblen), that is, by slowly building up and combining point by point the understanding of small parts of the universe. Finally, it was taken for granted that the procedures of observation and the experiments which were required to capture the data of experience in no way determined the result of the experiment. It is possible to show that each of these three tacit presuppositions of classical mechanics was almost a prerequisite for the ultimate success of classical physics. Without the conviction that the motions and velocities of bodies are determinate and determinable; without the belief that the whole can be deduced by rational analysis of the parts; and without the tacit supposition that one's observation is in no way capable of influencing the "objective" material world, the researches of classical physics would have made very little sense, or to put it less dogmatically, would have lacked much of the motivating power which sustained them. For it was their prescientific presuppositions which led the seventeenth century physicists to believe in the possibility of a complete description and prediction of the course of the great mechanism of the universe. For example, the motion of the planets and of all matter was, at least in principle, believed to be subject to regular and predictable forces. As a result it was possible to argue that, given complete information, the future course

² W. Heisenberg, "Recent Changes in the Foundations of Exact Science," in *Philosophic Problems of Nuclear Science* (London, Faber and Faber, n.d.), p. 25.

of events could, in principle, be determined and predicted with absolute certainty. Indeed, "at any given time the present continuous change in the velocity of a planet is prescribed by the gravitational attraction of the sun and the other planets, ... it 'obeys' this prescription, without hesitation and without refractory obstinacy; thus it is led constantly in a motion which a mathematician is able to calculate in advance."³ It was this determinate motion of the planets from which was derived the notion of a determinism of nature which became the model of all later applications of mechanics in the search for the regularities believed to be exhibited by all matter, whether in inanimate nature, in living organisms or in human society.⁴ This notion found its most consistent expression in Laplace's conception of an all-seeing and all-knowing Providence which, due to the knowledge of the position and movements of all atoms, is able to predict any future state of the universe to the minutest detail with the aid of Newtonian laws of mechanics. This belief in a determinate regularity of all nature, including man and society, is still reflected in the notion that careful observation and description of past events enables us to achieve a more complete knowledge required for the prediction of the future.

I. Complementarity and Uncertainty

THE monistic notion which shaped the habits of thought and guided (and still guides) the researches of many disciplines outside of modern physics seems to have been severely shaken when it was applied to the structure of the individual atom. This structure exhibits characteristics which the laws of classical physics cannot explain. Certain processes within the atom cannot be observed and analyzed without disturbing what is being observed and hence affecting the outcome of the experiment. As a result of this uncontrollable influence of the observation on the observed, the

³ E. Jordan, *Physik im Vordringen* (Braunschweig, F. Vieweg & Sohn, 1949), p. 71. (All quotations translated by the author).

⁴ "And indeed, if all matter (including the human brain and the human heart) consists of atoms and if the motion of each atom is subject to principles similar to those which describe the motion of the planets, then everything in nature (including human life) is subject to the continuous never-wanting compulsion of mechanical (determinable) causality - i.e. subject to predetermination by means of prior mathematical calculation." *Ibid.*, p. 71.

latter becomes ambiguous and indeterminate. The apparatus may be said to interrupt the causal interconnection⁵ and to introduce an element of uncertainty which precludes any monistic description. Let us illustrate this by comparing the motion of the planets and their observation on the one hand and observations of the atom on the other. "Whereas the planets can be observed and traced in their course without any disturbance of their motion by the observer or the apparatus, any attempt to 'observe' the atom by means of the appropriate experimental apparatus prevents the measurements of its velocity. The electrons escape our observation – not even partially or for a particular section do they traverse a regular course. For ... when we try to establish the position of an electron, its velocity escapes our control: in order to observe the velocity we must conduct experiments which provoke the wave character of the electron, that is to say the electron is transformed into a phenomenon far extended in space."⁶

The impossibility of locating the position of a charged particle like the electron at a definite time is not the result of as yet incomplete and inadequate measurement. Rather, it is because the electron revolves at such high speeds that it cannot emit light which would make it possible to locate its position. For during the time it takes to emit light "the electron ... would have performed a million revolutions."⁷ Because these phenomena are so radically opposed to all common-sense notions, modern physics finds it necessary to develop auxiliary concepts which serve only purposes of explanation and calculation and have nothing to do with anything that can be encountered by sensory perception.

This extraordinary situation leads to the further realization that our common-sense observations may in reality be filters which select only a special kind of data. What we are inclined to consider as data in the light of our observations in the macro-physical world are in reality not data at all but the outcome of our method of observation. Our experimental apparatus makes "*capta*" out of what we thought to be data.

⁵ W. Pauli, *Die Philosophische Bedeutung der Idee der Komplementarität*, *Experientia*, Vol. VI, (1950), p. 72.

⁶ Jordan, *op. cit.*, 1949, p. 72.

⁷ H. Margenau, *The Nature of Physical Reality* (New York, McGraw-Hill Book Company, 1950), p. 41.

Suppose we wanted to explore and "determine" the regularities which govern the size of fish in a particular locality. The size of the fish we catch in our repeated sampling will vary, depending upon the character of the net we decided to use. Thus, a net with a mesh not wider than 2 inches will yield data apparently supporting the conclusion that there are no fish smaller than 2 inches in this particular locality. A complete description of the fish population cannot be derived from samples taken by only one net of a given mesh size. Or in other words, to use only one net of a given mesh size is equivalent to making impossible a complete observation and hence a complete description of the situation. The example which goes back to Eddington,⁸ makes it clear that there may be cases even in the macro-physical world where the laws and regularities inferred from certain observations may apply to the observation rather than to the objective situation which the evidence is supposed to represent. By choosing the experiment, the observer may determine the kind of observation he will make to the exclusion of other observations which he would make if he had chosen another experiment. To return to the world of atoms, it depends upon the experiment whether light or electrons appear as particles or as waves. An experiment which permits us to recognize the wave character of light and another which shows its corpuscular character can never be made at the same light ray.⁹

In addition to these peculiarities of the world of atoms there are other related phenomena which illustrate a basic uncertainty and discontinuity in atomic processes. While it is possible to determine the average "life expectancy" of a given quantity of radium, the disintegration of each individual atom which makes up the quantity cannot be predicted.¹⁰ The probability of such disintegration (a nuclear reaction) of an individual atom seems to be entirely independent of its history. It must be viewed rather

⁸ See A. March, "Die Neuorientierung der Physik," *Die Neue Weltanschauung* (Stuttgart, Deutsche Verlagsanstalt, 1952), p. 36.

⁹ Jordan, *op. cit.*, (1949), p. 71.

¹⁰ "The physicist can predict that the average life span (of a mg. of radium) from now to its disintegration is 2295 years. But he cannot determine whether an individual atom taken from the mg. of radium will deteriorate within the next second or within a millenium." E. Jordan, *Die Physik und das Geheimnis des Organischen Lebens* (Braunschweig, F. Vieweg & Sohn, 1948), p. 37. (author's translation)

as a jump-like process which comes as a complete surprise to itself and to nature. Indeed there is no predictability of the event. "Whether the individual atom disintegrates earlier or later is not due to any contemporary difference in age between it and other atoms; ... the physicist cannot find any cause which would enable him to predict the different future reactions of any two atoms. And this example of indeterminacy of the nuclear change illustrates all reactions of atoms as for instance the emission of a quantum of light; hence the latter process must be considered as "jump-like" in character.... It is not possible to conceive of a single such jump-like event as the inevitable and invariable result of a cause which could provide the basis for its prediction."¹¹

2. The Determinacy of Macro-Physical Processes

ONE question which the new physical knowledge raises is the problem of correspondence (Oppenheimer) between the laws of atomic physics and those of large-scale physics. Is it possible to link the discontinuities and probabilities of the atomic world to the continuities and determinacy which are characteristic of the motions and velocities of large-scale physics? It would appear that the determinacy of the events of large-scale physics must be somehow based upon the discontinuities and probabilities of atomic phenomena. While some physicists like Einstein hoped to return to a completely deterministic world view which combines the two complementary ways of describing the two systems in a single system, others seem to consider such a reduction as unnecessary and even meaningless. They argue that the problem of correspondence can be satisfactorily solved if we direct our attention not to the individual atom but to the total structure or configuration of which the atom is a part. The jump-like and indeterminate behavior of the electron in the atomic world must be regarded as the outcome of the interaction of many factors operating within the context of a macro-physical structure. It is this interaction within the context of the structure as a whole or, in other words, the accumulation of an exceedingly large number of qualitatively equal atoms whose total behavior and interaction we observe (in large-scale physics) without paying attention to

¹¹ *Ibid.*, p. 38.

the individual atoms.¹² The behavior in a large-scale domain is continuous and determinate because it represents the outcome of a statistical regularity of interaction. Hence, when we observe the atom in its natural habitat, that is, in conjunction with an enormous number of other atoms (as for example in a microscopic particle), we are faced with a determinate and predictable situation despite the fact that the behavior of each individual atom is indeterminate and jump-like in character. Such determinacy of the whole despite indeterminateness of the parts is not the manifestation of any mysterious directive force. It can be explained in terms of certain rival and hence partly neutralizing tendencies which are operative in a complex system composed of atoms which, "produce on the average ... a constant small preponderance of orientation in the direction of the field and proportional to it".¹³ Apparently, then, it is this constant though small preponderance of direction in the rival motions of the parts which accounts for the routinized determinate character of macro-physical processes.¹⁴

Thus it may be said that despite the impossibility of determining the precise location of any electrons in the atomic world at any given time, their behavior tends to be marked, under the circumstances described, by an enduring determinacy and predictability which can be formulated in terms of probability calculations with a high degree of certainty. This determinacy is not the outcome of either a directive or a constant force but is that characteristic of probability. We may point out in passing that the particular usefulness of mathematics in the exploration of physical processes stems precisely from the fact that such systems are

¹² Jordan, *op. cit.*, (1949), p. 48.

¹³ E. Schrödinger, "What Is Life," *What Is Life and Other Scientific Essays* (New York, Doubleday, 1956), pp. 9-10.

¹⁴ "Whatever the laws which determine the behavior of light or of electrons in atoms or other parts of the atomic world, as we come closer and closer to the familiar ground of large-scale experience, these laws must conform more and more closely to those we know to be true... the key is the quantum of action, whose finiteness characterizes the new features of atomic physics.... What this tends to mean in practice is that when mass and distances are big compared to those of the electron and the atom's size, classical theory will be right. Where energies are large and times long compared to atomic energies and times, we shall not need to correct Newton. Where this is so, the statistical laws of atomic physics will lead to probabilities more and more like certitudes..." R. J. Oppenheimer, *Science and Common Understanding* (New York, Simon and Schuster, 1953), p. 48.

characterized by the interaction of an enormously large number of atoms moving with an average small constant preponderance of orientation. Thus it is possible to relate the properties of macro-physical matter to the behavior of its smallest component part. By accounting for a series of facts and experiences which seemed to occur in apparently separate universes, in terms of a more general explanation, the same facts and experiences are shown to be interconnected. This demonstration of interconnections integrates our knowledge and creates order which "simplifies and perfects the scientific view of the universe".¹⁵

The preceding discussion also shows why the physicists' inability to predict the reaction of the individual atom to deliberate, outside disturbances does not mean that the laws of classical physics have broken down. On the contrary, as we have just seen, the latter remain as effective a basis for the prediction of the events of large-scale physics as they always were. The regularities of planetary motion and velocity can be determined with the same accuracy as before; after all, we are still predicting the occurrence of an eclipse of the sun. It is still correct to say that the universe is a "machine" or a "mechanism" composed of innumerable subsidiary structures, all bound together and all interacting with one another. Whereas classical physics considered only relatively large-scale physical particles and their interaction, modern nuclear physics is concerned with processes and interrelationships between infinitely small particles which may likewise be regarded as "mechanisms" in the sense of systems of interaction. But unlike large-scale mechanisms or processes of interaction which are apparently not affected by the observation, the processes of nuclear physics must be regarded as typically subject to change by the act of observation. The observer thus becomes part of the mechanism if we define the latter dynamically – i.e., in such a fashion "as to include the entire field with which it has transactional relations."¹⁶

If we understand the new and the classical physical theories correctly, these differences of the effects of the act of observation

¹⁵ M. Planck, *The Philosophy of Physics* (London, George Allen and Unwin, 1936), p. 83.

¹⁶ C. J. Herrick, "A Neurologist's Excursion into Psychology," *Main Currents in Modern Thought*, Vol. 12, No. 4 (1956), p. 83.

upon the observed account for the fact that the less inclusive mechanisms or processes of nuclear physics cannot be accounted for with the same precision and in terms of the concepts and regularities which hold for the macro-physical world of solar systems and microscopic particles. That the laws of macro-physics have not lost their validity for the interpretation of the events and processes of the macrophysical world should in no way be surprising. Knowledge that has been tested in one field does not lose its relevance and validity because we find that it cannot account for phenomena in another realm. By the same token it stands to reason that even tested laws (regularities) pertaining to phenomena in one field of analysis do not necessarily retain their relevance when applied to another field of investigation.

This is not to say that classical mechanics and nuclear physics are contradictory in the sense that they must necessarily stand in a mutually exclusive relationship to each other. On the contrary, an adequate and complete description of the world requires that both modes of description be used, depending upon the realm of experience that is under discussion. To force the experiences of one realm into the regularities and conceptualizations that have proved suitable in another realm can only give rise to error. In short, a complete understanding calls for two or more complementary descriptions. This notion of the complementarity of two different modes of description, both of which have their relevance and are required for a complete understanding of reality, is an important conclusion that must be drawn from the developments in modern physics.¹⁷

What do these new insights of physics suggest for our understanding of human society in general and the problem of integration of social inquiry in particular? Doubtless the realization that a complete and correct description may require more than one conceptualization is of the greatest importance to social inquiry. A complete acceptance of this realization would go a long way in counteracting and overcoming our traditional tendency of seeing antinomies and dichotomies where we are merely dealing with complementary modes of thinking and conceptualizations.

¹⁷ For the fact that complementary descriptions actually have a long history, see J. Oppenheimer, *op. cit.*, (1953), pp. 77-79.

Neither of the two (or more) modes of conceptualization in isolation will yield a complete and correct understanding of the problem under discussion. Or to put it differently, a complete and correct description of the total structure must interconnect the two ways of accounting for facts and experiences, which so far seemed to be separate, as if they were occurring in different, apparently unrelated universes. Planck's statement that the demonstration of such interconnection has the effect of integrating our knowledge and of creating order by simplifying and perfecting the scientific view of the universe holds equally true in social inquiry. While the physical sciences are well advanced in interconnecting different explanations, the social sciences are just beginning to realize that the demonstration of such an interconnection may be a problem and a challenge.

Strictly speaking, the relationship between large-scale and nuclear processes perhaps bears only a limited resemblance to the connection that may exist between the various fields of social inquiry. In nuclear physics the situation is such that one mode of analysis precludes the other. In the field of social inquiry we are often confronted merely with "a contrast of interest and terminology, but not an inherent inapplicability of two ways of talking."¹⁸ In any event whether we are confronted with true complementarity or not, the need for showing the "correspondence" between different terminologies and preoccupations is as great as the need to show the interconnections between the principles of large-scale mechanics and those of nuclear science. We shall return to the principle of complementarity and correspondence in social inquiry when we discuss the two basic common denominator concepts of man and culture.

It has been suggested by some that the inability to describe the motion of the single electron and the resulting indeterminateness of nuclear processes confirms the doctrine of basic spontaneity in nature, and the concept of free will and represents a final liquidation of materialism. What is more, it is often argued that the new findings of nuclear science establish a case against the notion of causality. We believe that these considerations and speculations are based upon specious reasoning. The jump-like character and indeterminacy of the motion of the individual

¹⁸ *Ibid.*, p. 79.

electron has nothing whatsoever to do with the metaphysical questions raised by the notions of spontaneity and creativity in nature, freedom of will, materialism, and causality. The fact that the motion of the electron is unpredictable does not make it acausal. In the first place events and processes may be causally determined and yet may be unpredictable. Secondly, when the jump-like event or motion does occur—and after all it does happen, whether suddenly without discernible intermediate stages or within a period of time, however small—it not only happens but might conceivably be interrupted by an unforeseen disturbance.¹⁹ The lack of predictability of the motion of the electron may suggest gaps in the continuity of nature in so far as the micro-physical world is concerned. This independence in the variation of nuclear phenomena and the mutual interaction of the observer and the observed makes the event not acausal. What it forces us to question perhaps is the notion of the fundamental individuality of the electron; instead it compels us to direct our attention, from the very outset, to the total structure or system as a whole.²⁰ Then it will be seen that what appears as a mysterious spontaneous creativity in nuclear physical processes is in reality a highly prosaic and continuous process of transformation in physical systems—a process of change which has its counterparts in biological and social structures.

To summarize: While many of the fundamental notions of modern physical analysis are still in flux, generally the new principles of nuclear physics and the new modes of thought tend to confirm the notion of the physical universe as a system or level of organization which is composed of innumerable subsystems. What Whitehead liked to describe as organisms of different complexity and what have since come to be known as levels of organization, systems, or structures is indeed what modern science assumes as fundamental to the ultimate nature of physical reality. Each of these structures is marked by a continuous interplay of the whole with its parts. And it is in this interplay of the parts with each other and the whole that we must locate an element of order, an organizing principle which holds the parts

¹⁹ E. Schrödinger, "What is Matter?," *Scientific American* Vol. 189 (Sept. 1953), p. 56.

²⁰ E. Schrödinger, *Science and Humanism, Physics in our Time* (Cambridge, Eng., the University Press, 1951), pp. 18–21. See also *op. cit.*, p. 56.

together and prevents them and the whole from running blindly in all directions. This interplay also accounts for the fact that each part and the whole are in a continuous and self-operating process of change. Indeed, it is in this interplay of the whole with its parts that we must find the reasons for the dynamic character of physical systems, the emergence of novelty and change in the physical universe as well as the basis for the determinacy of macro-physical processes.

An understanding of these processes in both their macro and their nuclear-physical aspects presupposes knowledge of the structure and functioning of the system as a whole as well as of the substructures which make up the over-all system. The principles that govern the structure and functioning of the macro-physical systems are not necessarily those which apply to the nuclear processes or systems. Indeed, the constitution of nuclear systems is such that the process of observation, and the presence of the observer affects the results of the experiment. Depending upon the observation, different findings will emerge and a complete description of the process can be given only in terms of complementary descriptions. Most physicists seem to believe that as far as nuclear processes are concerned, we must be satisfied with an essential indeterminacy of physical events, and that the determinacy and predictability of macro-physical processes are the outcome of a statistical regularity in the interaction of a very large number of particles, none of which is capable of exerting a predominant influence because they neutralize each other's indeterminate ("jump-like") action.

Before we compare the structure and functioning of inorganic matter with the essential features of human society it is important to survey briefly the basic characteristics of biological systems. To do so is the purpose of the next chapter.

CHAPTER V

Living Organism

The closed processes studied in quantum physics are no direct analogue to biological functions...

The simple concepts of physical science to an ever higher degree lose their immediate applicability the more we approach the features of living organisms...

N. BOHR*

FROM a discussion of the basic characteristics of inanimate matter we turn now to a consideration of the nature of living organisms. As in the preceding chapter we are interested not in the details of biological findings but in an interpretation of the distinguishing features of living organisms. We aim at an understanding of the nature of living matter as contrasted to inorganic matter on the one hand and of human society on the other. In this effort we are able to draw upon the work of biologists and others who have interpreted the general implications of contemporary biological research.

It was perhaps inevitable that new discoveries and particularly new modes of thought in the physical sciences should have had far-reaching consequences for our understanding of living organisms. New conceptualizations which helped the physicist to give a more adequate account of the structure of the world of atoms and electrons have proved fruitful in formulating new hypotheses concerning the hereditary process and other phenomena observed in living organisms. This is not to say that new conceptualizations in nuclear physics refute the thesis that the two levels of organization are closely linked and interconnected. The basic connection and continuity between inanimate matter and living organisms stems from the fact that all matter – and hence matter embodied in living substances – share a common basis in their atomic structure. More than this, if *all* matter

* N. Bohr, "Science and the Unity of Knowledge," in L. Leary (ed.), *The Unity of Knowledge*, *op. cit.* pp. 56, 58.

including that embodied in living substances, must be conceived as vast numbers of atoms and molecules, it is to be expected that the connection between inorganic matter and living substances can be expressed in terms of the concepts and regularities of nuclear science. Hence, in as much as organisms are composed of matter with an atomic structure, an understanding of atoms should provide the clue for an interpretation of the connection and continuity of the two levels of organization; there is likely to be a bridge which leads from inorganic matter to the origin of living organisms. And yet, some of the most important features of life cannot be adequately accounted for in terms of the regularities of either macro-physics or nuclear-physics. This fact tends to support the conclusion that living organisms represent a special level of organization with a complexity which is *sui generis*.

1. The Hereditary Process

BEFORE turning to the central problem of this chapter – the interpretation of living organisms as distinct “open systems” – it may be worthwhile to deal briefly with the manner in which living organisms are capable of reproducing and transmitting their entire structure and visible characteristics from one generation to the next. In this process of inheritance we are witnessing a highly unique stability and continuity of structure, which does not, however, prevent the emergence of new forms. How are we to account for these continuities and discontinuities?

The high degree of stability and the measurable frequency of mutations suggested that the answer to the problem of biological inheritance is to be found in the atomic structure of a hypothetical entity – the gene – as the seat and carrier of the characteristics which are transmitted in all their minute details. By locating these entities in the nucleae of the two cells which unite to form the fertilized egg, and by assuming that the atomic structure of these entities embodies a complex and relatively fixed system of functional relationships, it has become possible to account for the empirically observed regularities of the hereditary process. A well-ordered arrangement in the atomic structure of the genes can be shown to provide the explanation for the regular and

constant transmission of the entire structure of the living organism.¹ What appeared to many as a mysterious process with an apparent direction or purpose, finds its explanation in a study of the micro-physical structure and the system of relationships within the nucleae of the two cells. Indeed, to the highly organized arrangement of atoms in the genes must be attributed the extraordinary power of control exhibited in all processes of embryonic growth and the hereditary process in general.

The modern theory of "quantum genetics" also accounts for the phenomenon of mutations. Mutations differ from mere variations in that, unlike the latter, they do not follow the pattern of normal distribution curves but are "jump-like" and are fully inherited. Genes are assumed to be grouped like beads on a string. They are transmitted in this form. However, they are also capable of rearranging their position and sometimes actually do. Such rearrangement may take the form of either a deletion, or a substitution. When this happens, the new grouping is transmitted in the hereditary process and with it the new genetic information which it embodies. In other words, the hypothesis of a highly organized structure of the genes with their directive power over the hereditary process provides an orderly explanation for the essential stability observed in biological inheritance and growth and, at the same time, offers an explanation for the emergence of new forms resulting from the recombination of genes. "The sexual method of reproduction may be said to provide an elaborate lottery which serves the function of recombining genes in new ways thus permitting living things to explore a practically limitless range of possible variations"² upon which the species draw for their evolutionary advance.

The question as to what may bring about the rearrangement in the order of the genes and the resulting mutations can be answered only in the light of a detailed analysis of the chemical structure of the cell and the reaction of the latter to the regrouping

¹ "A well-ordered association of atoms, endowed with sufficient resistivity to keep its order permanently, appears to be the only conceivable material structure that offers a variety of possible arrangements sufficiently large to embody a complicated system of 'determinations' within a small special boundary." E. Schrödinger, *What is Life and Other Scientific Essays* (New York, Doubleday, 1956), p. 61.

² N. H. Horowitz, "The Gene," *Scientific American*. (October, 1956, Vol. 195, No. 4) p. 81.

of the genes. For our purposes, it may suffice to indicate that the alteration of the genes appears to be due to chemical changes brought about by spontaneous radiation. This may be inferred from the fact that exposure to x-rays speeds up the rate of mutations. For instance, "over a wide range of x-ray dosages the frequency of mutation in *Drosophila* is directly proportional to the number of ionizations (i.e. removal of electrons) with apparently no indication of a threshold below which mutations are not induced."³ Gene mutations have profound effects in the cell; they interfere with such important processes as the organism's ability to make essential chemicals (e.g. particular enzymes, vitamins, acids, etc.). Gene mutations may actually sterilize the cell or permanently alter all its descendants. All of which points to the appalling hazard of any additional man-made radiation for the future of humanity.

It is significant that the successful solution of the problem of the hereditary process took the form of a close integration of the concepts, theories and modes of thinking of nuclear science and genetics; this integrated approach culminated in modern "quantum genetics." The discontinuous character of the changes manifest in mutations pointed to discontinuities of a nuclear character which occur within and affect the highly organized arrangement of atoms in a hereditary structure with strong powers of direction and control over the process of biological growth.

2. Living Organisms as Open Systems

LIVING organisms raise much more complex problems than those related to the transmission of structures and properties with a high degree of stability from one generation to the next. Living organisms possess the capacity of maintaining a unique organization of elements and are capable of coordinating automatically a great number of activities and processes within this organization without which life would be impossible. Indeed, it is this at least temporary maintenance of a unique organization of materials and the automatic capacity of coordinating a great number of activities and processes which must be regarded as the most typical feature of all living processes. It must, therefore, stand at the

³ *Ibid.*, p. 84.

center of any account of living organisms as distinguished from inorganic matter on the one hand and human society on the other.

A complete explanation of how this organization of the living organism is maintained and how the coordination of various activities and processes within it takes place still seems to be beyond our intellectual grasp. For this reason, it is particularly important, within the context of this attempt to distinguish the subject matter of physics, biology, and the social sciences, to try to make clear at least the nature of the problems involved. The following examples are designed to set the stage for an analysis of the nature of the problems raised by living systems as compared to inorganic matter.

Let us start with those characteristics of living processes whose uniqueness can be most easily appreciated by the nonbiologist: the unique and highly coordinated manner of biological growth. The development of living substances into an integrated and differentiated living organism (an animal, a body, a tree) evidently calls for a high degree of correlation between the rate of growth of the component parts. Each part has to grow in relation to other parts and the whole body. In short, normal biological growth presupposes growth correlations between the parts and the whole. Clearly this is a phenomenon which has its counterpart in social change where the proper correlations are however not automatically maintained.

Or consider the unique ability of living processes to reach the same result from different initial conditions. This can be illustrated by the capacity of certain cells to regenerate. "If you cut off the shoot of a plant, it will regenerate roots. If you sever the vascular bundles, they will reform around the cut, and restore connections again. Where a young animal embryo is divided into two cells you can kill one of them, and the remaining one will go ahead and develop, not into half an animal, but into a whole one.... If an earthworm is cut in two, the head end will form a new tail."⁴ Surely nothing of the sort can be observed in inanimate matter. The process of biological growth is unique in this respect.

⁴ E. W. Sinnott, "Cell and Psyche." *Main Currents in Modern Thought*, Vol. 9, No. 1 (1952), pp. 6.

Or consider what happens to the structure of a living organism after death. Chemical reactions of the same compounds evidently continue; but instead of proceeding in accordance with the specific integrative pattern characteristic of intercellar and intracellular reactions during life, these reactions are now disintegrative. To put the same story in more general terms, "we know that the compounds present in a typical cell ... when mixed at random in a test tube, interact chemically in a manner very different from that which they show inside the cell while it is living."⁵ Indeed, the maintenance of the complex order of the components of a living cell – an order which involves a unique and specific, highly diversified and constant arrangement of matter – distinguishes the living substance from the more homogeneous, simple, and uniform arrangements of matter and energy in inanimate nature. In other words, the structure of the organism differs radically from that of inanimate matter with which physicists and chemists deal either experimentally in their laboratories or conceptually in their studies. In contrast to what is considered in physics as a general trend toward a state of disintegration where no further motion takes place and all tendencies to form compounds cease and different temperatures have leveled out through transfer of heat, the characteristics of life seem to be that it escapes, at least temporarily, this tendency toward decay and static equilibrium. In fact, the distinguishing criteria of the living organism may be described as the ability "to preserve the integrity of the organism in the face of general conditions, both internal and environmental, which work towards its disintegration."⁶ From the perspective of the physicists, a substance may be said to be living when it is doing something, when it moves and continues to exchange materials with the environment for a much longer period than a piece of inanimate matter under the same conditions could be expected to stay in motion.⁷

With this formulation we reach the point where it is possible to describe the specific and unique features of living organisms with a reasonable degree of precision: Unlike inorganic matter which is not capable of counteracting the trend toward decay

⁵ R. S. Lillie, *General Biology and Philosophy of Organism* (Chicago, University of Chicago Press, 1945), p. 35. (Copyright 1945 by the University of Chicago).

⁶ *Ibid.*, p. 86.

⁷ Schrödinger, *op. cit.*, (1956) p. 69.

and leveling of differences and which is unable to maintain itself through the incorporation of elements from the environment, living organisms are capable of "maintaining themselves in a steady state [and] can avoid the increase of entropy and may even develop toward states of increased order and organization."⁸ That is to say, they are *open systems* which maintain themselves in a steady state due to an influx and efflux of nutrients and waste materials.

This ability of living organisms to use materials from their environment for the maintenance of orderly processes of embryonic development and general growth is further supplemented, at least in the higher organisms, by a variety of hormonal and nervous mechanisms which permit the most complex and often instantaneous coordination of processes and actions in animal and human bodies. It is these superimposed self-regulating mechanisms which tend to restore balance and are capable of exercising control and of achieving instantaneous reactions and coordinations which give the appearance of purpose and direction not found in the inanimate closed systems of inorganic matter.

3. Structure and Purpose

WE cannot leave this subject without making some reference to various hypotheses which have been advanced to account for and explain the empirical facts of biological growth and maintenance of order. While there is as yet no generally accepted theory of biological systems, a number of tentative interpretations have been suggested which are of interest to us.

We need not concern ourselves with the old controversy of mechanism versus vitalism, even though much can still be learned from the way in which each of the two alternative modes of thinking approached the problem. The former viewed the world, including biological processes, as subject to the laws of mechanical causality. As such it was predisposed to regard all phenomena which seemed to exhibit purpose and direction as by-products of chemical (physiological) processes. The latter took the position that the highly coordinated processes of biological growth, and

⁸ L. von Bertalanffy, "General System Theory," *Main Currents in Modern Thought*, Vol. XI, (March 1955), p. 78.

particularly the ability of arriving at the same results from different starting points, are contradictory to the laws of mechanical causality; consequently vitalism posited the existence of some psychic and volitional factor which was believed to guide biological processes to their "goal" or "purpose."

Today it appears that although biological systems still defy a complete theoretical understanding, the earlier contradictory explanations may be unified into a set of complementary explanations that may offer a way out of the dilemma. We have already seen that the transmission of biological forms and their relatively rare mutations may be due to a highly complex and stable arrangement of atoms in the gene which acts as key or "steering mechanism" in the transmission of the properties of the living organism from one generation to the next. A slight change in the arrangement of the elements in the same compound may be said to account for observable changes in the structure of a few individuals which are then exposed to evolutionary validation or rejection.

The atomic structure of the cell with its special directing activities may have something to do with the gradual emergence of special organizing and regulatory features in living organisms. If we assume, as most doctrines of evolution seem to do, that the emergence of life at some point in the past (or for that matter the transition from nonliving to living organizations) was the result of chance (random variations) which became fixed in the subsequent process of natural selection, the emergence of special organizing and self-regulatory mechanisms may simply be attributed to evolution (environmental validation in a long period of development).

The apparently purposeful activity of the various automatic regulatory hormonal and neural mechanisms which characterize the seemingly timeless reaction pattern and the maintenance of steady states in living organisms (homeostasis) may turn out to be similar in operation to the various feedback mechanisms by which "messages" are transmitted from a "receptor" to an "effector" in many electronic machines. However, similarities and analogies are dangerous and usually superficial; they may suggest the general direction in which the answer may be found; but they are not necessarily the answer. Regulation by a feedback system

presupposes a fixed arrangement; such a system is secondary in the sense that it can operate only on the basis of a prior fixed arrangement. It is not the existence of a feedback system which needs explaining but the emergence of the underlying arrangement. It is easy to see that various substances can act as evocators (triggers) which put into motion a regulatory response in the living organism. "But the real trick of the juke box is not in the nickel but in the mechanism which it starts."⁹

How are we to account for the emergence of those fixed arrangements in living organisms which make possible the regulatory and seemingly purposeful sending of "messages" in connection with the maintenance of homeostasis and the operations of other regulatory mechanisms? Some biologists are inclined to explain the gradual emergence of these underlying "mechanisms" by simply positing a general law or tendency of all systems and its various component parts to become more efficient. In the light of these explanations the biological organism as a special form of organization has merely followed a general trend toward mechanical efficiency characteristic of all systems.

This explanation is hardly satisfactory because it fails to throw any light on the origin and nature of the regulatory mechanism. How does one account, for example, for the regulatory feature of biological growth or the ability to preserve the integrity and order of the organism against the forces which work toward decay and disintegration? Here we seem to be confronted with a special organizing and coordinating capacity of living materials which controls the growth correlations of different parts and guarantees the necessary synchronization of numerous processes and physiological reactions. It is these processes which call for an explanation; and here we face a special dilemma which is not unlike that connected with the inevitable interference with the observed object by the act of observation in nuclear physics. An analysis of the processes and chemical reactions which are continuously taking place in living organisms presupposes micro-physical observations while the organism is alive and able to perform them. However, there are limits beyond which this research may not be pushed, for micro-physical observation may

⁹ Sinnott, *op. cit.*, p. 7.

drastically interfere with life itself.¹⁰ In other words, we are faced with a situation where, in order to obtain the information necessary to validate the physico-chemical interpretation of life, we are bound to change, and indeed end, the very process which alone can yield the information.

How can this dilemma be resolved? It seems to us that the solution calls for an abandonment of the attempt to reduce biological phenomena to physico-chemical regularities, which account for the processes characteristic of the closed system of inorganic matter. Similarly we must avoid interpreting biological processes in terms of a mysterious directive factor which is said to control the process of life. Instead we must assume the existence of organizing principles inherent in the structure of all living materials. What has to be understood are the structural or organizing relations which connect the parts and the whole. These relations seem to determine the fate of individual elements in accordance to their position in the body and their exposure to various influences from a changing internal and external environment. Bertalanffy's distinction between closed and open systems represents such an attempt to explain the empirical facts of biological growth and order in terms of "primary regulations" in organic systems, which are effectuated by interaction of elements and processes. These primary regulations which maintain the fundamental and primitive order in living organisms are based upon the fact that the living organism is an open system, which maintains itself through a continuous exchange of materials with the environment. In other words, an organism may be said to be an organization which is "continually sucking orderliness from its environment" to counteract its tendency toward decay.¹¹

4. The Psychophysical Hypothesis

OTHERS have tried to resolve the dilemma by resolutely combining the physico-chemical and directive properties of life in a

¹⁰ "If in the course of an intellectual experiment, we were to determine by means of the most completely conceivable observation of an organism, the behavior of each individual atom - a determination which would eliminate every residue of our uncertainty (except that degree of uncertainty which cannot be eliminated due to reasons connected with quantum physics) the phenomenon of life would be extinguished long before and the organism would have changed into a corpse." E. Jordan, *Die Physik und das Geheimnis des Organischen Lebens* (Braunschweig, F. Vieweg & Sohn, 1948), p. 124.

¹¹ Schrödinger, *op. cit.*, (1956), p. 73.

unitary conceptual framework. They regard the traditional distinction between the physico-chemical and the directive (purposeful) factors of life as falsely conceived opposites without basis in actuality. In other words, the traditional distinctions between the physical and the directive-psychic, like the common-sense distinction of mind and body, are believed by these scholars to be common-sense delusions. Just as Spinoza dismissed the common-sense representation of the human mind and the human body as two quasi-substantial entities as no more than a confused picture of our imagination,¹² there is good reason to believe "that the concepts 'purely physical' and 'purely psychic' are artificial ones and, as such, incomplete ... being, in fact, abstractions from an experience which combines both aspects. If either aspect, psychical *or* physical, represents only part of a reality which in its actual or existential character includes factors of both kinds ... the problem appears in a different and clearer light and need no longer be considered 'insoluble.' According to this 'double-aspect' conception, psychical activity cannot be isolated, as an independent agency, from other kinds of natural existence but is always associated with physical activity; hence no one need be surprised that it has physical effects".¹³ By thus viewing the distinction between the so-called physical and the directive factors in living organisms as an arbitrary abstraction from the reality of life in which the two appear always as complementary aspects of one and the same biological process, the whole problem assumes a different character. The distinction between the physical and the directive elements in living systems would disappear; the two would have to be considered as closely interwoven if not indeed identical in all normal life.

Is there any empirical evidence to support such a unified conceptual framework? Or, since we cannot really expect any empirical evidence for the above hypothesis of a fundamental identity of the physical and the so-called directive elements in living systems, are there any illustrations which would enable the nonbiologist to grasp the essential meaning of the general thesis that the traditional distinction between the physical and the psychic forces of life may rest upon a common-sense delusion?

¹² Stuart Hampshire, *Spinoza* (Baltimore, Pelican Books, 1951), p. 109.

¹³ Lillie, *op. cit.*, pp. 162-3.

In the first place we may refer to a wide variety of phenomena which illustrate the intimate interplay and fusion of the psychic and the physical. Situations of stress and psychic conflict can be shown to manifest themselves in physical symptoms and disturbances. It is true these phenomena can be and still are widely interpreted as conversion phenomena, that is examples of an originally psychic element transformed into the physical sphere. At the same time, however, the phenomena which are viewed as conversion phenomena by psychoanalytic and psychosomatic medicine may also be regarded as evidence of a fusion of the psychic and the physical, as two complementary aspects of a unitary process.

A similar fusion of the physical and the "directive-psychic" in living organisms comes to light in various specific response patterns in animals and plants to changing environmental conditions. Thus many biological systems make adjustments to and come to terms with a change in environment in ways which can serve as illustrations of the hypothesis that the physical and the "directive-psychic" are not separate but are actually closely interwoven. "All living stuff is irritable. It will respond to stimuli even without a nervous system. We have all seen a sensitive plant, *mimosa*. It responds to shock but it takes about a thousand times as long as a nerve impulse to do so. Even single-celled protozoan can be 'taught' a little. Plants can acquire 'habits.' They have a germ of memory, though no nervous system."¹⁴ Moreover, these response patterns of living systems seem to depend upon the environment. Each organism is capable of coping only with a certain range of changes. But within this range different situations will give rise to different standard responses on the part of the organism in its efforts to come to terms with the world. "You grow a certain kind of primrose at a low temperature and it has red flowers. At a high temperature it has white flowers. Its norm, its standard, is modified by the kind of environment in which it grows.... What a given gene will produce in inheritance is not an invariable characteristic. It will depend on the other genes, and on the environment in which the plant or animal is growing. A single gene has not one role, but a whole

¹⁴ Sinnott, *op. cit.*, pp. 7-8.

repertoire of roles, and this repertoire changes during development."¹⁵

In one way or another all these changing roles and purposes and hence all responses and behavior of lower organisms constitute answers to the requirements of continued survival and growth. Somewhere in the course of evolution the response pattern observed in plant life merges into instinct, behavior, and purpose. Only if we compare physical processes in living organisms and psychological phenomena in their extreme and most developed manifestations do the two seem to be so far apart as to make the thesis of their fundamental unity appear implausible. There is no need to assume a break in principle between physiology and psychic factors, between matter and mind, between protoplasm and purpose.

The foregoing analysis does not imply that every physiological process or event takes place under the influence of some consciously conceived purpose which "guides" the underlying physiological mechanism at any given time. For there is no need for such a continually active psychical influence because, as we have seen, a regulatory control mechanism may develop and become stabilized and routinized by repetition into a fixed arrangement of the feedback type.¹⁶

To sum up: What are the essential features of life, and how do living systems differ in structure and functioning from inorganic matter? The so-called "riddle" of life finds its most baffling expression no longer in the question of the origin of life and the hereditary mechanism but rather in the specific integration and regulatory features which mark the process of biological growth. What has so far defied complete explanation is the pattern of internal reciprocal reactions to the various parts of the organism and the latter's response to external stimuli which protect the process of living and enable the organisms to grow. The dis-

¹⁵ *Ibid.*, p. 9. Similarly "a simple sluggish animal like a clam has a very simple sort of physiological life, with very few physiological regulations, very few purposes. An insect with a constantly changing environment has physiological and psychological norms and purposes that change considerably." *Ibid.* p. 9.

¹⁶ We need only assume that psychic factors and controls leave behind them "in the nervous system, some special chemical or structural modification which has the characteristic physical property of persistence or conservation; and this stable impress, or engram, in some way makes easier the later repetition of the action." Lillie, *op. cit.*, p. 96.

tinguishing feature of the living process lies in the fact that it is an open system. In other words, living organisms are marked by their dependence upon a process of metabolism, in the course of which materials from the environment are incorporated and integrated into a specific and predictable pattern.

In the synthetic process which follows incorporation, these materials are recombined in accordance with a constant organizational pattern which is characteristic for each species. Each animal or plant organization, once it is synthesized, is maintained with an essential constancy of structure and activity throughout a certain limited period or lifetime, which varies greatly from species to species and is biologically predetermined, i. e., inherited. In this sense, each organic individual is transient, i. e., passes through a temporarily limited life-cycle, usually divided into successive subcycles of development, level maintenance, and senescence, after which it dies or disintegrates.¹⁷

The distinguishing character of these processes is precisely that they give rise to an arrangement of atoms which differs fundamentally from that found to be characteristic of inorganic matter. The central problem of biology, it would appear, derives from the fact that organic systems possess a special potency of organized growth and regeneration, that this potency implies a unique capacity of arranging matter and energy (absorbed from the environment) in a fashion which is contrary to those observed in inorganic matter, and that the whole process of biological (normal) development exhibits regulatory and directive features in the sense that events take a special and definite course which is in harmony with, and indeed a prerequisite for, the normal growth and the continued functioning of the organism. It is these characteristics which we have in mind when we refer to living organisms as systems exhibiting a special and unique level of organization.

The fruitfulness of the psycho-physical hypothesis lies not merely in the fact that it resolves the older controversy between mechanism and vitalism. Without breaking the continuity with nonliving materials it assumes an intimate fusion of the physical and the psychic and regulatory elements. As such the hypothesis serves as a bridge from the living human organism to social reality in which regulatory and directive factors play an important role.

The foregoing discussion has made no attempt to describe the

¹⁷ *Ibid.*, p. 29.

specific biological characteristics of man. Such a description would seem to be the next task of our discussion of the unifying and differentiating criteria of the three phases of reality into which we have classified all natural phenomena. For obviously, not living organism in general, but the specific human biological form – man – occupies the center of the stage when we deal with social reality. Since man is not merely a member of a biological species (whatever his special biological characteristics may be), but always a cultural being, we shall postpone the discussion of his special biological characteristics until after we are ready to view man within the context of sociocultural structures or forms of organizations.

Note on the Origin of Life

IN this attempt to delimit the three levels of existant reality we are not directly concerned with the question of the origin of life. And yet, since the question of the evolutionary continuity between the three levels of organization may be raised and is indeed a legitimate one, it may be in order to advance the following observations.

While it is still impossible to describe unequivocally every step in the emergence of living organisms, it is possible to visualize the whole process as an evolutionary scheme with a continuous rise in the level of organization from the constituent element of atoms to the complex structures of living organisms.¹⁸

In the light of this general scheme of evolution, the problem of the origin of life may be said to turn into the question of how life can have arisen through a rearrangement of nonliving components. The fact that a "spontaneous" generation of life as a result of a change in the arrangement of the components of non-living materials apparently is not taking place under present

¹⁸ "There were 'inorganic' molecules before there were living cells, the origin of which evidently depended upon the right environmental conditions for the flowering of the potentialities of the protein system; there were living cells before there were organs or tissues of metazoan organisms; there were primitive organisms before there were any higher ones, and higher organisms before there were any social associations. The fundamental thread that seems to run through the history of our world is a continuous rise in level of organization." J. Needham, "A Biologist's View of Whitehead's Philosophy," *The Philosophy of A. N. Whitehead* in P. A. Schilpp (ed.) (Evanston, Ill., Northwestern University Press, 1941), pp. 249-250.

conditions is no proof that it could not and did not take place in the past. For, in 'the first place; the conditions prevailing today may be totally different from those in the past. Furthermore, "no apparent change within a thousand years tells anything as to a million years; and no apparent change within a million years tells anything about a million million years."¹⁹ The solution to "the riddle of the origin of life" may thus be found by viewing it in terms of probability and chance rather than as the outcome of conscious aim and effort. This is the hypothesis of those who suggest that "life originated as the result of a very 'improbable' event which however was almost certain to happen given sufficient time and sufficient matter of suitable composition in a suitable state."²⁰ Biologists working in this field suggest that, given enough time, such an improbable event if viewed in connection with the action of solar radiation could happen "at least once."²¹ That is to say, even if our present experimental arrangements do not confirm this hypothesis, the origin of life may still have been an orderly natural event. In other words, the precursors of all present living things may have arisen from a reproduction of living material which itself may have come about as a chance rearrangement of matter in the direction of the complex molecules of protoplasm with the novel capacity of duplicating themselves and of undergoing mutation. We need not concern ourselves here with the manner in which it may be possible to account for the subsequent developments from the first emergence of living things to the simplest algae and the more complex forms of living organisms represented by modern man. This decisive link in the explanation is provided by the theory of evolution.

¹⁹ A. N. Whitehead, *Modes of Thought* (New York, The Macmillan Company, 1938), p. 193.

²⁰ J. B. S. Haldane, "The Origin of Life," *New Biology*, No. 16 (1954), p. 12.

²¹ G. Wald, "The Origin of Life," *Scientific American*, Vol. 191, No. 2 (1954), p. 47.

CHAPTER VI

Human Society

... there are only a few sociologists who have ventured... to assert that there is something distinct or unique in social phenomena; so we are met with a paradoxical situation in which social phenomena are isolated from physical and organic considerations and yet are explained in physical, organic or psychological terms instead of in characteristically social terms.

J. DEWEY*

ANY attempt to consider human society as a distinct form of organization and to introduce the social as a special category, separate and distinct from the inorganic and the organic levels of organization, may give rise to a fundamental objection. Thus it may be argued that if the social denotes a specific form of association between human beings, it is at best only a "highly special case of association and as such ... restricted in significance, humanly interesting, of course, but a matter of detail rather than of an important principle."¹ This objection to the whole attempt of distinguishing the social as a special phase of nature and a distinct category of description and interpretation overlooks, as Dewey also pointed out, the purely formal character of the concept of organization or system. The fact that all existent reality can be viewed as manifestations of structure or organization in the generic sense of these terms does not make it superfluous to inquire into the specific characteristics and distinguishing features exhibited by each. On the contrary, it is precisely the formal character of the concept of organization or system which makes such an inquiry necessary and fruitful. For the formal concept of system acquires meaning and content only by making explicit the distinguishing characteristics of specific modes of association. While the distinctive features of inorganic matter and living organisms have become increasingly clear with the advance of our knowledge in physics and biology, the social

* J. Dewey, *Philosophy and Civilization* (New York, Minton, Balch and Co, 1931), p. 81.

¹ *Ibid.*, pp. 79-80.

sciences, because of their compartmentalization, seem to be only at the beginning of their understanding of the special mode of organization and interdependence manifested by human society. Each new advance in our understanding of concrete social phenomena seems to disclose new functional connections and as such provides new insights into the specific nature of social structure in general and into the similarities and continuities which connect the social with the organic and the inorganic. In any event, a discussion of the distinctive and unique features of social reality has to go beyond the characterization of human society as a particularly complex level of organization. We must try to deduce from our observations of social phenomena the specific features which distinguish human societies from the better-known structures such as inorganic matter and living organisms.

Like other forms of association human groupings and human society are in the last analysis the outcome of a special type of evolution. The special character of this evolution is due to the human ability of acquiring and transmitting experiences which, in turn, can be traced back to distinct biological characteristics of the human organism. Man's biological immaturity at birth, the prolonged infant dependency and plasticity, and above all the ability to delay and suspend the gratification of even essential needs, seem to be the specific preconditions for the development of those human characteristics and potentialities which enable and indeed force man to act, to plan, and to live in larger associations. Since we shall deal with these unique biological characteristics of man in greater detail in chapter 8, we shall concentrate here on those biological and "culturally" channeled human potentialities which have made man a culture-building and transmitting being.

Man's biological immaturity at birth accounts not only for the infant's dependency upon others and the need for some form of organized provision for his survival but also makes necessary and possible the "enculturation" of the human infant. Furthermore, the biological immaturity of the human infant as compared, for instance, with the offspring of anthropoids seems to explain the extraordinary plasticity of the human brain without which he could not acquire and develop the capacity of speech and of conceptual thought and communication. From this ability of

using concepts is derived man's ability to assume an abstract attitude and to experience himself and the world indirectly, that is, with the aid of symbolic representations. The ability to think and reason abstractly is paralleled by an ability to give artistic expression by means of various symbolic representations of significant experiences of reality, beliefs, and attitudes and to respond to such representation with emotional and esthetic satisfaction. The human ability to express experiences, beliefs, and attitudes symbolically also makes it possible to share them with others, to establish some community of experience, and to transmit acquired experiences from one generation to the next. It is this ability of transmitting acquired and shared experiences which gives human groups their distinctive characteristics inasmuch as it opens the way to a new type of "inheritance" or "cultural evolution" which permits a much speedier and in many ways more effective type of evolutionary transformation.² Human society may thus be viewed as the outcome of cumulative evolutionary processes which give rise to qualitatively different and new methods of organization.

This method of transmitting acquired experiences and traditions has been an unusually "successful" one: it evidently accounts for the emergence of man as the latest dominant type in biological evolution. It has given man far-reaching control over the rest of nature which puts serious restrictions on the evolution of other species. Above all, the process of cumulative transmission of experience and tradition has placed into the hands of man the means which enable him, for better or for worse, to play a major role in the further process of biological evolution. In fact, from the perspective of evolutionary time, if not indeed from that of historical time, we need not hesitate to accept the thesis that man has become an active and perhaps the sole agent of the evolutionary process on this planet capable of affecting major advances and of realizing entirely new possibilities.³

The foregoing account of the evolution of human associations

² "Biological evolution depends upon natural selection... cultural evolution depends on cumulative tradition, which was made possible when mind and its products became capable of self-reproduction and self-variation." J. Huxley, "Man's Place and Role in Nature", in L. Leary (ed.), *The Unity of Knowledge* *op. cit.* p. 86.

³ *Ibid.*, p. 86.

and human society may suffice to set the stage for the main task before us: to examine the typical elements of social systems, to identify and analyze the functions of various subsystems found in human society, and to describe the nature of their interaction. We propose to deal with these questions briefly under the following headings: Enculturation, The Economic System; Power, Coercion, and Government; Social Action and Social Indeterminacy. In two concluding sections we shall then set forth what we consider to be the distinct characteristics of social systems and show that social structures and social change are not contradictory but that, on the contrary, the former includes the latter.

1. Enculturation

THE immaturity of the human infant at birth calls for the provision of an environment necessary for his survival and for a process of enculturation in the course of which the child acquires his ability to speak, to think, and to remember experiences in terms of conventional concepts. He learns to attribute meaning to common symbols and situations and to respond to them in a more or less determinate and hence predictable manner. The child and the adolescent develop culturally validated feelings as well as the important needs for safety and participation or their opposites under unfavorable circumstances; he assumes and performs the various roles or behavior patterns which his society prescribes for him and which likewise stabilize his behavior and channel his responses in different situations. In short, the individual learns and internalizes into his personality structure those propensities, inclinations, attitudes, and value orientations which make him a functioning and predictable and yet more or less unique member of human society. The major burden of these integrating functions is borne by the kinship or family system which must be regarded as a typical component and strategic subsystem of all human societies. Its significance stems from the fact that it secures the survival and perpetuation of the species and at the same time plays a major role in transmitting acquired experiences and traditions. We are disregarding here that the kinship system in different societies may differ. Nor shall we pay any attention to the fact that the enculturation of the child and

particularly of the adolescent may be transferred to religious, military, political, or educational orders and groups.

2. The Economic System, Power, Coercion, and Government

FROM the biological immaturity and dependence of the human infant and the corresponding need for some form of kinship system, we turn next to man's dependence upon his physical and cultural environment and the corresponding need for some system of production and distribution. As a biological organism and therefore as an open system man's survival and growth depends upon the assimilation of certain materials from his environment. Unlike the closed systems in the inorganic world, the human organism must draw upon his natural environment in order to satisfy a variety of his requirements or "needs." These needs seem to be arranged in a flexible and at least, in part, culturally conditioned order of priority and prepotency. That is to say, the gratification of the most urgent requirements of survival and growth do not give rise to a state of static satiation. Instead, appetites revive and new wants and qualitatively new desires may develop. It would lead us too far afield to deal with the question of how this expansibility of wants differs from culture to culture.

The means for the gratification of human needs and requirements of life are not available in unlimited quantities as finished products when and where man may need them. For all practical purposes man has to spend time and effort in order to obtain the means required for survival and growth. In short, he must work, or as Marx called it, he must "wrestle with nature." While man's power of production may increase and has increased in some societies more than in others, his wants have tended to expand at the same time. As a result it is not unreasonable to regard scarcity, or what Marx called the realm of necessity, as a fundamental characteristic of human existence and of all human societies. This is not contradicted by the fact that the more advanced societies may reach a state of affluence or relative abundance in which certain minimum requirements of human health and survival can be met for all with considerably shortened working hours. Nor can we deal here with the important problem of

distinguishing between essential and less essential wants in terms of some objective standards of health and basic human requirements. These are issues which, despite their great importance in a society of relative abundance, must not be permitted to becloud the basic fact that nature does not provide the means required for the satisfaction of human wants without work and that because of the expansibility of wants and the resulting phenomena of scarcity, there is need for purposeful work and action in every human society.

Fundamentally, it is this dependence upon the natural environment as well as the expansibility of human wants and the resulting scarcity which makes the question of work (or production) and distribution one of the foremost social problems with which human society must necessarily be concerned. The term production has reference to the allocation of the real burden of work, that is the time and effort needed for the creation of goods and services required for the gratification of human wants. Distribution refers here to the division of the product among the individual members of society. Now the question as to how a product jointly produced in a system of divided labor, is to be shared by those who produce it and the allocation of the real burden of work are issues which are liable to cause serious conflicts of interest between different individuals and groupings. Hence the determination of what to produce, the "distribution" of the burden of work (the real allocation problem), and the division of the total output are issues of the greatest importance in human society. To be able to influence these decisions either directly or indirectly, by persuasion or by force, be it naked coercion, violence, or threats, or by withholding economic necessities, has been and will continue to be the objective of individuals and groups faced with the problem of scarcity and work. It is the possibility of serious disagreement concerning the problems of production and distribution which makes for real conflicts of interests in society. And it is these conflicts which make the exercise of and the striving for power not only plausible but an integral part of the social process.

While we are not suggesting that conflicts arise only over economic issues of production and distribution, we do wish to emphasize that economic problems are necessarily power prob-

lems. In other words, power is wealth and wealth is power and each may be sought for the sake of the other. The analysis of power and counterpower, of domination and coercion and their significance for the understanding of social reality in the domestic and the international scene, has received relatively little attention in contemporary social theory. And yet there can be no doubt about the fact that an impartial and unbiased understanding of the distribution of the national product, and of prices in domestic and in international markets and indeed of competition and monopoly cannot be achieved in terms of any equilibrium model but only in terms of a theory of power, coercion, and domination which does not isolate the search for gain from the desire for power by individuals, groups, and governments.⁴

While conflicts over production and distribution can be resolved and power can be effectively curbed and channeled into all kinds of indirect and seemingly impersonal and tolerable forms of compulsion, conflicts in human society are rarely, if indeed, ever settled once and for all; they reappear in new forms and compromises. Hence the persistent need to secure workable solutions for these conflicts and the need for government. Furthermore, since power and particularly the subtler forms of compulsion tend to surround themselves with rationalizations and moral justifications, the appeal to reason and moral sentiments is not likely to suffice in order to secure workable and equitable solutions of conflicts of interests. The recurrent problems which arise from scarcity and conflicting interests can be solved only by the development and exercise of counterpower and the transfer of private power to public authority. This is

⁴ We cannot do more than refer the reader to the pertinent literature: Commons, 1899-1900; Hawtrey, 1930; Niebuhr, 1932 and 1953; Russell, 1938; Carr, 1939; Brady, 1943; Preiser, 1949; Galbraith, 1952; Perroux, 1950; Mills, 1956; Lynd, 1956. Nor can we deal here with those factors and situations which may call for and have led to a high degree of political centralization and may give rise to the concentration of total power in the hands of particular groups in society. Among these situations are external aggression and invasion, internal decay, the need to organize activities which require central coordination, and the allocation of large amounts of human and natural resources to the development of irrigation systems on a broad territorial basis or the need to counteract socially destructive pursuits of private objectives in modern industrial societies. For a systematic treatment of these aspects of the use and misuse of power in society see Barrington Moore, Jr. *Political Power and Social Theory* (Cambridge, Mass., Harvard University Press, 1958) and K. A. Wittfogel, *Oriental Despotism* (New Haven, Conn., Yale University Press, 1957).

precisely one of the functions of government: to institute procedures to curb individual power. Conflict, power, and collective action and their restraint and administration by government are therefore closely related features of society which no social inquiry, no matter how abstract, can safely ignore if it wants to study social processes scientifically that is to say comprehensively.

However, we need not devote our attention to the second distinct but related function of modern government: the administration of the short- and long-term interests of the community (public purposes) as distinguished from the private wants of its individual members; nor can we deal with the fallacy that the rivalry and interaction of individual wants and private power will necessarily promote the public interest.

3. Social Action and Social Indeterminacy

VIEWED in the light of the preceding account of the phenomena of scarcity, production, distribution, conflict, power, and government, the problem of social action assumes a more concrete form. All human action is necessarily social action. What makes it social is, as we shall show later, the social character of the individual. However, apart from this, an increasingly important part of human action is collective action, inasmuch as it is undertaken by various collective groups and public agencies in society. The term social action refers to those private and collective decisions and activities by which individuals, groups, or governments tend to achieve their respective purposes.

Social action in this sense is oriented toward the future. It implies not only some future purpose, aim, aspiration, or value and hence some evaluation and choice but some anticipation of the possible consequences of the transaction. Despite these characteristics we do *not* imply that all social action is rational in the sense that it is preceded by careful and reasoned deliberation concerning ends and means. All we have in mind is that social action involves, in varying degrees, a perception of the present and the future and some element of decision-making as opposed to routinized behavior. In other words, social action and the psychic realities which precede them do not run wildly in all directions but show some measure of uniformity. Such uniformity

is the result not, as has long been believed, of the fact that human beings follow some simple and easily measurable goals, as for example, the maximization of material well-being (however broadly defined), but of the fact that the relatively stable socio-cultural "matrix" establishes definite human reaction patterns which make for some uniformity of human behavior.

Again this uniformity is not to be interpreted to mean that all social action follows one pattern. On the contrary, there remain possibilities for novelty – for some form of autonomous action. Essentially, what we are saying is that human behavior, and hence social action, is not to be conceived as a mechanical and automatic response to external and internal stimuli. No matter how much individuals and social groups and their behavior must be regarded as products of the pattern of routinized sociocultural arrangements which they have socially inherited, they preserve a degree of autonomy and spontaneity which enables them to act in a novel or unique manner. If this is granted – and we shall have occasion to lend further support to this thesis when we discuss the concept of culture – it follows that social action must be regarded as effective (in whatever small degree) to influence the future. In other words, the pattern of routinized sociocultural conditions cannot be said to *determine* the future course of social events in a completely predictable fashion.

In this connection it is important to realize that social action takes place at various levels and is carried on by different entities: the government and its subdivisions, groups, and numerous individuals. This gives us not only a picture of the possible multiplicity of purposes, aims, and aspirations involving the possibility of different perceptions of the present and the future as well as different anticipations of the consequences of present transactions; in addition, it immediately introduces several elements of extreme complexity into the social situation which are of the utmost importance for an understanding of the unique characteristics of social reality. For the fact that social action is carried on by different entities in society once more focuses attention on the possibility and significance of conflicts, rivalries, and antagonisms. What is more, different social entities are of different strength, occupy different strategic positions in society, and wield different degrees of power. Hence their action carries different

weight and influence in determining the outcome of social processes which their decisions may initiate.

In fact, once the full implications of social action and interaction of different entities are understood, it becomes clear why sociocultural processes bear little resemblance to either nuclear or large-scale physical phenomena and their statistical determinacy. Large-scale physical events or processes are determinate and predictable because they are the outcome of the statistical regularity of an interaction of a multitude of atoms. It is important to keep these considerations in mind before attempting to transfer modes of thinking which have proved adequate for the interpretation of physical reality to social structures composed of human beings. Thus it would appear that whenever the number of elements in a social situation is not great enough to make possible the neutralizing effect of "rival" tendencies and where the indeterminate and unpredictable behavior of one or a few elements (individuals and groups) is capable of exerting a preponderance of influence and orientation – in short, where observed events must be attributed to the directing and regulatory action of incompletely predictable "decisions" – under these circumstances the behavior of the macro-cosmos (the aggregate) may be as indeterminate and unpredictable as the action of the parts. Now, social situations are not made up of elements which are essentially equal as far as their pull and influence on the social process is concerned. There are some individuals and groups which may have a stronger influence on the outcome than others. Thus the social process is subject to pressures and pulls of unequal strength. Under these circumstances neutralization of random behavior and statistical regularity are less significant than the establishment of the strength of various preponderant pulls and pressures.

Furthermore, even if we could overlook this important difference, we would still be faced with the fact that the number of effective entities in any social situation is much smaller than the number of molecules in any macro-physical situation. As a result, the scope for the neutralization of random behavior is much reduced. In other words, the conditions for a statistical determinacy with a comparatively high accuracy are not fulfilled. Let us make this clear by the following simple calculation: According

to Schrödinger, "the laws of physics and physical chemistry are inaccurate within a probable relative error of the order of $1/\sqrt{n}$, where n is the number of molecules that cooperate to bring about that law."⁵ In other words, the presence and interaction of 1,000,000 molecules would yield a relative error of 1 : 1000 ($1/\sqrt{1\ 000\ 000} = 1 : 1\ 000$) or $1/10\%$. The smaller the number of effective elements in a social system, the greater the probable error in any social law. Thus if the number n is 100, the probable error would be of the order of 10% ($1/\sqrt{100} = 1 : 10$ or 10%).

For these reasons we feel that indeterminacy and incomplete predictability must be regarded as typical characteristics of social events and social processes.

4. Human Societies as Systems with Specific Structures

FROM the point of view of effective prediction and scientific analysis the situation would indeed be hopeless if human society and its various component elements did not constantly channel individual behavior into socially acceptable and culturally approved performances. This is achieved – as we have tried to indicate and shall show again in chapter 9 – by the enculturation process, which transmits the acquired tradition, value orientations and expected behavior patterns (roles) from one generation to the next. This process makes for a certain degree of predictability of human behavior, and society as a whole and its component elements appear to be of one piece. That is, they exhibit a more or less structured pattern. This pattern is reflected in predominant value orientations on matters of fundamental importance, which tend to be internalized in the personality structure and as such give some measure of direction, stability, and regularity to human action.

This view of human society also throws light on the question of what holds it together. What keeps human society and its elements together are not simply the requirements of biological survival or the exercise of organized power but the community's shared values and transmitted experience. Human associations come into existence and are held together by common values and

⁵ E. Schrödinger, *What is Life and Other Scientific Essays* (New York, Doubleday and Company, 1956), p. 15.

common experiences, the sum total of what is shared and transmitted. What is shared and transmitted are patterns of thought and science, law and morality, art and ritual. Huxley calls this pattern of conscious experience, thought, and purpose which provides the integrating bond between the individual members of society, man's "noetic system."⁶

Thus, in summary, human society may be said to be a system composed of a network of four interacting substructures:

- (1) the system of institutionalized arrangements related to the procreation and enculturation of the young and to the transmission of man's acquired experiences and propensities;
- (2) the system of institutionalized arrangements related to the production and distribution of goods and services required or desired for the gratification of human wants;
- (3) the system of institutionalized arrangements related to the substitution of collective (public) power and coercion for private power and coercion;
- (4) the noetic system of thought, value orientations, art, religion, and ritual performances which are shared and transmitted and which channel human action and responses into more or less regular and stable performances and strivings.

While human societies must be viewed as systems, they are unlike macro-physical structures such as bridges and skyscrapers in which the relationships between the whole and the components are fixed and stable for all practical purposes. They differ from both physical systems and living organisms. The fact that societies are systems composed of human beings (living organisms or open systems) and of a much smaller number of components makes them qualitatively different from physical systems. Nor can human societies be compared with a living organism in view of the fact that societies are composed of many human beings with their specific capacities to learn and to transmit acquired experience and their ability not merely to adapt passively but to deal with their environment in a novel manner.* Indeed it is the combined effect of these substantive differences between inorganic and organic structures on the one hand and social systems

⁶ Huxley, *op. cit.*, 1955, p. 88.

* We shall come back to this point in Part III.

on the other which give the latter their specifically flexible and dynamic character.

5. Social Change

THE human capacity of conceptual thought and communication and the ability to transmit the acquired and accumulated experience of mankind, together with the presence of human purposes translated into human action, makes it not only possible but probable that new structural relationships and new arrangements may come into existence in human societies at a much more rapid rate than is the case in the organic and physical world. Since social relationships are not mechanically fixed and stable, there is considerable room for modification in each of the four substructures of social systems (kinship, production and distribution, political systems, and noetic systems). Since these four substructures are connected by a process of continuous interaction, it follows that modifications in one must lead to transformation of the whole. In short, while social change and social processes may be slow, they are as a rule cumulative. Their repercussions will be felt throughout the entire system of relationships which connect the component parts with each other and with society as a whole. In principle, innovations are possible in each of the four substructures; they occur in man's noetic system, in his system of production and distribution, in the political system, and in the kinship system. Wherever they may originate, their effect will be felt throughout the entire social structure until a more or less radical transformation has taken place in the whole system of institutional arrangements of which human societies consist.

However, the important point which is sometimes overlooked in the discussion of social change is that the novel elements are reflected not necessarily in the emergence of new institutions but in new forms, in which various institutional arrangements and entire subsystems of society are interacting. While social institutions may convey the appearance of relative constancy, their relationships and functions may undergo radical changes. Indeed, these changes in structure and function may bring to the forefront previously present but only latently effective propensities, and

may give rise to entirely new effects and potentialities.⁷

One simple example may serve to illustrate the point we are trying to make. The significance of trade unions in contemporary society cannot be found in their origin but depends upon the manner in which they function within the system of contemporary economic and political institutions. Each of these institutions and the form of their interaction have changed so completely over the last 150 years that the search for origins and prototypes of trade unions will yield only an accidental intelligence about their significance to-day. Indeed, the preoccupation with origins and prototypes, unless constantly checked by a realization of the implications of the structural character of society at any given time, may cause the social scientist to succumb to a wholly unwarranted confidence in linear continuities and recapitulations of the past.

The appearance of continuity of individual institutions often conceals radical changes in the system as a whole. Thus relatively gradual changes during the last thirty years in the American economy (the new distribution of power and income, reforms in the tax structure, new interpretations by the Supreme Court, legislation dealing with trade unions and corporations, and the extension of the concept of public utilities to regional development schemes) have changed important features of American capitalism. The radical effects of these structural changes are not always understood by contemporary observers.⁸

We are thus led to conclude that the concept of human society as a social structure must be understood to include social change. Indeed, we mystify the concept of society and we deprive the concept of social structure of its meaning if we isolate either from the changes and processes that occur within them. Social structure and social change are not contradictory; on the contrary, the former includes the latter. Viewed as social structure human society is in a continuous process of change. Social change does not have to take the form of a disappearance of old and the appearance of new parts but is usually reflected in the emergence

⁷ W. Tritsch, *Die Wandlungen der Menschlichen Beziehungen, Die Deutsche Weltschau* (Stuttgart, Die Deutsche Verlagsanstalt, 1952), p. 153.

⁸ See, however, Mario Einaudi, *The Roosevelt Revolution* (New York, Harcourt, Brace and Co., 1959).

of new relationships between the parts and the whole. Human society must be viewed as a form of organization which permits, and in some instances even promotes, the continuous emergence of novel relationships of a qualitatively different character. Indeed, the presence and potency of human volition and social action introduces elements of direction in the social process which may work toward accelerated change. For, human purposes translated into human action make the interaction between the parts and the whole more dynamic and account for a greater frequency of change in social organization as compared with the relatively simpler physical and biological processes. All this points to a significant difference between social organization and the structure of machines and biological organisms: the freedom of their parts to act in a novel fashion and to regroup themselves in a new pattern.⁹

This relative freedom of the parts to regroup themselves in novel patterns introduces an element of discontinuity and instability into social processes. In so far as social action and human purposes need not conform completely to pre-established patterns of behavior, the social order exhibits less stable patterns and structures than can be observed in mechanical systems and biological organisms. The presence of human purposes and the fact that the sociocultural framework itself is subject to change tends to make the relationships between the components of social systems more complex than those characteristic of macro-physical (mechanical) and biological structures. While the three levels of reality (inorganic matter, living organisms, and human society) are related and continuous, they represent dynamic structures with distinctly different levels of complexity as far as the interaction of their parts with each other and the whole is concerned.

To sum up: Man's dependence upon the environment for the gratification of his needs and the expansibility of his wants confronts him with the problem of scarcity, the necessity of work, and the problem of production and distribution in general. Closely related are the intricate problems of conflict and power,

⁹ "The twin tests by which we can tell a society from an organism or a machine (on this showing) would be the freedom of its parts to regroup themselves." K. W. Deutsch, *Organism and Society: Some Models in Natural and Social Science*, *Philosophy of Science*, Vol. 18, No. 3, July 1951, p. 251.

which give rise to the institution of government. Having come into existence as the (intended and unintended) result of human needs and human purposes, human society is kept together by the fact that it channels the performances and responses of its individual members. Behavior and personality structure assume a modal character and become predictable at least within limits. Of outstanding importance as an integrator in this connection is man's "noetic" system, that is, the organized pattern of his conscious experience, thought, and purpose (values), which is shared and transmitted from one generation to the next. Social phenomena and problems, in contrast to physical reality, are never free of purpose and hence values. We endeavored to show that the concept of social structure embodies the idea of change and process. Largely as a result of new constellations of power and coercion, new needs, new problems, and new patterns of thought, the interaction between the whole and the parts of human society assumes new forms and new characteristics. Human society may thus be said to be in a continuous process of change and development in which new institutional arrangements and essentially novel social structures continually arise.

Viewed from the perspective of evolution the three phases of reality are connected and continuous in time. Each can be shown to be the outgrowth of an evolutionary process in which living organisms and human society represent relatively late stages of development. The critical point of transition from the inorganic to the organic was reached when the former acquired the capacity of reproduction and the character of an "open system," exchanging material with its environment in a process of assimilation and excretion. The transition from the organic to human society presupposes the evolution of man and human groupings and the specific capacities of speech and abstraction which make man a culture-building and culture-transmitting being.

Furthermore, the three phases of reality are interconnected in space; they "envelop" each other in the sense that the organic incorporates elements of the inorganic and the social includes man as well as the physical environment which is the prerequisite of human existence. In this sense human society is the fullest and most comprehensive of the three modes of association. This is the basis for Dewey's insistence that "the social as a category

[is] continuous with and inclusive of the categories of the physical, vital and mental."¹⁰ The fact that the more complex biological structures are rooted in physico-chemical processes and that the social is "rooted in the simpler and earlier physical and biological subject matters"¹¹ does not mean that the more complex social structures encompass *all* that is earlier and more simple. The organic does not encompass all of inanimate nature and the social does not incorporate all living organisms. While the biological does not include all of inanimate nature and transcends it in time and space, and while the social does not include all biological phenomena and transcends them in time and space, it is nevertheless possible to view man's multidimensional environment as the outcome of a single interconnected process. From the perspective of evolutionary time, what was formerly experienced as disconnected and discontinuous turns out to be continuous (successive) in time and connected (coexisting) in space. Furthermore, each of the interconnected phases of man's multidimensional environment exhibits the characteristics of a system marked by a continuous interplay of the whole with its parts and of the parts with each other. Each of the three interconnected phases of reality gives rise to continuous change and novel arrangements. Indeed it is the dynamic interaction of the whole and its parts which gives inorganic matter, living organisms, and human society, and thus the whole of nature, their dynamic character. Each level of organization and the whole of reality are in a constant process of flux. This process is self-operating and cumulative, and is capable of giving rise to new arrangements which differ qualitatively from those found previously. Structure, change, and the emergence of novelty are thus the typical features of a unitary process of nature.

The foregoing analysis and classification of the subject matter of the three fields of inquiry enables us finally to turn to the elaboration of the common-denominator concepts of man and culture which we suggest as the basis for the integration of social knowledge and social inquiry.

¹⁰ J. Dewey, *op. cit.*, p. 83.

¹¹ H. L. Whiteway, *Scientific Method and the Conditions of Social Intelligence*, (St. Johns, Newfoundland, Trade Printers and Publishers Ltd., 1943.) p. 5.

PART THREE

*Man and Culture
as Integrating Conceptual Frameworks*

CHAPTER VII

Integration by Common-Denominator Concepts

What does it mean to have a conceptual bridge of communication between different departments of knowledge?... It is the problem of obtaining an elementary basic primitive set of concepts in terms of which all the facts of all the diverse phases of human interest and experience can be described.

F. S. C. NORTHROP*

WE have endeavored to show that there exists an evolutionary continuity between all phases of existant reality from the inorganic to the organic and the social. Just as the structure of the organic is connected with the inorganic by fundamental ties and principles, the social is not independent of the organic but, as pointed out before, is rooted in the simpler and earlier physical and biological subject matters. Thus it stands to reason that the social disciplines which are concerned with the study of man and society are likewise connected with the natural sciences by some fundamental ties. From this fundamental connection, it would seem to follow that, in so far as the natural sciences deal with man and his physical environment, social inquiry cannot legitimately refuse to take notice of the concepts and tested conclusions of biology and physics. Such a refusal would be as unreasonable as a refusal of biology to take cognizance of the concepts and verified knowledge of physics and chemistry. To do so would expose the biologist to the risk of conducting his research not merely in isolation but without regard to knowledge about the chemico-physical processes which sustain the living organism. Whereas the intrinsic connection between the biological sciences and the sciences dealing with inorganic nature is fully recognized and indeed explored with ever increasing success and vigor under the impact of our new understanding of micro-physical processes, the connection between the biological and

* F. S. C. Northrop, "The Problem of Integrating Knowledge and the Method for Its Solution," *Proceedings of the Stillwater Conference* (Foundation for Integrated Education, 1950), p. 26.

social sciences is still far from being accepted even in principle. To build the necessary conceptual bridges from the biological (and psychological) sciences to the sociocultural disciplines is therefore a relevant avenue of approach to the integration of social knowledge and social inquiry. In this process of establishing closer contacts between the findings of biology and the social disciplines, biology and psychology may be said to hold a strategic position.¹

However, it is a mistake to conclude that the integration of social knowledge can be achieved by viewing man and culture in the perspective of evolutionary time or by taking account of the findings of biology about the human organism. What speaks against this simple formula is the fact that, as we pointed out before, man and human society represent qualitatively different levels of organization. Social reality exhibits special characteristics which make it dissimilar and set it apart from the subject matters of biology and the physical sciences. More than this, as we shall see in the following chapter, man occupies a unique position in nature. His biological weaknesses force him to cope with the problems of life in a special and unique manner. The fact that man is capable of conceptual thought and communication enables him to act and to transmit acquired experiences and traditions. These closely related capacities which explain why man, unlike animals is a culture-building and culture-transmitting being, account for the fact that social change differs from biological evolution. The presence in man of elements of consciousness, volition, and purpose, and the human capacity to select alternative courses of action militate against any indiscriminate transfer of concepts, propositions, and methods of thought from the physical and biological disciplines to social analysis. While such a transfer may have succeeded in creating a semblance of integration of our knowledge in the past, it nevertheless belongs to those endeavors of reasoning by analogy which sooner or later leads to "reductionism" and are bound to break down because of the manifold qualitative differences between human society and organic and inorganic nature. Thus, no matter

¹ "Biology (and psychology) are at the crossroad between the physical sciences and the humanities and the social sciences, between matter and man." E. W. Sinnott, "Cell and Psyche," *Main Currents in Modern Thought*, 1952, Vol. 9, No. 1, p. 7.

how tempting it may be to achieve the integration of social inquiry and social knowledge by extending physical and biological models and modes of thought to the social disciplines, any such attempt must be viewed with suspicion.

Just as scientific method has to follow the lead of the subject matter, the integration of social knowledge has to be based upon the full realization of the distinguishing features of social reality. If social phenomena were actually the autonomous events they appear to be in the conceptual frameworks of many of the separate disciplines, any attempt to integrate social knowledge and social inquiry could be successful only by distorting reality. Actually, however, the more we advance our understanding of man and culture, and indeed the world as a whole, the clearer becomes the fundamental interrelatedness of all elements of social reality. The question is, how can this interrelatedness find expression in an integrated framework of analysis?

1. The Nature of Integrating Concepts

THE basic principles which underlie our approach to the problem of integration are derived from the realization that our scientific knowledge is expressed in the form of systematized hypotheses and theories which are formulated in terms of concepts. Concepts are not descriptions of phenomena and experiences. They are terms that have been given precise meaning and are designed to represent and symbolize the common characteristics of a number of phenomena grouped as a class. They may be said to be types or images of reality created for the purposes of theoretical interpretation. In short, they simplify and "condense" and thus render more precise what otherwise would remain vague. Their purpose is closely related to the whole process of cognition: to render transparent and intelligible what is confusing and obscure. It is true that concepts may be nonempirical in the sense in which mathematics may be said to start from certain postulates or axioms from which specific theorems are deduced, which may or may not be helpful for the explanation of observable empirical conditions. However, the fact that scientific concepts and particularly integrating concepts are mental constructs does not mean that they are necessarily products of the human

mind prior to observation. The intellectual images we call integrating conceptual constructs are based upon a critical examination of experience. They are derived from inferences drawn from experience and critically observed reality. No less than the physicist, the social scientist must endeavor to provide operational definitions in terms of which the empirical content and meaning of his concepts can be ascertained. In other words, common-denominator concepts should be formulated, as far as possible, in harmony with the results of empirical research and, ideally speaking, should be capable of operational definition. Only then will we avoid the danger of developing purely formal and speculative conceptual frameworks which may lead to a hasty and dogmatic synthesis by imputing a preconceived pattern into the recalcitrant material.

By incorporating our organized observations and experiences concepts and conceptual frameworks tend to guide and organize our present and future observations and experiences. In this way they help to establish some preliminary order. Indeed our concepts and the theories we formulate with their aid enable us to relate and integrate what to common-sense observation may appear as disparate phenomena and as opposites. In some instances such concepts and theories reconcile what has long been considered unrelated and disparate. For example,

the concept of temperature reconciles the originally opposed concepts of hotness and coldness. On a vaster scale, modern physical theory not only integrates all the multifarious forms of physical existence in the single concept of matter and the diverse types of action in the single concept of energy, but reconciles the inertness of matter and the activity of energy in a still more embracing synthesis. Similarly modern evolutionary genetic theory not only demonstrates the unity of life-green plants, animals, bacteria, and the rest – all based on the common mechanism of the chromosomal gene-complex, but also reconciles constancy with change.³

The fact that concepts can reconcile what to common-sense perception appear to be unrelated and indeed opposites suggest to the social scientist the general procedure for integrating social knowledge and social inquiry. Phenomena which seem to be disconnected may prove to be connected and completely reconcilable in terms of a more general conceptual framework. For

³ J. Huxley, "Man's Place and Role in Nature," in L. Leary (ed.), *The Unity of Knowledge*, *op. cit.* pp. 91-92.

this reason the integration of social inquiry presupposes an appropriate widening of our basic conceptualizations in such a manner as to give systematic and, as far as possible, unitary expression to apparently unrelated facts. Hence, the social scientist who is interested in overcoming the present compartmentalization of social knowledge must endeavor to define integrating concepts that provide an orderly and unambiguous framework for the comprehension of the elementary facts and uniformities of human nature and social processes.

In this sense it may be said that the general principles which must guide the integration of social knowledge do not differ from those which have proved successful in other fields of investigation. This follows from the structure of our knowledge. As we have just shown we define, express, and comprehend our observations and experiences in terms of concepts and logical frameworks. Hence intellectual integration, in the sense of establishing order between seemingly disparate and unconnected phenomena and concepts, can be achieved only if the narrower concepts, in so far as they relate to the same level of analysis, can be unambiguously expressed in terms of wider concepts and logical frameworks. Since such conceptual frameworks have the task of relating the specialized concepts and narrower frameworks of a number of disciplines, it is reasonable to refer to them as common-denominator concepts. For just as we look for a common denominator when we intend to add or subtract different fractions, so must we find or construct "a set of common-denominator concepts in terms of which we can express the otherwise incommensurable concepts of our different disciplines, subject matters and cultures."³

Indeed, viewed in this light the integration of social knowledge does not differ basically from the task of scientific inquiry in general: To show interconnections, to proceed from partial knowledge of isolated facts to a more comprehensive understanding of interrelationships between facts; to relate diverse phenomena and theories to a more comprehensive scheme; to show how explanations offered at one level of analysis are the consequences of more basic and comprehensive rules and regu-

³ Northrop, "The Problem of Integrating Knowledge and the Method for Its Solution," *op. cit.*, p. 27.

larities; and to show exactly the nature of the continuity and relationship between the various levels of analysis. In fact, all scientific explanations consist precisely in the demonstration of the logical connections between tested uniformities and generalizations within a given field as well as between different fields of analysis. In this sense, scientific explanation calls for some kind of subsummation of an explanation under some more general law or regularity. The greater the comprehensiveness of the latter, the greater the degree of integration achieved. In the last analysis integration perfects our knowledge by making explicit logical connections, thereby simplifying our comprehension – in short, by creating order out of an otherwise obscure situation.

2. Integrating Conceptual Frameworks in the Social Sciences

OF what nature must be common-denominator concepts if they are to serve as effective integrators of the social sciences? As integrating tools such conceptual frameworks must cut across the subject matters of several disciplines. Indeed they ought to be broad enough to encompass as many phases and aspects of human behavior as possible. More specifically they must be able to define as clearly and accurately as possible what may be called the “universal categories of culture”⁴ or “the uniformities and similarities of human nature.”⁵

Closely related to these requirements of comprehensiveness and generality is the fact that integrating conceptual frameworks in the social sciences must steer clear of the danger of ethnocentricity. That is to say, they must, as far as possible, transcend the special characteristics of particular cultural patterns of human behavior found in one or the other of historically given societies.

Moreover, the integrating schemes must take account of the essential features and distinguishing characteristics of social reality. They must give expression to the structural character of human society; they must not ignore but place in the center the dynamic interaction of the component parts with one another

⁴ C. Kluckhohn, “Universal Categories of Culture,” in A. L. Kroeber (ed.), *Anthropology Today* (Chicago, University of Chicago Press, 1953), p. 515.

⁵ G. P. Murdock, “The Common Denominator of Cultures,” in R. Linton, (ed.), *The Science of Man in the World of Crisis* (New York, Columbia University Press, 1946), pp. 123–140.

and with the whole; they must be capable of taking fully into account the possibility of structural change – the transformation of the relationship which connects the whole with its component parts and the latter with each other. They must not lose sight of the role and significance of human action and human purposes. In short, they must conceptualize the universally and inevitably human traits and propensities not in isolation from one another but in terms of their functional interdependence; they must force us to think in terms of such interdependence.

Furthermore, while our conceptual frameworks should provide an unambiguous representation of the dynamic structure of human society and should be defined, as clearly as possible, in terms of organized observations, they must be formulated without rigidity. They must remain elastic and open – they must not insulate themselves against new evidence and new knowledge. This is important for all knowledge and all basic concepts but it is particularly important in regard to our abundant and often ambiguous knowledge about man and social processes.

Finally, all conceptual frameworks should be defined in such a fashion as to make explicit, as far as possible, the scientist's "pre-analytical vision" (Schumpeter) or "hidden valuations" (Myrdal). This would call for a deliberate statement of the investigator's social philosophy and value premises in order to alert the reader against the surreptitious introduction of normative elements (either conservative or reformative) into the analysis at the ground level of concept formation.

3. The Complementary Concepts of Man and Culture

SINCE the conceptual schemes we are looking for have to reflect what is inevitably and universally human, it would seem to follow that we need a comprehensive concept of man and human nature. Ideally we must look toward a single monistic conceptual framework of man in order to achieve the desired integration of our knowledge about man and society. As we will show, this was the objective of those who first attempted to establish a secular science of man and society.*

* See "Note on Earlier Attempts to Erect a System of Social Knowledge upon an Explicit Concept of Man," pp. 134-137.

Actually, however, the attempt to construct a comprehensive framework of man and human nature gives rise to difficulties which are related to the fact that man acquires important and specifically human capacities in a process of "enculturation." That is to say, while man is a culture-creating being, he also absorbs important characteristics from the culture into which he is born. In other words the individual tends to incorporate into his personality basic elements of his socio-cultural environment. His needs, the mode of their satisfaction, and his behavior are all molded by his human environment. For this reason it has always proved difficult, if not impossible, to give adequate expression to man's nature and his behavior in terms of either biological traits or purely subjective-individual motives, which do not at the same time express the cultural component of man's nature. A concept of man viewed simply as an organism, just as all attempts to interpret human behavior from a purely individualistic perspective, would be as inadequate as the exclusive concentration on the cultural component of his nature. Neither of these two perspectives would be adequate if used to the exclusion of the other. Each neglects important aspects of human behavior and of the social process.

In order to avoid these pitfalls we suggest the use of two complementary conceptual frameworks: Man and culture. While the former gives expression to the subjective (individual, mental, motivational, psychological, volitional) aspects of man, the latter stresses the objective (extra-individual, social, environmental, institutional) elements in social processes and human behavior. As we have pointed out, we do not believe that these two perspectives are irreconcilable and that they will not ultimately be merged into a monistic framework. As a matter of fact, there are indications of a trend toward a reconciliation of the two emphases.⁶

The complementary concepts of man and culture which we

⁶ Many psychologists, psychoanalysts, and economists seem to feel the need to include the neglected sociocultural aspects of man's behavior, while sociologists and cultural anthropologists show a tendency to incorporate the less inclusive subjective elements of psychology and psychoanalysis. Perhaps the most convincing evidence of such a reconciliation is to be found in current research on culture and personality. See M. E. Spiro, "Culture and Personality," *Psychiatry*, Vol. 14, No. 1, (February 1951), pp. 19-46. On the whole subject see J. Gillin (ed.) *For a Science of Social Man* (New York, Macmillan Company, 1954).

have in mind draw the methodological conclusion from Cooley's earlier dictum that

a separate individual is an abstraction unknown to experience, and so likewise is society when regarded as something apart from individuals. The real thing is Human Life, which may be considered either in an individual aspect or in a social, that is to say in a general, aspect; but is always, as a matter of fact, both individual and general. In other words, "Society" and "Individuals" do not denote separable phenomena....⁷

What individuals are, think, or do comes to them, to a very large extent, from their man-made (cultural) environment; hence the attempts to understand the social process in terms of the motives of individuals in isolation from their socio-cultural environment can never lead to a complete and hence correct understanding of social phenomena and human society. And similarly, cultures are man-made and at the same time create problems for the individual; hence any interpretation of culture as a purely objective institutionalized process taking place outside and independent of (and without any effect on) the individual can only give rise to an incomplete, partial, and hence misleading understanding of the social process. For this reason the integration of social knowledge and social inquiry must be based, for the time being upon the two integrating frameworks of man and culture, understood to be complementary in the sense of referring to two inseparable aspects of human existence. In this way we shall be able to counteract the drawbacks of a philosophical dualism which tends to impress upon the mind the image of a false dichotomy where there is, in reality, interaction and fusion.⁸

One final point needs to be stressed: the complementary integrating frameworks of man and culture must be viewed as "real types" rather than as mathematical constructs. As we have indicated repeatedly, what we are looking for are conceptual frameworks that incorporate the results of empirical research and stay close to the data gained by observation and analysis. The concept of man like that of culture "is a sort of ideation ... which

⁷ Ch. H. Cooley, *Human Nature and the Social Order* (New York, Charles Scribners and Sons, 1902), pp. 36-37.

⁸ On the importance to combine the "objective" and "subjective" approach in social inquiry, see Menger (1923), Lenz (1955), Gerth-Mills (1953), Rieff (1952), Dupriez (1951), and Oppenheimer (1953).

springs ever and again from empirical facts and never fails to be grounded and substantiated by them."⁹

From this insistence on the substantive-empirical character of the conceptual frameworks of man and culture follow several important consequences. In the first place, the conceptual scheme must incorporate both the essential polarity and basic unity of man and culture. The term polarity refers to the previously mentioned fact that man and environment can be viewed as two poles of socio-cultural reality. The term "basic unity" refers to the fact that just as man cannot exist and cannot be understood apart from his culture, culture cannot be understood apart from man. Man lives in his natural and cultural environment; his continued existence depends upon his ability to incorporate into his psychological structure and his psychic awareness the most varied aspects of this natural and cultural environment. Man cannot become a human being unless he is physically and psychologically connected with and exposed to a specific sociocultural environment.

In the second place, since the concept of man is designed to convey a picture of human behavior dynamically and reciprocally interacting with its environment under typical conditions, special care must be taken not to draw our inferences from isolated performances occurring under circumstances which may give rise to atypical behavior. As a matter of fact, inferences drawn from observation of isolated performances in response to special experimental or clinical circumstances may be highly misleading for our purposes. Suppose we observe human behavior under conditions of deprivation. Under such circumstances the human organism is likely to react in a manner which may be as atypical as the situation to which he is exposed. In other words, we must take into account the fact that in an emergency the human organism will be governed by tendencies which have assumed an overwhelming but temporary importance.¹⁰

We cannot discuss here what we consider to be the limitations

⁹ K. Goldstein, *Human Nature* (Cambridge, Mass., Harvard University Press, 1940), p. 24.

¹⁰ "If a human being is forced to live in a state of hunger for a long time, or if there are conditions in his body which produce a strong feeling of hunger, so that he is urged to relieve this feeling... then it appears as if he were under a hunger drive. The same may be the case with sex." *Ibid.*, p. 143.

of some of the current methods used in observing and testing human performances in isolation and the generalizations arrived at in the light of such observations. Suffice it to say that what may be significant results of certain tests for some specific purposes, may yield a highly fragmentary piece of knowledge that is not directly relevant for a comprehensive concept of man and human behavior. We are interested, as we have pointed out, in the total structure of man and the organizing principle of the human personality. Hence it is important to view the functioning of the human organism and the human personality under conditions which are more "normal" than those underlying most experimental tests. This does not mean, of course, that the results of clinical research are irrelevant and cannot be used to draw inferences for human behavior. The validity of such inferences will depend, however, on our ability to discount the distorting character of the conditions under which the particular behavior was observed.

One final observation concerns the position of those who deny the possibility of constructing conceptual frameworks of man and culture. It is sometimes argued that what are believed to be typical characteristics of human nature are actually highly variable traits differing from culture to culture. Indeed, the essential characteristics of man, the structure of his personality and of his behavior, and many of his basic needs and capacities are acquired after birth and hence vary depending upon the culture in which he grows up. It is these acquired traits and capacities which, as will be shown presently, form an important part, if not the core, of the nature of man. But this dependence of human traits upon a changeable cultural environment does not make it impossible to develop a concept of man and human nature. For although man's cultural constitution (the nature of his acquired needs, his values, and the psychological structure of his personality) show a high degree of variation from one culture to another, it is precisely man's capacity to acquire and internalize these cultural elements into a basic personality structure which sets him apart from other forms of organic life. And it is this unique position of man in nature to which we must try to do justice in the concept of man. While we have to acknowledge our debt to the tested results of biological research which demonstrate the

evolutionary continuity and similarity of man and animals we have to protect ourselves against the temptation to derive our understanding of man from the study of sub-human species. Theorizing in terms of a basic equivalence of men and animals may give rise to a variety of errors which social inquiry must avoid.

The first step in the development of a concept of man must consist in the elaboration of those unique and typically human characteristics which differentiate the human organism from sub-human species and make man the acting and culture-building and culture-absorbing being that he is. In short, we must take account of the similarities that connect and the differences that separate man from animals; we must be explicit about those features of man which make it possible and necessary to speak of his unique position in nature.

Note on Earlier Attempts to Erect a System of Social Knowledge Upon an Explicit Concept of Man.

THE realization that a comprehensive and scientific understanding of social processes depends upon a concept of man is anything but new. The relatively high degree of intellectual integration which earlier systems of social inquiry were able to achieve was due to the fact that they made use of explicit concepts of man and human nature as the starting point of their investigations. Greek and medieval thinkers, as well as Grotius and his successors, were agreed that social inquiry could not dispense with an explicit concept of human nature. For this reason and because these earlier systems of social inquiry also provide an illustration of some of the dangers to which the use of inadequately tested and indeed ideologically colored concepts of man may give rise, it will be worthwhile to summarize their most salient features.

Both Greek thought and medieval scholasticism denied the possibility of an autonomous social science. Their preoccupation with what they considered to be either the good life or the destiny of man made it plausible to them, and indeed axiomatic, that any knowledge of society and politics was part of ethics or theology both of which provided them with an implicit and often

explicitly stated concept of man. Likewise, the founders of a secular and autonomous science of politics took it for granted that the study of human relations either within or between nations had to start from a concept of man and human nature. In this respect there seems to be relatively little difference between the pioneers who laid the foundation for a secular science of politics and their Aristotelian and scholastic predecessors. It has often been shown that Plato's normative political science rests upon his concept of human nature – that there is a “higher” and a “lower” man in each individual, that the two are at war with each other, and that virtue and the good life depend upon knowledge. Aristotle's political ideals, his conception of law and of the state as an entity concerned with the moral improvement of the citizen, his theory of property, his justification of slavery and class distinction are derived from and held together by his conceptions of the nature of man and the alleged prerequisites for the emergence of virtue and the good life. The classical belief in the essential perfectibility of social life rested upon the conviction that men have reason and speech and possess the sense of right and wrong. Hence unlike animals they are fitted for a political life in society.

A similar concept of man as a being distinguished by his rationality and an inherent inclination to live in society and in accordance with his rational endowments underlies Thomas Aquinas' conception of social and political life. Thomas' justification of human laws as a derivation from natural law, and particularly the support he lends to human regulations and their enforcement by coercion, rests upon his concept of the nature of man. Power and coercion, according to this view, which was still the view of Locke, have the legitimate function to give force to that which is inherently reasonable and therefore morally right. “For both men (i.e., Thomas and Locke) the ruler is as definitely bound by reason and justice as his subjects, and his power over the positive law arises from the need of keeping it in agreement with Natural Law.”¹¹

This general procedure of placing a concept of man in the center of one's speculations about social and political life underlies

¹¹ G. H. Sabine, *A History of Political Theory* (New York, Holt, Rinehart and Winston, 1937), p. 255.

all later attempts to construct a secular and autonomous science of jurisprudence after the decline of the unity and authority of Catholicism. Indeed, it never occurred to Grotius and his followers to question the validity of the idea of a "law of nature" or a fundamental law binding for all secular authorities – for rulers and subjects alike. And like all preceding political thought the nature of this fundamental law was derived from a concept of man and human nature. Indeed, the classical program of political research seems to have called for the theoretical development of the full implications of the concept of man. Dispassionate reason, it was hoped, would permit the social scientist to deduce from the nature of man and human behavior the basic principles which were to guide the organization of his social and political life both within and between communities. This is particularly clear in the case of Grotius, whose lasting contribution rests on the fact that his concept of man and human conduct stressed the desire for society rather than the principle of self-interest. Hence, law, order, and society possess, according to Grotius, an immediate and direct utility inasmuch as they tend to satisfy man's impelling need for social life apart from any private benefit they may convey to the individual in his pursuit of self-interest.

Man is, to be sure, an animal, but an animal of a superior kind, much farther removed from all other animals than the different kinds of animals are from one another.... But among the traits characteristic of man is an impelling desire for society, that is, for the social life – not of any and every sort, but peaceful, and organized according to the measure of his intelligence, with those who are of his own kind; this social trend the Stoics call "sociableness."¹²

This impelling desire for society, this basic sociability and mutuality which Grotius regarded as primary characteristics of human conduct, is composed of two elements: the need for cooperation and man's mutual sympathy. From these primary characteristics of human nature are derived (1) the human need to live in society and to lead a peaceful and organized existence in common with his fellow men, (2) the desire to maintain society which as the source of "municipal" law tends to preserve men's constitution (i.e. their lives, their selves, and their property), (3) the striving for perfection which gives rise to crafts and indus-

¹² *De Jure Belli ac Pacis*, quoted from Sabine, *op. cit.*, pp. 422-423.

tries, as well as all original forms of legal relationships, particularly the contractual reciprocity of rights and obligations in which originated the institution of property.¹³ Finally, it is man's sociability – his need for cooperation and his mutual sympathy – which makes life and hence peace (private, domestic, and international) both the goal of social action and the basis for a legal community of mankind which, according to Grotius, exists without any world-wide central organization. Upon this concept of men and human nature are based Grotius' secular study of social and moral norms, his famous theory of the law of nations, and his interpretation of the role of force (war) as an institution which, as Schiffer has shown again,¹⁴ may be required in order to restore justice. We are not concerned with the details of Grotius' system of social inquiry. The point we do want to make has emerged clearly: for Grotius it was axiomatic that the new secularized science of society had to be based firmly on an explicit concept of man and human nature.

As is well known, Grotius' general approach to the study of society served as the model for many generations of social scientists. Pufendorf derived the rules of natural law and the rules of his comprehensive system of jurisprudence from an investigation of the nature of man and the conditions of his existence by a method of logical deductions from certain premises.¹⁵ Similarly, the political theories of the seventeenth century, whether we think of Machiavelli's prescriptions for the prince, Hobbes' defense of monarchical absolutism, or Locke's theory of self-interest, all rested on explicit concepts of human nature and human behavior. The difference between Grotius and these later writers consisted not in their basic methodological convictions concerning the proper study of man and society but rather in an increasing emphasis on the self-regarding motives which were believed to actuate human behavior and a growing tendency to adapt the science of man to the natural sciences and particularly to the science of mechanics.

¹³ A. Solomon, "Hugo Grotius and the Social Sciences," *Political Science Quarterly*, Vol. 62, (1947), pp. 62-81.

¹⁴ W. Schiffer, *The Legal Community of Mankind* (New York, Columbia University Press, 1954), pp. 30-48.

¹⁵ *Ibid.*, pp. 49-63.

CHAPTER VIII

Toward a Concept of Man and Human Nature

Man is not born human and he becomes human only through socialization in a culture, thereby acquiring capacity for action in terms of self and other.

H. BECKER*

The very existence of the organism is tied up with the possibility of finding an adequate milieu within its environment.

K. GOLDSTEIN**

WITH the preceding chapter we have completed the original task which we had set ourselves: To identify the nature and causes of the present compartmentalization of social knowledge and to outline a positive approach to the integration of social inquiry. We have discussed the symptoms and effects as well as the causes of the present intellectual situation in the social sciences. We have surveyed and criticized a number of proposals aiming at the integration of social knowledge and we have advanced the thesis that the present compartmentalization of the social sciences can be overcome only by integrating conceptual frameworks. Without such frameworks there can be no communication between the disciplines, and without adequate communication any attempt at integration must necessarily remain sterile. We have suggested that the integrating conceptual frameworks in the social sciences must be man and culture. In this and the following chapter we shall attempt to show that it is possible, in the light of our contemporary knowledge about human behavior and society, to define with a reasonable degree of precision certain characteristics of man and culture which the social scientist can neglect only at the price of diverting social inquiry from the analysis of important and vital to formal and isolated studies.

The fact that our observations of man and culture can never

* H. Becker, "Science, Culture and Society," *Philosophy of Science*, October 1952, p. 283.

** K. Goldstein, *Human Nature* (Cambridge, Mass., Harvard University Press 1940), p. 89.

be complete does not militate against the formulation of conceptual frameworks for the social sciences. The time for the integration of social inquiry will never come if we make the formulation of integrating concepts dependent upon the attainment of absolute certainty with regard to our knowledge of man and culture. In fact, our knowledge of man is likely to remain tentative and incomplete because of the dynamic character of social structures which inevitably gives rise to new constellations and to new experiences and observations. Not even the most radical advances of our knowledge of human behavior can alter this situation. The only conclusion to be drawn from the necessarily incomplete and tentative character of our knowledge of man is that we must keep our conceptual frameworks open and flexible. They require constant re-examination in the light of new empirical data. The social sciences do not claim eternal and universal validity. They do not transcend the limits of human experience and historical memory. They are concerned rather with man and culture in their historically known and foreseeable configurations. For this reason alone the common-denominator concepts of man and culture need not concern themselves either with the predecessors or the descendants of historical man.¹

What makes it possible to speak of man's unique biological structure and his unique position in nature is a body of largely interdisciplinary studies which are not older than twenty years. These investigations have been guided by a new perspective to the study of man and human nature, which rests upon an empirico-biological basis without falling into the trap of the doctrine of the equivalence of man and animal. Instead of searching for parallels in the capacities and performances of animals and men, and instead of deriving the "higher" human forms of life from the "lower" biological structures, the emphasis is on the uniqueness of the biological structure of the human organism.

¹ Like Tillich's ontological concepts, our common-denominator concepts of man and culture "deal with historical man [and culture] as he is given in present experience and in historical memory. An anthropology which transcends these limits, empirically toward the past or speculatively toward the future, is not a doctrine of man.... Historical man is a descendant of beings who had no history, and perhaps there will be beings who are descendants of historical man who have no history. This simply means that neither animals nor supermen are the objects of a doctrine of man." P. Tillich, *Systematic Theology* (Chicago, The University of Chicago Press, 1951), p. 167.

Recognizing the significance of this structure of man for social inquiry we start out with an exploration of the unique features of the human organism by raising the following key questions: How is it possible that a living organism that is as weak and deficient as the human body at birth does not succumb to the force of an environment which can be highly destructive of all living things in general and to human beings in particular? Or more specifically, what are the problems which man has to face and how must he cope with them in order to maintain himself and to survive from one day to the next as well as to reproduce the species? What capacities must man have in order to live? What internal resources must be at his disposal in order to cope with his environment? What functions must he be able to perform in order to compensate for his specific weaknesses and deficiencies?

The specific nature and the novelty of these questions indicate a new orientation to the understanding of man and human nature.

1. The "Premature" Birth of the Human Infant

As a first approach let us consider briefly those important characteristics which man has in common with other living organisms. Like other living structures the basic constancy of the human organism from generation to generation is subject to the apparently universal regularities of the hereditary mechanism which modern genetics traces back to the strictly repetitive character of the division of the cell and regulatory apparatus represented by the gene. The principles which explain mutations in other living structures have been shown to be applicable to and to account for the mutations in the human species. Again, like other living structures the human organism is an open system which maintains itself by incorporating and assimilating materials from the environment; and like plants and animals the human organism passes through limited life cycles of development from immaturity through a period of aging to death and disintegration. Finally, there are the various nervous and chemical systems of regulation and coordination which permit the functioning of distant organs and tissues, often instantaneously, thereby making possible man's necessary adjustment to changing

external situations. In short, cells, genes, mutations, reproduction, metabolism, relative genetic constancy, response and adjustment, automatic regulators, homeostasis – these are some of the key biological concepts which must be used in order to explain the common characteristics which man as a biological organism shares with all living structures, or at least with animals.

The dependency of all living organisms as open systems upon the environment makes necessary a process of interaction between the organism and the environment. In fact, an organism can exist only within an environment from which it receives the sources of energy which, at least for a limited time, prevent its disintegration and permit it to exist and grow. To this effect each organism is equipped with a number of sense organs which serve specific purposes such as the ingestion of food, the reception of a variety of important stimuli from the environment needed for the search and acquisition of food, the movement of the organism or its parts, detection and protection against enemies, and reproduction of the species. Indeed the effective limits of the environment of the sub-human species are determined by the range of their closely coordinated sense organs, through which they receive, and respond to, stimuli and with the aid of which they are able to cope with the world.

That is to say, an animal which is fitted into its environment by its particular system of sense organs is also limited to this environment. It lives in an essentially closed segment of the world which is determined by its anatomical structure and which cannot be extended with the equipment and the means available to the animal. In this connection it is important to realize that most animals are either fully equipped at birth or acquire the necessary sensory and motor capacities in a surprisingly short period of time. An animal may be equipped at birth with a protective cover which guards it against detrimental climatic influences. Its highly specialized activities and responses are largely inherited. Some of the most essential responses seem to be true instincts: they are present at birth and automatic, depending only upon endogenous stimuli. Another group of innate responses related to the animal's orientation in connection with the performance of necessary functions come into play automatically as

a result of influences from the outside.² Depending upon their respective anatomical structure they live in a closed world which they cannot and, in the interest of their survival, must not extend. Since animals are "perfectly" endowed and equipped at birth with fully functioning and highly specialized sense organs which enable them to exist, their survival as a species is guaranteed as long as the environment remains substantially the same.

By contrast, man seems to lack this system of highly specialized sense organs. To be sure, the human infant inherits, together with his organic structure, a system of sense organs. But while the sense organs of the animal are more or less fully developed and serve specific purposes, the situation is different with the human infant. Although the sense organs of the infant tend to expose him to a great number of stimuli, they are not capable of performing any but the most essential general functions of breathing, crying, touching and viewing. Compared with the sense organs of young animals those of the human infant exhibit a degree of relative "underdevelopment" which seems to be characteristic of his entire organic structure.

As a matter of fact, if we consider the physical proportions and the highly specialized equipment with which all other mammals are born, the human infant is born in a quasi-embryonic state. It takes another year or longer before the infant acquires the ability to use his sensory and motor organs, assumes the characteristically human erect position, and develops the human ability to speak. A relatively short period of gestation produces a relatively immature infant which, unlike animals, does not enjoy the relative safety and protection of a fixed instinctual organization. Biologically speaking, the first year of human infancy may well be regarded as an extension of embryonical existence, or alternatively, as a phase of extra-uterine existence. It is as if the process of embryonic growth during pregnancy were prematurely interrupted.³ The fundamental importance of this concept of "premature birth" and subsequent "extra-uterine existence" for

² For a further discussion of this important distinction between two kinds of innate motor activities in animals see K. Lorenz, "Ueber die Bildung des Instinkt-begriffes," *Die Naturwissenschaften*, Vol. 25, (1937), pp. 289-318.

³ For further elaborations see A. Gehlen, *Der Mensch, seine Natur und seine Stellung in der Welt* (Bonn, Athenaeum Verlag, 1950), p. 47. (All quotations in this and the following chapter are translations by the author). See also A. Portman, 1945 and F. Stumpff, 1950.

understanding man's unique position and for the development of the human being cannot be overestimated. It seems to account not only for the extreme dependency of the human infant; it explains why he has to cope with numerous experiences and stimuli to which his organism is exposed because of the openness of his sense organs. In fact the completion of biological processes of maturation has to take place not under the given and relatively stable conditions of the uterus, but in interaction with a highly variable human environment.

2. Biological Weaknesses as Latent Potentialities

PREMATURE birth and the biological weaknesses of the human infant seem to make possible a malleability and educability in the process of growth which have enabled man to develop those "higher" functions and capacities which, upon closer analysis, turn out to be precisely the prerequisites for the survival and development of such a biologically open, and immature organism as that of the human infant. There is first the relative underdevelopment and the related prolonged malleability of the human brain. In comparison with the brain of all mammals the human brain shows two characteristics: (1) it weighs much more and (2) it has much greater capacity of growth and development in mass and structure. Whereas the brain of a young gorilla or chimpanzee weighs only a fraction of what the human brain weighs at birth, it is, relatively speaking, very near completion. The brain of the young anthropoid develops relatively less and loses its malleability much earlier than the human brain. In other words, the relatively larger mass (by weight) of the human brain at birth is much less developed; it continues to grow in quantity and complexity not only at a much faster rate than any other organ but for a much longer period of time than is the case with the brains of all subhuman species.⁴

If we add to this greater mass and complexity of structure and the prolonged malleability of the human brain, the "immaturity" of man's nonspecific sense organs, we have set the stage for understanding how and why man alone is able to develop a

⁴ R. Briffault, "Evolution of Human Species," in V. F. Calverton (ed.), *The Making of Man* (New York, Modern Library, 1931), p. 768.

conceptual system, the ability to speak, and the ability to abstract. In the absence of any considerable instinctive endowment and without any specific and highly differentiated sense organs, the human infant is fully exposed to the stimuli from his environment including the experience of specific objects and persons. In fact, existence and survival depend upon such experiences and the ability to retain them in some fashion. What the human hand first grasps and experiences by touch is later experienced and "grasped" by the eye without direct contact. What hand and eye start is continued by the ear. The child connects particular sounds and visual experiences with significant persons; thus the foundation is laid for the development of the symbolic system and the emergence of language. Sound and speech heighten the possibilities of communication and permit a continuous elaboration of the symbolic representation of reality independently of the objects. Indeed, the development of language and conceptual thought merely continues what was first initiated in early infancy: the connection of images and sounds with particular meanings. However, it is important to note that language and the specific features of human intelligence do not tend to emerge inevitably and automatically, as is the case with other biological processes of growth, but only under the direct influence of experience and training. The development of speech and the whole symbolic system of conceptual thought and human intelligence in general seem to depend upon the prolonged malleability of the human brain, the prolonged period of infantile dependency, and the related extension of the period of intimate contact with the biological mother or its substitute.

In short then, a biological weakness has been turned into a source of strength. For let us consider briefly what it means to have at one's disposal a symbolic system in the form of sounds, speech, and concepts. What are the full implications of man's symbolic system? In the first place, such a system enables him to transcend the immediate experience of his senses. He can view his experience from the outside; he can represent it symbolically and view it objectively, interpret it, react to it symbolically. Indeed, he can conceive of alternative responses and weigh in his mind alternative consequences and then determine his future action. Whereas the animal is capable of experiencing the world

only directly in terms of immediately felt sense perceptions, man has added a new dimension of experience: the abstract attitude. He still experiences a situation directly with his sense organs, but he is able to "grasp" it even before it actually occurs. He transcends what is given with immediacy and comprehends the assumed, the hypothetical, the potential. In short, he is able to turn toward the future and toward that which does not exist or which exists only in his imagination. In this sense he lives in an open world – a world, moreover, which is to a large extent of his own making and which he can enlarge in his mind at will.⁵

We are not concerned here with the problem of the origin and evolution of language and abstract thought beyond the point made earlier: namely that language as an instrument of communication arises out of the necessities of human action and cooperation without which man could not counteract and overcome his relative biological weaknesses. Once in existence, man's linguistic and symbolic system and the related capacity of abstract thought radically change the whole character of man's relationship to the world. In fact,

no longer can man confront reality immediately; he cannot see it, as it were, face to face. Physical reality seems to recede in proportion as man's symbolic activity advances. Instead of dealing with the things themselves man is in a sense constantly conversing with himself. He has so enveloped himself in linguistic forms, in artistic images, in mystical symbols or religious rites that he cannot see or know anything except by the interposition of this artificial medium.⁶

Man's symbolic system and the related process of thought opens up entirely new possibilities of learning and intellectual growth. By organizing his experiences into a common pool of accumulated knowledge and techniques and by transmitting this

⁵ "The functional circle of man [*Funktionskreise*]" is not only quantitatively enlarged; it has also undergone a qualitative change. Man has, as it were, discovered a new method of adapting himself to his environment. Between the receptor system and the effector system, which are to be found in all animal species, we find in man a third link which we may describe as the symbolic system. This new acquisition transforms the whole of human life. As compared with other animals man lives not merely in a broader reality; he lives, so to speak, in a new *dimension* of reality. There is an unmistakable difference between organic reactions and human responses. In the first case a direct and immediate answer is given to an outward stimulus; in the second case the answer is delayed. It is interrupted and retarded by a slow and complicated process of thought." E. Cassirer, *An Essay on Man*, (New Haven, Yale University Press, 1944), p. 24.

⁶ *Ibid.*, p. 25.

pool from one generation to the next, the process of learning becomes truly cumulative. The world of each individual is limited not to what he inherits nor to what he directly experiences but depends upon what he is able to acquire in a laborious process of learning. What distinguishes one human being from another is what he has been able to acquire through his own labor in a never-ending process of training and enculturation. The sum total of this store of accumulated knowledge and techniques, of beliefs and values which man is able to create and to communicate due to his symbolic system, is his culture. And it is due to this pool of accumulated knowledge and techniques that man is able to cope with the problem of living despite the far-reaching weaknesses at birth which would make any animal unfit to survive the destructive forces of the environment.

It is hardly necessary to point out that the very fact which permits man to live in a new dimension of reality exposes him to special problems and dangers which no animal seems to experience. Man alone among the living creatures is affected not only by his experiences of the outside world but also by his thoughts and the meaning which he attributes to his experiences. In his encounter with a world which both literally and figuratively is largely of his own making, man also experiences the effects of a special vulnerability: the dangers to his mental health.

3. The Structure of Human Needs and Motives

THE elaboration of a conceptual framework of man and human nature cannot stop with the demonstration of the unique biological structure of the human organism. Beyond this demonstration lies the more important task of accounting for man's needs and motives. That is to say, an integrating conceptual framework of man and human nature must give meaningful expression to the observed regularities of the behavior of man under different conditions. It must reflect the fact that man can exist and survive only if he develops capacities which make it possible to act and work with an orientation toward the future. Special care must be taken to avoid the pitfalls of those theories of human behavior that rely mostly on inherited and instinctive motivation and drives. Instead we must aim at a concept of

human behavior and human motivation that takes full account of conscious and deliberate action.

What must be the motivational and need pattern in a biological organism which seems to lack any significant inherited instinctive equipment and any specialized sense organs? Let us approach this problem by inquiring first into behavior and motivation under conditions of inherited, automatically functioning systems of instincts and responses. Under such conditions which are found in lower animals, behavior tends to take the form of a fixed stimulus-response process. That is, highly specific responses follow specific stimuli. The responses occur automatically either as a result of inner chemically directed processes (as in the case of homeostasis) or together with a quasi-intelligent and purposeful orientation to external stimuli.⁷ What the animal inherits is not simply the ability to respond but the entire structure of stimulus-response processes in which the "action" pattern is fully and automatically determined. This is the fundamental instinct and drive pattern of the animal world, a pattern which seems to be organized in a hierarchical fashion and in some instances, as for example in the case of the sex instinct, is marked by a clearly defined seasonal periodicity. These fixed stimulus-response patterns cannot be said to "aim" at anything. They are neither deliberate in character nor do they carry within themselves any elements of consciousness in any organized perceptual sense.⁸

Unlike most animals, the human organism exhibits only the most rudimentary elements of a fixed pattern of stimulus-response action. It is highly instructive to consider hypothetically the human situation if man's behavior followed the pattern characteristic of a fixed specialized cycle of stimuli-responses. Under such conditions man would be incapable of dealing with the world in the specifically human fashion which alone makes it possible for him to maintain himself, to survive, and to grow. Thus automatic and fixed responses to specific inner or outer stimuli would rule out any truly deliberate and purposeful action

⁷ On the distinction between inherited instinctual responses and reactions which include and coincide with an apparently deliberate and "intelligent" orientation in animals, see Gehlen, *op. cit.*, p. 25, and the literature listed there.

⁸ L. L. Bernard, *Instinct: A Study in Social Psychology* (New York, Holt, Rinehart and Winston, 1924), p. 452.

because there could be no stock-taking of the situation; there would be no time to become conscious of it and to consider and anticipate the effects of alternative actions. Purposeful action presupposes a stimulus and response pattern and a structure of motivational drives which is neither automatic, specialized, nor fixed. More than this, any fixed system of responses and any hierarchically arranged system of motives would make it difficult, if not impossible, to respond to situations without specific stimuli. Indeed, as a being whose sense organs are unspecialized and open to all kinds of external and internal stimuli it would be impossible for man to plan, to anticipate – in short to cope with the world in a purposeful and deliberate manner.⁹ That is to say, in view of his biological weaknesses man could not solve the problems of living. He could not maintain himself. In order to survive man needs a reservoir of nonspecialized motivational energy which can be channeled into different directions depending upon the situation. He requires a nondifferentiated system of drives with a high degree of plasticity which enables him to cope with a great variety of conditions.

We may describe the situation in a different manner. If our needs and drives required more or less immediate gratification, we would be unable to develop that degree of awareness and understanding which is called for by the mental preparation necessary for a purposeful act. While the animal's needs compel it to immediate action, the relatively unspecific human sense organs are relatively free from the domination of the underlying need structure. This freedom of our sense organs from the overwhelming and complete domination of our drives, which at first sight appears to be an organic weakness in the human infant, turns out to be a source of strength. The possibility of delaying and even temporarily suspending the gratification of one or the other of our needs makes possible the purposeful act and thus work (action) and hence human life. The fact that the gratification of human needs can be delayed is the prerequisite both for the particularly human way of coping with the problem of living and the emergence of rational (deliberate) thought and action.¹⁰

⁹ Gehlen, *op. cit.*, p. 367.

¹⁰ "This delay creates a vacuum, a *hiatus* between the needs and their gratification and in this vacuum we find not only the purposeful act but also all necessary and appropriate (*sachgemäß*) reasoning which in order to be adequate

We do not suggest that the *hiatus* between needs and gratification is the cause of human reason and human action. The point we are trying to make is rather that the relative freedom of our sense organs from the domination of external and internal stimuli and drives constitutes an indispensable link in the chain of interdependent capacities which give man his unique position and enable him to overcome what for any animal would be a dangerous biological weakness.

Due to the absence of a system of differentiated instincts organized in a fixed hierarchy man is able to endow his needs, including the pursuit of his "higher" needs and objectives, whether present or future, with the power and energy of a drive. Man must first become conscious of his needs in order to be able to act and plan with a view to gratifying them. What is more, he is able to give direction to his needs in accordance with whatever situation he finds himself in; he is capable of investing the action leading to the gratification of his needs with the motivational energy of a drive. Without this ability to orient his needs in accordance with new experiences and new situations, man could not hope to cope with the world and to survive. In fact, any radically new situation would expose him to complete helplessness. The distinct organization of the human organism makes it necessary that our system of needs and of motivational drives which direct the final action remain flexible and open to development in the light of new experiences.

Not being burdened with a fixed stimulus-response pattern, man is capable of temporarily suspending the gratification of even the most elementary biological needs; he can make his needs the object of selection; he can concentrate on one or the other of his needs and, depending on his experiences and purposes, present and future, can endow the selected need with the motivational energy of a major purpose, thereby channeling his behavior and securing the execution of the required action.¹¹

and fruitful must be as little disturbed by the underlying drive as the action itself." Gehlen, *op. cit.*, p. 362.

¹¹ "Man is distinguished by that power of analysis of the field of stimulation which enables him to pick out one stimulus rather than another and so to hold on to the response that belongs to that stimulus, picking it out from others, and recombining it with others." G. H. Mead, "Self, Mind and Society," in A. Strauss (ed.), *The Social Psychology of George Herbert Mead* (Chicago, University of Chicago Press, 1956), p. 187.

Furthermore, our needs are recurrent. This recurrence is, of course, rooted in the biological structure of our organism which depends upon the maintenance of a relative constancy (homeostasis) of supplies of materials, in the absence of which life cannot be preserved. Disturbances in, or variations of this internal balance due to the continuous depletion of stored surplus materials such as water, salt, sugar, protein, and oxygen, in the body or due to changes in the external environment (e.g., extreme cold or heat) upset the internal balance and lead to deprivation and death. However, variations from stable states put into motion compensatory activities which will replenish the depleted stores of necessary materials. Depending upon the internal situation of the body, different materials may acquire special importance. Deficiencies in the supply of essential materials set into motion compensatory activities which restore the internal conditions of constancy. Thus physiological needs and their recurrences are experienced as a result of the variations from the internal conditions of constancy necessary for life. Our awareness or conscious memory of past experiences of our needs gives rise to what economists call future wants. Such future wants may be assumed to be organized roughly in the same order of relative intensity and priority as their corresponding present wants. Usually, however, they are experienced with less intensity than their present counterparts. (Hence, the so-called preference for present against future satisfactions.) Future needs, that is needs of whose recurrence we are aware, coexist in our consciousness with present needs. Furthermore, man is aware of and usually anticipates more than one of his needs. We are thus led to the interesting conclusion that several present and future needs may coexist and influence our present action just as more than one present goal may determine our behavior.¹²

Human motivation is also continuous and human needs are expandable. The fact that we satisfy one need does not mean that it ceases to exist and that other and new needs may not emerge

¹² In addition, present and future needs coexist and may either compete or "cooperate" with each other. This further complicates the structure of human needs and human motivation. On the whole subject of the competition and cooperation of present and future needs see C. R. Noyes, *Economic Man in Relation to his Natural Environment* (New York, Columbia University Press, 1948), I, pp. 385-394.

and occupy the foreground of our awareness. A satisfied need may continue to exist in a potential or prepotential fashion. The dynamic character and pattern of interrelationships of human needs has long been recognized. Economists speak of the principle of diminishing utility and the expansibility of human wants. Psychologists and motivational theory affirm that the appearance of any particular need depends upon the state of satisfaction or dissatisfaction of all other needs; in other words, other prepotent desires must have attained a state of relative satisfaction.¹³ Hence "sound motivational theory should ... assume that motivation is constant, never ending, fluctuating and complex..."¹⁴

For all these reasons the social sciences must remain sceptical of all explanations which tend to attribute primary potency to one allegedly predominant and universal human motive or need. Only under particular or rather abnormal circumstances is it possible to find evidence that supports the idea of a primary or predominant motive. For example, under catastrophic conditions or in situations marked by extreme deprivation, insecurity, and threat, one need may indeed assume overruling importance and may actually seem to exist in isolation. Under such conditions it may be quite literally true that men, like animals, live by food or sex alone. However, if these needs appear in the foreground in other than emergency conditions and crowd out other human needs, they are more likely to reflect a basic deformation of the human personality which, in its sickness, has channeled its motivational energy into one direction to the exclusion of every other. What appears in the foreground in a given situation depends upon the state of the human organism and the stimuli of the milieu in which it finds itself. Those needs are in the foreground which, under given conditions, are of the relatively greatest importance to the individual. If the survival of the organism depends upon the maintenance of its inner chemical balance, the healthy response will be to channel energies and activities in such a fashion as to secure and preserve the balance without which life might be threatened. And similarly if a par-

¹³ "Wanting anything in itself implies already existing satisfaction of other wants" and "needing never ceases, the gratification of one need creates another." A. H. Maslow, *Motivation and Personality* (New York, Harper and Brothers, 1954), p. 69 and p. 134.

¹⁴ *Ibid.*, p. 69.

ticular form of social organization makes human self-affirmation, social existence and status practically dependent upon the acquisition of money, income and the possession of wealth – that is to say, if production and distribution are organized along the lines of a market-exchange economy – then indeed a separate economic motive (as evidenced in a desire for money income and wealth) will assume a predominant and primary role. However, even or precisely under these circumstances when the empirical evidence of daily living seems to support the illusion of a separate and universal economic motive, the striving for income, gains, and possessions – as every competent advertiser knows only too well – usually acts as a channel for a variety of additional motives, such as the desire for social respect and prestige, for good will and power.

Indeed, it is always problematical to interpret overt behavior as the expression of a single isolated motive, whether primary or secondary. On the contrary one and the same act may serve as a channel for the gratification of several purposes or needs. Such instances of “multiple motivation” can be observed not only in sick persons but also in healthy individuals. Contrariwise, different types of behavior can be shown to serve essentially the same aim. The phenomena of multimotivated behavior and the interchangeability of different overt acts which gratify one and the same need may serve as further evidence of the extraordinary malleability and adaptability of human needs and the absence of any fixed or specialized pattern of such needs.¹⁵ Even the physiological needs, including the sexual or hormone-directed needs, show elements of the plasticity which marks the entire structure of human needs. Sublimation and unconscious motivation in general therefore form integral elements of any concepts of man and human behavior.

4. Rationality and Emotionality

UNLIKE other living organisms, which adapt themselves passively to their environment, man can draw upon the whole range of his specifically human capacities which enable him

¹⁵ For a further discussion of this whole subject see Maslow, *op. cit.*, pp. 37, 67 and 102.

actively to change his environment. Thus, due to his ability to view the environment abstractly by means of his symbolic system, he is able to anticipate the consequences of his action. And by thus anticipating the future, he becomes capable of purposeful action. He can weigh in his mind even future advantages and disadvantages and by considering the "opportunity costs" of alternative courses of action, he is capable of rational behavior. In short, he has the capacity to plan and to choose.

However, while the concept of human nature here developed stresses the rationality of human conduct, it does not lend support to the thesis that *all* human action is the result of rational choices between anticipated advantages and disadvantages. By discarding from the very outset the traditional dualistic conceptualizations of reason and nonreason (impulse, instinct, emotion) in favor of a holistic view of the basic unity of reason and feeling, there is left room for the emotional elements in human responses. In this way we are able to avoid the mistake of imputing rationality into human action where it plays only a minor, if indeed any, part. If we were to consider man exclusively as a rational being because he is able to choose between different alternatives, we would overlook the fact that deliberate action is merely one side of human nature. For the capacity to speak and to form a symbolic system, which accounts for man's abstract attitude and for his ability to attach meaning to his experiences does not supersede his capacity to respond to various stimuli in an impulsive and emotional manner. On the contrary, in many instances, language merely expresses feelings and emotions. By enabling man to attach symbolic meaning to the nonrational aspect of his nature, language and conceptual thought may actually heighten the intensity with which these feelings channel human behavior.

It follows, therefore, that in order to comprehend man and human behavior it can never be sufficient to view human responses merely from the point of view of man's capacity for rational action. We may be able to distinguish conceptually between reason and emotions, but we are unable to separate these complementary aspects of human behavior in our observations. In fact, "we have learned ... to respect equally rationality, emotionality and the conative or wishing and driving side

of our nature.... The healthy man is all of a piece, integrated.... It is the neurotic who is at odds with himself, whose reason struggles with his emotions."¹⁶

5. *A Bio-Cultural Concept of Man and Human Nature*

WITH the foregoing discussion we have completed the survey of some of the more important elements of our knowledge of man. What remains to be done is to place special emphasis on those features which together form the content of the concept of man. In this endeavor it will be unavoidable to anticipate, at least to a certain extent, our discussion of the influence of the "objective" environment into which man is born and from which he incorporates important elements into his nature and his personality. For, as pointed out previously, the conceptual framework of man must give adequate expression to the biological and the cultural aspects of human nature and human behavior. Only a "bio-cultural" concept of man can provide the integrating framework for the social sciences. As a biological organism with a unique structure man differs from animals. Man stands alone in nature in the sense that he finds the solution to the problems of living in a manner which separates him from all animals. The reduction of the instinctual equipment in man, the undeveloped and premature state in which his sense organs are at birth, the resulting complete and prolonged helplessness of the human infant, the special structure of human needs with the possibility of a "hiatus" between gratification and stimulus, the special brain-body proportions, and the consequent malleability of the structure of the human brain are all indicative of the fact that the biological structure of man is marked at the same time by great weaknesses and great potentialities of growth and development. More than this, man is capable of coping with the problems of existence and survival only by becoming an acting (working) individual in the technical sense of the term. Work is a deliberate activity which, because it is oriented toward the future, presupposes the abstract attitude. Man develops this ability to work by turning his biological deficiencies and latent potentialities into actual capacities. In this specific sense human and social life must be understood

¹⁶ *Ibid.*, p. 342.

as a special level of organization which differs radically and fundamentally from animal life. Man is a particularly adaptable being with unique potentialities which can be developed only in a process of interaction with other human beings. Not only the infant's survival but man's growth and the development of his actual capacities depend upon this interaction between a highly adaptable biological organism and an adequate cultural (human) milieu. Without such interaction, man either fails to develop or tends to develop his potentialities in a one-sided and incomplete manner.

Unlike the largely fixed stimulus-response pattern of the lower animals, man possesses a nondifferentiated system of drives and motivations which can be channeled into whatever direction is called for by changing situations. Man seems to be able to invest any and all conceivable purposes and ends with a special motivational energy. More than this, man is capable of suspending temporarily the gratification of even elementary biological needs. Furthermore, he can make his needs the object of selection and he can endow the selected need with the emotional energy of a major purpose. For this reason it is misleading to regard human needs as innate and inherited and to classify them according to some kind of an inherent scale of relative importance. For all practical purposes our needs and motives as well as our action patterns must be regarded as acquired. They are not equivalent to innate properties and endowments but are the outcome of a complex process of enculturation which transmits both needs and behavior patterns from one generation to the next.

Man's unique biological structure also accounts for the emergence of what may be called his needs for interpersonal cooperation and communication. Normal life and development presupposes social existence since the emergence of the specifically human capacities can take place only in the course of prolonged interpersonal relations. Not only the physical survival of the human infant but the development of the human personality depends upon such interpersonal relationships. Man's needs for cooperation and communication manifest themselves, as will be shown, in ascertainable ways during different periods of human development. They are the outcome of the human experience of helplessness and isolation which threaten the actualization of

man's capacities. These experiences call for assurance which can be obtained only by establishing interpersonal relationships in the course of which, man is able to affirm his self-esteem. In this sense cooperation, self-affirmation, and individuation are not opposite but rather complementary aspects of human nature and human behavior.

In addition to the human needs for cooperation and communication we may single out a series of needs under the name of safety needs. They have their origin in experiences of various degrees of insecurities and existential anguish and give rise to nonpathological strivings for safety, order, and security. That is to say they are integral elements of human motivation; they can be satisfied in different ways. They are the foundation of man's persistent attempts to create for himself an "ordered world" either by animistic world views, supernatural religions, or secular philosophies.

To conclude, man does not simply adapt himself passively to a given environment. Unlike animals man can master the problem of living only after a prolonged process of maturation, in the course of which he develops his latent potentialities and acquires all those specifically human capacities which enable him to engage in deliberate action and purposeful work. In fact, the human ability to cope with the problem of life depends upon the development of these capacities which at birth are only latent potentialities inherent in man's unique biological structure. To actualize these potentialities may be called a real necessity of human existence.

The development of these capacities which are the prerequisites of all ordered behavior is possible only if the organism finds or creates an "adequate" milieu, in which external and internal stimuli bear a proper relationship to the capacity of the organism to respond. When the organism is confronted with conditions in which the external stimuli exceed its capacities to respond, life as a process of growth becomes problematical because ordered behavior is endangered and the actualization of latent potentialities is blocked if not actually ended. We may therefore say that an individual who does not succeed in establishing a relationship of adequacy between himself and the external situation is unable to cope successfully with the problems of living.

Because man depends upon the actualization of what at birth are only broad potentialities, the basic tendency of human life must be to establish a relationship of adequacy between the individual and his environment and thereby to secure man's self-actualization. In this sense then it is possible to agree with those who hold that self-actualization means existence and is the essential characteristic of human life. Indeed "the very existence of the organism is tied up with the possibility of finding an adequate milieu within its environment,"¹⁷ and as long as such a state of adequacy is maintained human life tends toward activity and progress.

While this tendency toward activity and progress may be said to be characteristic of all living matter man, in his self-actualization, can and will draw upon the whole range of his specifically human and culturally acquired capacities which enable him to actively change his environment. The human capacity which makes this possible and which enables man to become the creator and transmitter of culture is the specifically human intelligence which develops in the course of the reciprocal interaction of a unique biological structure with a man-made cultural milieu. Because of the realization that there are always and inevitably important cultural elements in human nature and human behavior and because there is indeed no human being without culture, we cannot as yet hope to provide an adequate and complete concept of man without the complementary concept of culture.

Note on Monistic Principles of Human Needs and Human Behavior

THERE have been many unsuccessful attempts by philosophers, biologists, and social scientists to define the structure of human motives and the pattern of human action by formulating monistic principles of great simplicity. The social scientist must resist this temptation to find in a monistic principle the key which will open every door to the understanding of man, and to believe that this master key can be found simply by marshaling evidence from particular situations. The struggle for survival, the "will-

¹⁷ Goldstein, *op. cit.*, p. 89.

to-power" (i.e., to outdo, to excel, to dominate), the desire for gain or money income, the pleasure principle (i.e., the search for pleasure and the avoidance of pain), the discharge of painful inner tension by gratification of this or that isolated impulse such as hunger or sex or the principle of adaptation (i.e., the search for passive conformity with some external situation) – all these principles of human motives and human action do not stand the test of empirical evidence. Their common characteristic seems to be the tendency to single out individual performances of man viewed under unique or particular circumstances and to attribute to them universal significance. One goal of human action, which may be validated in some cultures or in a particular pathological situation, is generalized into an allegedly pervasive all-powerful drive, with the result that all human behavior is seen in the light of the exceptional or the abnormal. This distorted view of human behavior is the inevitable outcome of a procedure that draws its inferences from unrepresentative situations and tends to accept particular isolated behavior patterns as constant and necessary components of human conduct.

Similar doubts must apply to the belief that the fundamental goal of all living organisms is to survive. Of course, nobody can deny that the continuation of life is the prerequisite of whatever else may be said to be the basic "principle" of life. In this sense the desire and perhaps a "struggle" for survival may be said to be a necessary characteristic of life. However, formulated in this fashion, the principle of survival does not add to an understanding of human existence. In fact, as soon as we try to use the principle of survival in any specific sense and interpret it to mean that the aim of human action is to assure continued living, it becomes not only misleading but untenable. It is true the desire to survive may dominate the individual when his existence is endangered. The seriously sick person whose physical survival is threatened may concentrate all his efforts on the prevention of any further deterioration of his condition. For him to preserve the conditions of life constitutes the most essential goal.¹⁸ The tendency of a

¹⁸ "The tendency to self-preservation is characteristic of sick people and is a sign of anomalous life, of decay of life. For the sick person the only form of actualization of his capacities which remains is the maintenance of the existent state. This is not the tendency of the normal person." Goldstein, *op. cit.*, pp. 141-142.

normal person in an adequate milieu is not merely to preserve the conditions of life but to extend his activities and interests toward further development.

CHAPTER IX

The Modern Concept of Culture

Exactly where the animal faces the natural environment man confronts the world of culture, i.e., the segment of nature which he has transformed and adapted to his purposes.

A. GEHLEN*

THROUGHOUT the preceding discussion we have emphasized that man acquires important and specifically human capacities in a process of enculturation. In the course of this process he incorporates into his personality basic elements of his culture which shape his needs, channel his behavior, and determine the general direction of his interests and development. To give an adequate account of human behavior without reference to culture must therefore remain problematical and incomplete. For this reason no social discipline can dispense altogether with a concept of culture as an "intervening variable" between man and environment.¹

To consider either culture or human behavior as given by viewing them from a particular (formal) perspective may simplify the process of social inquiry by transforming into data what are in reality variables. If we ignore this fact it may well be possible to build simplified models of man and society. This has been the road of compartmentalization. The road toward a progressive

* A. Gehlen, *Der Mensch, Seine Natur und Seine Stellung in der Welt* (Bonn, Athenaem Verlag, 1950), p. 40.

¹ "Culture is not a mystical force acting at a distance. Concretely it is created by individual organisms and by organisms operating as a group.... The history of each group leaves its precipitate - conveniently and, by now, traditionally called 'culture' - which is present in persons, shaping their perceptions of events, other persons, and the enviroing situation in ways not wholly determined by biology and by environmental process. Culture is an intervening variable between human 'organism' and 'environment'." A. L. Kroeber and Clyde Kluckhohn, *Culture, A Critical Review of Concepts and Definitions*, Papers of the Peabody Museum of American Archeology and Ethnology, Cambridge, Mass., Harvard University, Vol. XLVII, 1952, p. 186.

integration of our knowledge of man in society calls for the formulation and use in social inquiry of a conceptual framework of culture.

1. Definition of the Culture Concept

IN order to reach and convey an understanding of human behavior we need a framework within which the essential elements of culture can be systematically interrelated. We must be able to portray the whole by conveying an image of the manner in which these elements are related and held together. We believe that such a scheme has been developed by cultural anthropologists first in the study of primitive cultures and more recently in the study of complex civilizations. As a conceptual framework, culture serves as the explanatory tool for the study and comprehension of the typical and distinct pattern of behavior and the socially agreed prescriptions for and prohibitions of particular action of a given society. Understood as a tool of analysis the culture concept conveys an admittedly generalized picture of institutional arrangements, regularities and uniformities of behavior, and basic values and beliefs of a given society. Like all theoretical concepts, culture is a description of regularities and uniformities, of forms and content of human behavior, either directly observed or theoretically inferred from such observations. That is to say, as an abstract concept culture is an image of behavior – it is not behavior; it is a tool of analysis designed to make behavior intelligible. As a concept of great generality designed to encompass the totality of a complex process of interaction, the modern concept of culture is marked by a high degree of abstraction but does not lose its character as a real type. It is an approximation of observed human behavior from which, in fact, it is inferred.

The strategic significance of the culture concept for the integration of social inquiry stems from the fact that it places the dynamic and reciprocal interaction of man and society into the center of our scientific preoccupation. It is this concern with the interdependence of the various elements of social processes which gives the culture concept its comprehensiveness and enables it to cut across and to contain the subject matters of all social disci-

plines. Indeed, as a conceptual framework culture may be said to be "comparable in its generality and its explanatory importance to such concepts as gravity in physics, evolution in biology."²

What are the essential elements of the modern culture concept? Basically we can distinguish five key elements which together make up the modern concept of culture:

- (1) culture consists of patterns of and for behavior;
- (2) the patterns, either explicit or implicit, are acquired and transmitted by symbols;
- (3) such patterns of and for behavior are also embodied in artifacts, which, therefore, must be considered as parts of culture;
- (4) historically derived and selected values represent the essential core of different cultures which, can be distinguished in terms of such values;
- (5) culture systems are, at one and the same time, man-made ("products of action") and the conditioning factors of human behavior.³

The use of the culture concept in social analysis has been criticized on various grounds. It has been said that the concept tends to oversimplify the structure of complex civilizations and to overgeneralize from inadequate empirical observations; that it fails to take sufficient account of regional differences and variations; that it imputes an element of greater integration into a given culture than is actually the case; that it paints an "ideal-typical" picture inasmuch as it pays more attention to what

² C. Kluckhohn, "The Special Character of Integration in an Individual Culture," in *The Nature of Concepts, Their Inter-Relation and Role in Social Structure*, Proceedings of the Stillwater Conference, New York, Foundation for Integrated Education, 1950, p. 79.

³ Essentially these five elements are those advanced by Kroeber and Kluckhohn in their definition of culture: "Culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiments in artifacts; the essential core of culture consists of traditional (i.e., historically derived and selected) values; culture systems may, on the one hand, be considered as products of action, on the other as conditioning elements of further action." See A. L. Kroeber and C. Kluckhohn, *Culture: A Critical Review of Concepts and Definitions*, Papers of the Peabody Museum of American Archaeology and Ethnology (Cambridge, Mass., Harvard University, 1952), Vol. XLVII, No. 1, p. 181.

people may aspire to or want to believe themselves to be doing than what they actually do, and that as a result a given society appears to be more static, changeless, and a-historical than is actually the case.⁴ Indeed, there are critics who regard modern anthropology as a new "dismal science" dedicated to the demonstration of a pre-established social harmony and natural order and who oppose the culture concept as reflecting a fundamental bias against all induced change.⁵

The case against the culture concept would be serious if the critics were correct. We believe and hope to show that they are mistaken. The culture concept distills from the data of the past historically derived and prevailing patterns of behavior. It does not deny for a moment that society is in flux and in a process of transition. It is true that the concept assumes and supports the functional interrelatedness and structural links between the various component parts of a culture such as values, religion, institutions, behavior, symbols, arts, and artifacts. Just as the modern concepts of functionalism and structure do not deny change and indeed incorporate it, the concept of culture has room for sociocultural change originating both from within and from without the society in question. As a concept and tool of analysis culture does not ignore history or assume history to be "constant"; it does focus attention on the characteristics of a people and their culture at a particular time in their history.⁶ By placing structural and functional interrelationships into the center of analysis, the concept emphasizes the fact that societies are more or less "of one piece" without precluding the study of "disequilibrating" tendencies. By viewing culture as a more or less integrated structure in which the various elements are interrelated, the culture concept provides a theoretical framework for treating changes and novel elements from the perspective of whether they facilitate or hinder the functioning of the whole.

⁴ For further details of this criticism with special reference to Benedict's study of Japan see J. W. Bennett and M. Nagai, "The Japanese Critique of the Methodology of Benedict's *Chrysanthemum and the Sword*," *American Anthropologist* (1953), Vol. 55, pp. 404-411.

⁵ See G. Myrdal, *An American Dilemma, The Negro Problem in Modern Democracy*, Vol. I. (New York, Harper and Brothers, 1944), p. 1031-1032, and D. Gregg and E. Williams, "The Dismal Science of Functionalism," *American Anthropologist*" (1948), Vol. 4, p. 594.

⁶ D. G. Mandelbaum, "The Study of Complex Civilizations," in W. L. Thomas (ed.), *Current Anthropology* (Chicago, University of Chicago Press, 1956), p. 212.

Indeed, such changes and novel elements can be detected and studied with greater ease if they are viewed as conflicting with the predominant pattern of society.⁷

In the rest of this chapter, we hope to throw further light on the nature and significance of the culture concept as an integrating framework of social inquiry and social knowledge. We shall do so by dealing briefly with the origin or "causes" of culture, the integration of culture (or the enculturation process), and the problem of diversity and autonomy in cultures.

2. *The "Causes" of Culture*

WHAT are the universal conditions of human existence which have made it possible and necessary for man to become a culture-creating being? We have found the answer to this question in our discussion of man's unique position in nature. His relative weakness and physiological deficiencies at birth and the prolonged dependency of his offspring, the absence of any fixed instinctive equipment, his plasticity, the specific constitution of his brain and the related capacity for conceptual thought and symbolic representation, the need to solve the problems of living in a deliberate way, i.e., by foresight, planning and work – these are the factors to which we have to turn for an analysis of the emergence of culture.

The necessities of biological survival resulting from the prolonged dependency of the human offspring and from our basic physiological needs make it essential that men should engage in purposeful work and establish some form of group life. Group life, as indeed all endeavors of solving common problems, not only requires cooperation and communication but also tends to give rise to a selective validation of some behavior patterns as against others. The kind of behavior patterns which thus are selected and rewarded over and against others may be assumed to be those which are successful in helping to achieve the maintenance of individual and group life. In short, the fact that man is particularly vulnerable and can cope with the problem of living only by anticipating the future and by purposeful activity com-

⁷ Cf. Alex Inkeles, "Understanding a Foreign Society," *World Politics* (1951), Vol. III, p. 275.

pels him to live and work with others. The social character of human life calls not only for some standard system of communication, but gives rise to the emergence of validated customary behavior patterns and culturally sanctioned norms or values. These culturally validated customs and values make the behavior of the "normal" individual dependable and predictable* and hence provide the minimum measure of order and stability without which social life would be impossible.

Common cultural norms and value orientations have still another origin. They are closely connected with man's capacity of conceptual thought and symbolic representation as well as with his concern for the meaning of life. Confronted with a variety of real or imagined threats and faced with the inescapability of death, man is constantly induced to employ and develop his capacity for abstract thought in an effort to reduce and eliminate threatening experiences. This may be regarded as part and parcel of his endeavor to find an "adequate milieu" within his environment and to avoid anxiety-creating experiences. Under the impact of a variety of uncertainties and threats, man everywhere has sought answers to the problem of the meaning of existence, the nature of the universe, and his place in it. Once raised, the ontological question seems to lead man to the discovery and invention of an image of a more or less dependable and meaningful world. With the aid of this image, man adds some further measure of order to his life. In addition, this image of the world and of his place in it shapes man's religious conceptions as well as the premises of his basic values and beliefs.

It is possible to apply the same kind of reasoning which underlies the foregoing account of the emergence of cultural norms to the explanation of such specific institutional components of culture as kinship organization. The need to protect and raise man's biologically immature and dependent offspring accounts for the emergence of some more or less stable kinship or family organization in which the dependent infant is raised and protected and which plays a key role in imparting and transmitting

* Predictable in this context does not mean what the term implies when we speak of the prediction of a physical event such as the occurrence of the tides or the eclipse of the moon. Instead it refers to the fact that once we know the culture, the behavior of individuals can be anticipated with a relatively high degree of certainty.

the approved behavior patterns and value orientations of the group from one generation to the next.

The necessity of satisfying his physiological needs binds man to his natural environment, which contains the elements for their gratification. In this connection man has to overcome various hindrances which stand in the way of procuring the means for the satisfaction of his needs in adequate proportions and at the required time. Only "work" can overcome these resistances and obstacles. Work in this context does not mean simply movement in pursuit of food when the organism senses the need for it. Rather as pointed out before we mean by work those activities which are directed toward an as yet not existing situation. It is an activity designed to secure means that are considered important not only today, but tomorrow and next year. In this orientation toward the future lies always an act of deliberate surveying and anticipation. Stripped of every other possible component, work may be said to be purposeful action. It is the planful act *par excellence*. Indeed, in order to live man must work in a purposeful fashion with an orientation toward the future.⁸ The necessity to derive his food and shelter from the natural environment also has made man the inventor of techniques and artifacts in all cultures. Indeed, man has been able to develop techniques and artifacts which have enabled him to reduce the real burden involved in the production of goods and services. Needless to say that the entire process of need gratification and indeed, up to a certain point, even the actual character of the needs and the manner and extent of their gratification differ from culture to culture.

Finally, there are various contingencies such as natural emergencies, external aggression, threats to internal security, climatic conditions requiring collective action (i.e., irrigation projects) which seem to have given rise everywhere to larger social groupings and highly centralized political organizations with specific authorities and decision-making functions. In all

⁸ This is not intended to be an explanation of the nature and significance of human work. Work can never be understood simply in terms of the contribution it makes to the satisfaction of physiological needs. It must always be analysed as a primary channel for man's basic drive toward self-actualization. J. Barzun, *The House of Intellect* (New York, Harper and Brothers, 1959), p. 125. See also G. Friedmann (1950), F. H. Blum (1953), and H. Arendt (1958) for her distinction between labor, work, and action.

cultures, but particularly in complex literate societies in which writing, cities, and modern technologies go hand in hand with the most far-reaching occupational specialization, state and government tend to be increasingly concerned with activities directly related to production and distribution. Like communal kinship organizations, state and government and other collective organizations, no matter how great their variation in scope and function in different cultures, are concerned first and foremost with rendering man's total environment more secure, more stable, and more dependable – in short, more adequate than it would be without them. In this general sense, all culture may be viewed as a unique human achievement – “an adaptive tool” which has its origin and cause in the search for a solution of the inescapable problems of human existence.⁹

3. *The Integration of Culture*

WHAT gives the culture concept its particular fruitfulness for the integration of social inquiry is the fact that it places into the center of social analysis the functional interrelatedness and structural links between the various component parts of a given society. This integration of culture which is assumed and stressed by the concept calls for further discussion. How does it come about? The answer is to be found in the enculturation process, in the course of which “patterns of and for behavior” are transmitted (i.e., acquired and learned) from one generation to the next. Indeed, the individual acquires those elements in his cultural environment which make him a functioning and “predictable” member of his community in a process of continuous interaction with his culture. The process starts in early infancy, it continues in adolescence, and does not cease throughout the life-span of the individual. There seems to be widespread agreement that the earlier phases of enculturation, in the course of which the biologically immature infant develops his specifically human ca-

⁹ “Since all people face the same dilemmas, all cultures are just so many different answers to identical questions.... The patterns of all cultures crystallize around certain invariant points of reference: the conditions given by biology, by the nature of the external world, and by the universalities of social interaction. These are all very simple yet extremely important things, such as the existence of two sexes, the helplessness of infants, the mutual dependence of members of a group, death”. Kluckhohn, *op. cit.*, p. 78.

pacities, is of special and apparently lasting importance. It is during this phase that the elements of culture from common symbolic means of communication to values are brought to the child with the irresistible authority of the father, mother, or other significant adults.¹⁰ As mentioned previously, this phase of human development is also the period of greatest dependency and greatest plasticity of the infant. From the earliest stages of infancy human behavior passes through some kind of formal or informal sieve of acceptance and rejection. A system of rewards and punishments operates to assure that (culturally) acceptable behavior patterns are acquired and (culturally) unsatisfactory tendencies are rejected. While culturally satisfactory behavior patterns in the growing infant meet with gestures of reassurance and validation, culturally unsatisfactory performances provoke, in the significant adult facial responses, gestures of upset and mild worry and a tone of voice which are experienced as "graded anxiety" by the child.¹¹

This selective process of acceptance and rejection of different behavior patterns never ends during the life of the individual. For, "any culture, through its surrogates, provides constant rewards and punishments for the average individual. Together with the content of the patterns and institutions which he is required to practice or to believe, this process has the effect of creating in the average individual ... a typical outlook on life and a characteristic structure of personality."¹² Indeed, what gives structure to the organization of psychic forces within the individual and what accounts for the relative stability of the human personality are precisely these generally shared basic culture elements which have been acquired and internalized. What tends to be internalized and what gives rise to the relatively stable elements of the personality structure are, in addition to common symbolic terms, the typical explicit value orientations and the explicit standards of evaluation of individual achievements as well as those mechanisms of coping with

¹⁰ E. Sapir, *Selected Writings of E. Sapir*, edited by D. G. Mandelbaum (Berkeley, Calif., University of California Press, 1949), pp. 591-592.

¹¹ H. S. Sullivan, *The Interpersonal Theory of Psychiatry* (New York, W. W. Norton, 1953), Chapter 10.

¹² J. Gillin, "Methodological Problems in the Anthropological Study of Modern Cultures," *American Anthropologist* (1949), Vol. 51, pp. 392-393.

threatening situations which have proved successful in the past.

This selective incorporation of accepted and validated behavior patterns and common elements of the culture (such as linguistic concepts, modes of perception, common meanings, values, motives, habits, and customs) accomplishes not only the transmission of the culture from one generation to the next but also the integration of the culture as a whole. For it is precisely the selective manner in which the enculturation process proceeds which makes culture a unitary order of things – “a pattern of thought and action” (Benedict) rather than a haphazard collection of ideas, values, customs, and artifacts. The process of enculturation shapes the personality structure and channels the responses of the new generation, thereby providing a measure of coherence and stability in human relations. Common linguistic terms and concepts make for a highly uniform perception of reality, and generally accepted internalized values tend to produce common motivations. Experience and also perception are influenced by culture.¹³ In this fashion the enculturation process transmits the type of personality structure and the pattern of human behavior that predominates in the culture. Thus, it not only perpetuates the pattern but integrates the culture as well.

4. Integration, Diversity and Autonomy

THE process of enculturation which transmits important elements of common beliefs and value systems and molds the personality structure of the individual is not identical in form or content for each individual. No child is ever exposed to his culture as a whole. As an infant he is exposed only to that part of the culture which is incorporated in the personality structure of the members of his family.¹⁴ As an adult the individual may belong to a particular subculture (because of his membership in a particular occupational, social, religious, or regional group). As such he will be exposed only to a segment of the whole culture.

¹³ “No socialized human being views his experience freshly. His very perceptions are screened and distorted by what he has consciously and unconsciously absorbed from his culture.” Kroeber and Kluckhohn, *op. cit.*, p. 170.

¹⁴ “Just as every family transmits... a unique biological heritage, so each family transmits a unique cultural heritage.” M. E. Spiro, “Culture and Personality,” *Psychiatry* (1951), Vol. 14, p. 38.

These factors alone make for diversity of behavior within the general framework shared by all members of the culture.

Moreover, the process of enculturation is not a linear mechanical transmission in the course of which identical organisms passively submit to the infiltration of exactly the same dose of explicit and implicit cultural values, beliefs, meanings, or customs. The process of enculturation takes place among different persons, each with a unique biological heritage. As a result each individual can be expected to respond to his enculturation with varying degrees of acceptance, anxiety, or conflict depending upon the attitude (whether loving, indifferent, or hostile) of the significant adults with whom he has contacts. If we consider further that enculturation is a continuous process of interpersonal interaction between persons from a great variety of social and cultural backgrounds particularly in modern complex societies, it is hardly necessary to emphasize that such enculturation is not likely to give rise to a standard type of personality and a homogeneous behavior pattern for all. What emerges are likely to be clusters of uniformities in behavior of a type which are found most frequently but not one homogeneous pattern. Indeed, it is most unlikely that the integration of a culture can ever be complete in the sense that a unitary and monistic principle of organization will be found to dominate every phase of it. Usually, and particularly in complex civilizations, several complementary and even contradictory noetic systems may exist side by side with one or the other principle struggling for predominance. It is no wonder, therefore, that complex cultures can be understood only by making increasing use of the concept of subcultures and related sociological categories such as occupational stratification, group, (urban and rural), role, class, and so forth.

Thus, while it is true that the culture molds the individual and that the human personality emerges as the product of the process of enculturation, it is equally true that modern cultures offer more than one alternative for the formation of the individual's personality. Culture limits the alternatives and provides the general framework for the formation of a personality structure but it does not fix the structure in each and every detail.¹⁵ How-

¹⁵ G. A. de Laguna, "Culture and Rationality," *American Anthropologist* (1949), Vol. 51, p. 389.

ever, the emergence of a personality structure coincides with, or rather is a special aspect of, the individual's physical and intellectual maturation; it is an integral part of the process through which the individual acquires his distinctly human capacities, his self-awareness, and his typical modes of responses to the world. This structure of human capacities, self-awareness, and responses must be looked upon as a more or less enduring organization which, although acquired, tends to persist and remain effective even if the original conditions which brought it about have disappeared. That is to say, once the personality structure has come into existence and has been internalized, the individual person is capable of responding in terms of his own specific mechanism of emotional adjustment. Indeed, the important thing is to realize that once man's personality structure has developed, he is no longer merely an object of the culture.¹⁶ That is to say, the culture concept, properly interpreted, does not commit us to the notion of a one-way relationship between society and man, but leaves ample room for variability and novel action in human behavior. In short there is no need to accept the views of those social scientists who hold that man is the creature of his culture and has no influence over it.¹⁷ This cultural determinism not only exaggerates the degree of integration especially of complex cultures but also lends inadvertent support to those critics who reject the whole concept as indicative of a new dismal science of natural static equilibrium.¹⁸

¹⁶ "Although personality is a product of the social environment of the past, it is not, once it has developed, a mere object of the contemporary environment. What has developed is a *structure* within the individual, something which is capable of self-initiated action upon the social environment and of selection with respect to varied impinging stimuli, something which though always modifiable is frequently very resistant to fundamental change." T. W. Adorno *et al.*, *The Authoritarian Personality* (New York, Harper and Brothers, 1950), p. 6.

¹⁷ See R. Benedict, *Patterns of Culture* (New York, Penguin Books 1946), p. 2, and L. A. White, *The Science of Culture* (New York, Farrar Strauss, 1949), p. 126.

¹⁸ Myrdal's recognition of interlocking, circular interdependence within a process of cumulative causation in social affairs, which he advances as the main hypothesis for the study of economic underdevelopment and development, seems to us a major concession in the direction of the culture concept without committing the author, as he himself points out, to the notion of static equilibrium or a policy of *laissez faire*. G. Myrdal, *Economic Theory and Underdeveloped Regions* (London, Gerald Duckworth and Co., 1957), p. 23.

Summary and Conclusions

As a conceptual framework, culture is not a description of phenomena or experiences, but an abstraction derived from observed regularities in behavior. As such, it is a real type – an image that simplifies and renders intelligible what at first sight appears unconnected and disparate in character. Indeed, culture makes intelligible the behavior of individuals and groups in their interaction with one another and the specific cultural environment in which they function, and gives expression to and indeed emphasizes the structural character of social reality. In fact, the culture concept places the dynamic and reciprocal interaction of man into the center of our scientific preoccupations. As a real type it is sufficiently flexible and open to new evidence derived from new observations. As a conceptual framework it is of sufficient comprehensiveness to cut across all social sciences and, in its encompassing generality and its explanatory importance, may be said to be equivalent for social inquiry to such notions as gravity in physics and evolution in biology. Its strategic significance for the integration of the social sciences stems from the fact that culture is the intervening variable between man as an organism and the total environment. Because culture encompasses the entire range of experiences and phenomena between the individual and man's total environment, it is not only the key concept of cultural anthropology but also one of the two complementary conceptual frameworks for the integration of the social sciences.

The modern concept of culture has reference to the relatively constant regularities and uniformities in the forms and content of human behavior. Culture may be said to channel human behavior into specific performances by limiting the number of alternatives and restricting the means available to reach them. In this way behavior can be said to be relatively dependable and predictable. By channeling individual behavior and by selecting and condensing the patterns of human relations, culture can be regarded as a system or a pattern with identifiable constancies in the forms of human interaction.

While man's unique nature makes possible and necessary the emergence of culture as his most important adaptive tool, it is equally true that without culture man could not develop his

specifically human capacities. In the course of a continuous selective acceptance and rejection, the individual acquires and incorporates all the important elements of his culture such as common symbols, concepts, standards of values, and the mechanisms of coping with difficult situations, which have proved successful in the past. In this way the process of enculturation not only transmits the culture from one generation to the next but integrates it as well. For what makes a culture a more or less unitary order of things, a system with relatively constant relationships, and what keeps people together are the ideas, rules, and experiences which the members of society hold in common and which they transmit.

Contrary to what is sometimes asserted, the modern concept of culture does not lend support to the notion of a single and fixed personality structure. On the contrary, properly interpreted, the related concepts of culture and enculturation are compatible with the idea of a basic variability of human responses and the notion of autonomous individual action. In short, the concept of culture supports neither the widespread bias against the possibility of induced social change nor the belief that cultures tend toward "natural order" and static balance.

Note on Culture and Psychopathology

IN view of our insistence that the integrating concepts of man and culture must be derived from data relating to "normal" behavior, the question arises whether our concepts commit us to what we would consider a false dichotomy between health and pathological states. The increasing evidence of psychoneurosis and mental illness makes such a dichotomy more and more problematical. Furthermore, as a specifically human phenomenon psychoneurosis must be regarded as a social problem *par excellence*. For these reasons it is important to raise the question as to whether our concepts of man and culture encompass the phenomena of psychoneurosis or whether problems of psychopathology call for separate conceptual frameworks. In a sense the answer to this question could be regarded as a test of the comprehensiveness of our conceptual frameworks.

Doubtless there is more than one factor which may give rise

to psychopathology. To single out one factor as the cause of psychoneurosis runs counter to our emphasis on the total situation and its impact on human growth and mental illness. No theory that singles out one or another factor as *the* cause of psychoneurosis and mental breakdown can be accepted as an adequate explanation of what has really happened.

The underlying idea and the common feature of the concept of man and culture is the functional interdependence of man and society. As we have pointed out, man develops his specifically human capacities and needs in a reciprocal relationship with his cultural environment. He becomes human only in the course of enculturation, which makes it possible for the infant to internalize significant culture elements in his personality, and to acquire a self-system and the capacity for action as an individual; it is in the process of enculturation that man establishes the distinctly human relationship to his world and to himself and is able to satisfy his essential needs for self-affirmation, cooperation, and safety.

In the course of the process of enculturation man faces situations which are experienced as threats to his safety, and indeed to his existence. There are situations which are incommensurate to the organism's capacity to respond in any ordered fashion and which are, therefore, experienced as incapacitating and hence as a severe shock. In other situations, where the individual may remain capable of some action, the experience may nevertheless be such as to make it impossible for him to cope adequately with the threat and danger. Whereas the former situation may give rise to a feeling of anxiety, the latter may be said to create a feeling of persistent stress. Needless to add that whether a situation is experienced as incommensurate and catastrophic is not simply a matter of the objective conditions but depends in each instance upon the efficiency of perception, the ability to respond, and the personality structure. Thus, stress and anxiety are the response to endangering situations to which man is incapable to react adequately. The cause of stress and anxiety is precisely this inability to cope with the situation, or rather the subjective experience of conditions in which the organism's existence is in danger.¹⁹ In fact, what is threatened when feelings of anxiety are

¹⁹ Goldstein, *op. cit.*, p. 91 and K. Goldstein, *The Organism* (New York, American Book Company, 1939), pp. 291-307.

aroused is the very core of the personality – the essential security pattern which the personality has developed or is in the process of developing.

The situations and events which, in the process of enculturation, may give rise to stress and anxiety differ widely and, moreover, depend upon the general cultural milieu. Thus, “graded anxiety,” in the sense of a diffuse apprehension, may be experienced by the infant as a result of gestures of disapproval and states of mild upset and worry reflected in the tone of the voice of the significant adult in his immediate environment. The whole system of rewards and punishments, of approval and disapproval which bring about the transmission and internalization of culture may expose the child to repeated experiences of stress and anxiety. As long as this happens within a positive relationship between the child and the significant adults – a relationship which gives the child the assurance that it can depend on the adults – neither disapproval nor punishment need necessarily give rise to experiences of stress or anxiety. But when rules of behavior are enforced by mothers and fathers who have no positive relation to their children, who originally did not want or now reject the child, who have acquired an overprotective, hostile, or generally destructive attitude toward their offspring and the world, then reproaches, disapprovals, and punishments (whether just or unjust) may be experienced by the child as a continuous demonstration of a fundamental rejection, isolation, and loneliness and ultimately as a threat to his whole existence.

There are other situations which may give rise to stress and anxiety for the individual. Just as the infant and the child may be exposed to the overpowering authority of a nonloving, hostile, or overprotective parent, the adolescent may be faced with a variety of stress and anxiety-creating situations. Even the adult is exposed to tensions and disharmonies which can be traced to a concomittant process of retardation and acceleration in biological changes and cultural adaptation. Thus, the strains and stresses of the adolescent during puberty and the adjustments called for as a result of the deterioration of functional capacities in middle and old age may expose the individual to considerable unresolved stress and even anxiety. Even if the transition problems faced during infancy, childhood, and adolescence have found

a satisfactory solution, there is no guarantee that social institutions and culturally conditioned demands may not expose the adult to situations with which he may be unable to cope. Social and international insecurity, the fear of atomic warfare, military combat, and rapid changes in the cultural environment may cause acute stress and anxiety. Culturally extolled standards of achievement and insistence on conformity which contradict traditional moral imperatives, or the disintegration of formerly stable objects of loyalty such as family, state, and religion, as well as conflicting roles imposed upon a person may create conditions of tension and inner conflict. In addition many interpersonal and intergroup relationships in modern society, and particularly those connected with production and administration, are relationships of subordination. Such relationships always represent at least potential threats to the individual's self-esteem and may become the source of open or repressed stress and strain. If sufficiently severe and prolonged in duration, all these tension-creating situations may give rise to socially induced personality defects shared by millions or even the majority of the population.

How does man respond to the experience of stress and anxiety? The answer has already been given: He reacts to such experience by attempting to diminish the feeling of stress and anxiety. If we follow Rollo May in this matter, such endeavors may be either proportionate or disproportionate to the objective danger. They are proportionate if the anxiety "can be confronted constructively on the level of conscious awareness or can be relieved if the objective situation is altered."²⁰ If, however, the anxiety-creating situation confronts the individual with an inner conflict, it is possible and indeed likely that his reaction becomes disproportionate. Under these circumstances the reaction may involve repression (i.e., the suppression of one of the conflicting values) and may be "managed by means of various forms of retrenchment of activity and awareness, such as inhibitions, the development of symptoms, and the various neurotic defense mechanisms."²¹

If enculturation may give rise to feelings of abnormal stress

²⁰ Rollo May, *The Meaning of Anxiety* (New York, Ronald Press, 1950), p. 194.

²¹ *Ibid.*, p. 197.

and anxiety and hence may lead to serious personality conflicts, social inquiry cannot easily avoid the problems of the psychological impact of cultural institutions on psychic health and mental illness. If we take seriously the proposition that culture patterns are incorporated into the human personality and influence the psychic life of adults and if we accept the thesis that "institutions determine not only the impulses which it is necessary to repress, but also the kinds of channels which will be at the disposal of the repressed drives,"²² it follows that what is normal cannot be appraised simply in terms of the extent of the deviation of observed human behavior from some norm of a statistically measured average. For the statistically measured average of observed human behavior offers no guarantee that we are dealing with normal and sane phenomena. The fact that a particular pattern of behavior is shared by the majority does not necessarily make the behavior sane or normal. Indeed, the fact that "millions of people share the same forms of mental pathology does not make them sane."²³ On the contrary, it is entirely possible that the pattern of behavior has become widely accepted as a channel for culturally repressed drives. This is likely to happen in a culture which exposes the individual to inner stress due to conflicting demands and belief systems. The attending reaction mechanisms may find outlets in culturally validated channels and behavior patterns which, far from being normal, tend to inhibit the process of self-actualization. Indeed, where the culture exposes its members to inner conflicts which are met by culturally permitted adjustments providing security at the price of a retrenchment of self-actualization or awareness, we may speak with Fromm of "a socially patterned defect" as distinguished from a neurosis and the more severe forms of mental pathology. That is to say, not every inner conflict and not all anxiety-creating situations necessarily give rise to psychoneurosis and mental disease. If a majority does not attain freedom, spontaneity, or a genuine experience of self, the individual shares with others this defect. He is not aware of it as a defect; his security is not threatened, he does not feel isolated or inadequate.

²² K. Mannheim, *Man and Society in an Age of Reconstruction* (New York, Harcourt, Brace and Company, 1951), p. 122.

²³ E. Fromm, "The Psychology of Normalcy," *Dissent*, (1954), Vol. 1, p. 140.

He may suffer but he does not differ from others. In most cases "the cultural pattern that provided for the defect saves them from the outbreak of neurosis."²⁴

The social scientist is thus bound to reject the identification of the behavior of the majority with normal and sane behavior. Nor can he accept any given culture pattern as normal merely because it is generally practiced and enjoys the consensus of the majority. An empirically validated concept of man and human nature and an understanding of the impact of the enculturation process on the human personality and self-actualization may ultimately enable the social scientist to appraise different cultures and their dominant traits in terms of their psychological impact on the individual. Only in terms of such an understanding will it become possible "to scrutinize different institutions and cast up their [human] cost ... in terms of the less desirable behavior traits they stimulate and in terms of human suffering and frustration."²⁵ We shall then also be able to distinguish between different cultures according to the personality types they foster and the extent to which they provide genuine outlets for the full development of productive individuals.

The answer to our initial question is that the problems of psychoneurosis and mental illness do not call for separate conceptual frameworks. The concept of culture and man here discussed are sufficiently comprehensive to encompass both "normal" and "abnormal" behavior – indeed, they enable us to dispense with this false dichotomy altogether. More than this, the concept of man and culture make it possible for the social scientist to assume once more a critical position toward institutions and situations which impose upon human beings psychoneurotic illness and defects even though the latter may be shared (statistically speaking) by the greater part of the population.

²⁴ E. Fromm, "Individual and Social Origins of Neurosis," *American Sociological Review* (1944), Vol. IX, p. 383.

²⁵ Benedict, *op. cit.*, p. 229.

CHAPTER X

Integration and the Strategy of Scientific Inquiry

The question of whether we should begin with the simple or the complex appears to me the most important problem in philosophic method at the present time, cutting under, for example, the traditional distinctions of real and ideal.

J. DEWEY*

THE acceptance and use of the integrating concepts of man and culture would have far-reaching effects on the conduct of scientific research and the strategy of inquiry in the social sciences. We have singled out four of these interrelated effects: (1) The orientation towards the social context; (2) the preoccupation with social structure, social dynamics, and cumulative causation; (3) the acceptance of social indeterminacy and incomplete predictability; and (4) the importance of real types and substantive analysis.

1. The Orientation toward the Social Context

DOUBTLESS the most fundamental impact which the use of man and culture as conceptual frameworks would have on the strategy of scientific inquiry in the social sciences is the orientation toward the social context. What this means has already been touched upon in the preceding chapters. What remains to be done is to spell out the full implications of such an orientation for the future of social inquiry.

In the first place the use of man and culture as integrating frameworks calls from the very outset for an explicit recognition of the distinguishing differences between physical and biological processes on the one hand and social processes on the other. Instead of a latent or implicit anthropology social analysis will be forced to bring its assumptions concerning man and society

* J. Dewey, *Philosophy and Civilization* (New York, Minton, Balch and Co, 1931), pp. 78-79.

into the open, and no longer operate with tacit presuppositions concerning the alleged similarities between the structure of inanimate matter, living organisms, and human societies. The social, as a category, will thus find its final recognition and establish the social disciplines as distinct and yet related fields of inquiry alongside those of the physical and biological sciences. As long as the social disciplines fail or refuse to acknowledge the unique character of social processes, they jeopardize not only the validity of their generalizations but also their status as a distinct field of scientific inquiry.

If we recognize the social as a special and unique level of organization – it does not matter whether we call it a system, a pattern, or a field – social analysis will have to turn its attention increasingly to the study of social structures and the manner in which the inclusive level of social organization molds and guides the behavior of the parts. Instead of trying to understand social processes as the additive result of the behavior of its parts, it will become more relevant to place the interaction of the whole with its component parts into the center of analysis. This comprehensive or “holistic” perspective which centers attention on the social structure without precluding a study of the interaction of the parts within the social context would widen the scope of our analysis; it would make it comprehensive and hence truly scientific rather than partial and unadapted to the nature of the subject matter. Instead of the withdrawal into algebra and rigorous solutions of isolated and static problems which may support an illusion of determinacy and a search for security without being relevant and applicable to problems of policy,¹ the concern for the social context and the comprehensive perspective would lead to substantive solutions of problems that are vital from the point of view of human needs and human survival.

The question which arises if social events and phenomena have to be viewed as regularly and typically embedded in a larger social structure is, of course: What is the proper unit of investigation for the social scientist? It would be futile to try to define the unit of investigation in social inquiry once and for all. What

¹ For a particularly convincing demonstration of this statement with particular reference to orthodox economics and problems of economic development see Joan Robinson, “Teaching Economics,” *Economic Weekly* (Bombay) January 1960, pp. 173–175.

is to be investigated and how far and wide we have to cast the net of social inquiry depends upon the specific problem under study. There are doubtless problems where nothing short of the entire culture must be the unit of investigation. Many problems of human behavior can be analyzed only in terms of the culture as a whole. This is the procedure of cultural anthropology, which in the study of primitive and more recently of complex cultures has developed techniques that operate successfully from the whole to the parts. In the study of many problems such as the location of industry, the growth of metropolitan communities and the development of underdeveloped areas, it will be found that nothing short of an entire region and its geographical, economic, and cultural structure must be made the unit of investigation. Hence the continuous extension of regional studies and the emergence of a social science of regional structure in recent years.² For other purposes the unit of investigation may be considerably smaller; it may be what has been called the "situation" or the "transaction." A situation may be defined with Mannheim as "a unique configuration formed in the process of interaction between certain people."³ As such it may be patterned or unpatterned depending on whether it has become standardized or not in a given society. In both cases human activities are subject to some control which shapes and channels them.

J. R. Commons considered the "transaction" as the starting point and the basic unit of analysis in his "collective economics." Neither individual feelings of pain and pleasure nor utilities nor commodities but the totality of the legal-economic relations entered into by individuals and groups together with their expectations are regarded as the fundamental unit of investigation. Far from being static these transactions are translating the wishes and wills of acting individuals and groups into working rules which in turn become institutionalized and assume the character of organized and "going" concerns controlling individual behavior and channeling it into collective behavior. The

² W. Isard (1956), M. E. Garnsey (1956).

³ "If one is involved in a situation one is not entirely free; the combination of forces represented both by the material and moral factors at stake and by the wills of the other persons concerned, acts as a brake upon the individual." K. Mannheim, *Man and Society in an Age of Reconstruction* (New York, Harcourt Brace and Company, 1951), p. 299.

transactions which may include "two or more wills giving, taking, persuading, coercing, defrauding, commanding, obeying, competing" are, according to Commons, the true meeting place of economics, psychology, ethics, jurisprudence, and politics.⁴

Speaking in general terms we may say that the unit of social inquiry must be large enough to encompass all those factors which can be demonstrated to have an effect, and in this sense are "real" in the process of social interaction. Only in this way can we correct the deep-seated bias which considers an event as adequately explained if it can be related (correlated) in time to an antecedent event – i.e., without specific reference to the structure and form of the social context (in time and space) of which it is an integral part. The actual extent of the social context will vary from case to case; also, it may be more or less structured depending on whether or not it is pervaded by a predominant influence of some kind. In short, it is this social context which becomes the starting point of social inquiry once the common-denominator concepts of man and culture are used as tools of social analysis.

Some social scientists propose to view what we call the social context as a "configuration" or "constellation of forces," which are then compared to a field in analogy to the magnetic field in the physical sciences.⁵ In harmony with our general scepticism concerning analogies and the transfer of knowledge from one field of inquiry to another, we question this extension of field theoretical concepts to the social sciences. The physical sciences mean by field the totality of factors which are effective in a given situation. It is true the term refers to the dynamic interaction and interdependence of the whole with its parts. However, the most significant characteristic of a field is that it has reference to an "area" or "volume" whose space is pervaded by a single unifying influence. Magnetic fields have a focal point in which the intensity of the unifying influence reaches a maximum; the greater the distance from this focal point the more does the intensity of the influence fall off. Thus a field may be regarded

⁴ J. R. Commons, *Legal Foundations of Capitalism* (New York, Macmillan Company, 1932), p. 7. For a detailed and systematic discussion of Commons, see A. G. Gruchy, *Modern Economic Thought* (New York, Prentice Hall, 1947), pp. 135–243.

⁵ See K. Lewin (1936 and 1951); J. F. Brown (1936) and G. Murphy (1947).

as a model of a system that possesses a high degree of cohesion and is marked by a constancy of relationships which is characteristic of certain physical structures. Whether such cohesion and constancy of relationship is characteristic of social systems is more than doubtful.

Nevertheless the extension of the field concept to social analysis may have beneficial effects provided we keep in mind the difference between the magnetic field and a social system. Reasoning in terms of field theoretical concepts would impress upon social scientists, as it did upon some psychologists, the simple fact that "the molecules in the body do not blindly run,"⁶ and that social events must be studied in terms of a much greater number of effective variables in a given situation than is usually the case in physics. The concept of field properly extended may also focus attention upon the cognitive aspects of behavior which have long been neglected in social analysis and have only recently found limited recognition in economic theory. Thus whether particular elements in a social situation have any effect whatsoever and in this sense may be said to be "real" and to influence the outcome depends in a demonstrable way upon the perception and expectations of the acting individuals in the situation. For instance, it makes a great deal of difference whether the majority of the interacting individuals perceive a given price situation as inflationary or deflationary. Because perceptions influence our expectations they must be included in any analysis of a social situation. Indeed, expectations are of special importance not only because they constitute the link between the situation and human action but because they can be influenced and changed and hence offer one of the avenues for a deliberate modification of human behavior and social institutions.

2. The Preoccupation with Social Structure, Social Dynamics, and Cumulative Causation

ANY orientation of social inquiry toward the social context and any broadening of the unit of investigation called for by the integration of social knowledge raises the question of the nature

⁶ A. N. Whitehead, *Science and the Modern World* (New York, Mentor Books, 1948), p. 79.

of social dynamics and social causation. Of what nature is the process of social change if we take seriously the proposition that society is a structure composed of interrelated elements and substructures? Indeed, what happens to the whole concept of social change if we start from the structural characteristics of social reality? We have dealt with some of these problems in their most general form in connection with the discussion of the distinguishing characteristics of human society. We endeavored to show that there need be no contradiction between structure and change, between system and emerging novelty. More than this: the concept of social structure is deprived of much of its meaning if we separate it from the changes that may occur within a social system. One of the important ways in which such change (including the highly significant processes of growth) may take place is the emergence of novel relationships and forms of interaction rather than the appearance (or disappearance) of a particular component or of an entire substructure.

Before we elaborate further upon these earlier observations, it is necessary to emphasize that neither the culture concept nor the notion of social structure offer automatically a theory of social change. Even the doctrine of the relative autonomy of the human personality structure and the concept of the variability of human responses from the modal personality which we developed in the preceding chapter can hardly be accepted as a sufficient explanation of change. On the contrary, it must be conceded that the notion of social structure improperly understood, may have the effect of blocking our understanding of change. Indeed, if we use the concept of culture and social structure at a level of abstraction which fails to make contact with the specific and concrete, we may end up with a withdrawal from reality which can be as arid and as normatively apologetic as the search for levels of equilibrium of formal price theory. For example, if we refuse to concern ourselves with the reality of power, conflict, and domination in social affairs or if we ignore the effect of social institutions on human welfare, we may make social inquiry as irrelevant as any specialized and partial analysis has ever been. Indeed, we will then fall into the error of transforming the science of man in society into a new dismal science which tends to legitimize the allegedly harmonious *status quo*

and to support a policy of conservative inaction, and thus remains unable to grasp and to interpret the dynamic elements in social structures that make for social change.⁷

The problem of social change within social structures can be successfully attacked only, it seems, if adequate attention is paid to the possibility that different elements in the social system develop and expand at different speeds and hence may exert a new and different influence, thereby giving rise to qualitatively new relationships between the parts and the whole. As a result, all kinds of lags and leads may emerge which may put the system under tension. Marx and Veblen developed theories of social change mostly by demonstrating that different parts in a social system (e.g., technology, productivity, or pecuniary activities) develop and expand at greater speeds than the rest of the system and tend to upset the institutional order. Such processes within a social system must necessarily give rise to new internal relationships and hence change the original structure.

Such changes in the relationships between the component parts of social structures need not be slow and linear. On the contrary, relationships between variables may well change in a jump-like (i.e., non-linear) fashion—non-linear, that is, in relation to the frequency with which we are able to observe and measure them statistically. For this reason the social scientist must remain sceptical of all those attempts which aim at prediction and prognosis by simply projecting past relationships between variables into the future. What is frequently left out of account in such projections are qualitative changes resulting from the cumulative effects of quantitative changes as well as sudden variations of pace and pull; in short, what is neglected is the possibility of radical dislocation in social systems. The widespread inclination to operate with assumptions of linearity in social analysis which is characteristic of most model building reflects an essential belief in continuity and uniformity in social affairs which is often refuted by more detailed investigations. The outcome can only be inadequate theories and erroneous forecasts.

This neglect of the variability and sudden changes in corre-

⁷ For a recent and forceful denunciation of such a tendency in the methodological pretensions of what he calls "grand theory" in American sociology see C. Wright Mills, *The Sociological Imagination* (New York, Oxford University Press, 1959), Ch. 2.

lations in social systems is connected with the whole trend of reasoning by analogy to physical processes and the bias in favor of recurrence and balance in social affairs. It represents a failure to take seriously the logical and methodological implications of the general interdependency of all elements which shape social processes and which give them their structural and cumulative character.

We cannot go here into further details except to say that the whole problem of the emergence of novel relationships in social structures deserves much greater attention than it has received hitherto.⁸ We shall illustrate our thesis briefly by the following references to the two periods of economic growth in Europe after two World Wars: 1918-1929 and 1945-1955. Both were postwar periods of growth. Both were reconstruction periods following upon major and highly destructive wars. Both were decades of prosperity during which production in the major industrial countries made great strides. And yet despite these similarities the two periods exhibit far-reaching structural differences which account for the fact that the process of economic growth during the decade of 1945-1955 was more impressive than that of the decade following World War I. Among these significant structural changes both within the individual countries and in the international economy were the following: An increased economic role of government; a greater determination to stabilize spending and to prevent unemployment; important war-induced technological innovations in the engineering, chemical, and electrical industries which contributed toward higher productivity (output per man-hour); improved terms of trade in favor of the underdeveloped countries which raised the import capacity of the latter and benefited the export industries in the industrial nations; the lack of constancy in the relationships between such economic magnitudes as total income and food consumption and the related lag between manufacturing and primary production; the declining raw material content of finished output; the changing importance of different sources of energy as contributors to the world's total energy production. In all these instances we are face to face with jump-like changes in quantitative relationships between social magnitudes which can be recorded after their occurrence but hardly projected beforehand.⁹

The whole problem of "jump-like" changes in relationships in social systems can be understood only in the light of the principle of circular or cumulative social causation. This principle which

⁸ See, however, E. Salin, "Stand und Aufgaben der Konjunkturforschung," in A. C. Spiethoff, *Die Wirtschaftlichen Wechsellagen* (Tübingen, J. C. B. Mohr, 1955), pp. 1-10, and J. A. Schumpeter, "Historical Approach to the Analysis of Business Cycles," *Conference on Business Cycles* (New York, National Bureau of Economic Research, 1951), pp. 149-155.

⁹ For an attempt to measure and analyze these structural changes and their role in the postwar process of growth both in individual countries and on a world level, see United Nations, *World Economic Survey*, New York, 1955, pp. 31-40.

was first developed by Myrdal in the study of white prejudice and racial discrimination,¹⁰ has validity throughout the entire field of social relations. Its fruitfulness stems from the fact that it refutes the general belief in a basic trend toward self-correction in a social system. As soon as we turn from the formal analysis of static models to the study of dynamic social processes in their structural setting, we find that the social system exhibits no tendency toward automatic self-stabilization.

The system is by itself not moving toward any sort of balance between forces, but is constantly on the move away from such a situation. In the normal case a change does not call forth countervailing changes but, instead, supporting changes, which move the system in the same direction as the first change but much further. Because of such circular causation a social process tends to become cumulative and often to gather speed at an accelerating rate.¹¹

Of course, cumulative processes in economic affairs have been recognized before. Economic analysis has stressed the cumulative character of the multiplier effect, the accelerator, the lending activity of a commercial banking system operating with fractional reserves, or the process of speculation during an inventory boom. And yet these cumulative processes operate only within the narrow framework of the economic system. Myrdal's principle of circular interdependencies and cumulative causation emphasizes precisely the interaction of the economic with the whole range of noneconomic factors and the social system as a whole. In other words, the principle of circular interdependencies explicitly emphasizes the importance of social structure and therefore provides a more general hypothesis for the study of social processes than the still highly mechanical models of the multiplier and the accelerator of Keynesian and modern business-cycle analysis.

¹⁰ "White prejudice and discrimination keep the Negro low in standards of living, health, education, manners and morals. This, in turn, gives support to white prejudice. White prejudice and Negro standards thus mutually 'cause' each other.... If either of the factors change, this will cause a change in the other factor, too, and start a process of interaction where the change in one factor will continuously be supported by the reaction of the other factor. The whole system will be moving in the direction of the primary change, but much further. This is what we mean by cumulative causation." G. Myrdal, *An American Dilemma* (New York, Harper and Brothers, 1944), Vol. 1, pp. 75-76.

¹¹ G. Myrdal, *Economic Theory and Underdeveloped Regions* (London, Gerald Duckworth and Co., 1957), p. 13.

Awareness of social structure and of the principle of interlocking circular interdependencies raises important questions concerning the nature of social causation. Of course, what is at stake is not the principle of causation which guides all scientific inquiry, i.e., the belief that we can find a coherent theoretical system for the analytical description of any kind of social event, but rather the conviction that social events can be adequately accounted for in terms of a *primum mobile* or a primary and predominant condition which can be isolated and to which it makes sense to attribute causal potency. The social sciences have shared this belief in a primary cause with common-sense notions which have always been inclined to identify local isolated antecedents as the cause of events. In the social sciences this belief in a primary cause has often given rise to a facile imputation of causal potency to one or a few variables after their correlation with particular events had been demonstrated.

The concept of social structure and the notion of cumulative causation would shift our interest from the search for antecedents and primary or predominant causes to the properties of the present social structure.¹² Indeed, the analysis of these properties and the dynamic pattern of interaction would be the chief task of the social sciences. Such a shift of interest to the properties of the total system would mean that we "no longer seek the 'cause' of events in the nature of a single isolated object, but in the relationship between an object and its surroundings."¹³ If social events and social change emerge in a process of reciprocal interaction between the elements of the system (i.e., within its inner structure), it is no longer adequate to attribute causal potency to an individual variable or impulse. Rather, the outcome (the event, the process) must be viewed as the result of the entire initial situation and the interaction process as well as the basic properties of the total social structure. For if the characteristics of the initial constellation ("the momentary life space" in Lewin's terminology) had differed, the event would not have come about

¹² "In an interdependent system of dynamic causation there is no 'primary cause' but everything is the cause of everything else." G. Myrdal, *An American Dilemma*, I, *op. cit.*, 1944, p. 78. See also G. Myrdal, *Economic Theory and Underdeveloped Regions*, *op. cit.*, 1957, pp. 11-22.

¹³ K. Lewin, *Principles of Topological Psychology* (New York, MacGraw-Hill Book Company, 1936), p. 11.

(or not in this particular manner). In other words, the search for either single ("efficient") causes or for so-called multiple causative factors may well turn out to be an "episode" in the history of thought – a residue, perhaps, of an essentially animistic interpretation of natural events analogous to an earlier belief in the presence and potency of supernatural and omnipotent spirits or agents. Despite its obvious and rather amazing early success in many fields of the natural sciences, the concept of the cause, or of "several" causes, nevertheless may become "a rather dangerous trap for the unwary, a convenient form of *ad hoc* explanation or rationalization which ignores the more fundamental problems of science."¹⁴

Finally, the notions of social structure and cumulative causation help explain why most social structures seem to be inherently unstable. Their "equilibrium" is relatively labile and can be easily upset by factors capable of setting in motion the cumulative process of change. This new attitude toward social causation, far from implying that the search for sequences within a structural setting should be abandoned calls for the study of the interdependencies which makes the social system a unique level of organization. If this study of interdependencies and organizing relationships in the social system is not to degenerate into a search for a hidden order at all costs, it must be comprehensive enough to include the study of unbalance and disequilibrium. Moreover, instead of burdening the antecedents with the causal potency for the subsequent effect or event, such antecedents must be viewed at best only as catalysts which may be said to release the stored-up energy of the "social field." Instead of a facile imputation of causal potency to this or that catalyst we will have to realize that fundamentally "the search for causes is the search for differences within comparable situations."¹⁵ Integrated social research by freeing itself from the notion of a primary cause and by placing the basic properties of the structure into the center of the analysis would enable us to do justice to the nature of our materials and follow also in this respect the lead of our subject matter.

¹⁴ L. K. Frank, "Causation: An Episode in the History of Thought," *Journal of Philosophy* (August 1934), Vol. 31, p. 423.

¹⁵ R. M. MacIver, *Social Causation* (Boston, Ginn and Company, 1942), p. 149.

3. The Acceptance of Social Indeterminacy and Incomplete Predictability

A RECONSIDERATION of the nature of social causation raises once more the question of the determinacy and predictability of events which has been touched upon repeatedly in the course of our discussion. We encountered it first in connection with the analysis of inanimate matter where the failure to establish definite positions of the electron at a specific instant of time gives rise to the peculiar indeterminacy and lack of (complete) predictability in the atom. Nevertheless, despite this indeterminacy there exists the statistical determinacy and predictability of the macro-cosmos. This statistical determinacy of physical processes presupposes a vast number of electrons and their relatively equal "pull" in the field. Indeed it is the outcome of the interaction of a huge number of atoms and electrons, none of which is able to "pull" the field in one or the other direction. Out of the abundance of events which tend to cancel each other's influences emerges a statistical determinacy and predictability.

Social structures are composed of a much smaller number of elements than is characteristic of the atom. Moreover, the elements present in social systems differ in size and relative influence. For this reason we suggested that the model of the physicist, and particularly the considerations connected with the degree of accuracy of the laws of physics and chemistry (the so-called $1/\sqrt{n}$ rule), support the conclusion that probability calculations regarding social processes and events can yield only predictions of a very low accuracy and precision. This proposition may be illustrated by an example: The decision to invest is one of the most significant decisions in a modern economy. It has the most far-reaching repercussions for the level of output and employment and general economic growth. Considering the contemporary structure of the American economy, it stands to reason that the concentration of production in large companies has the effect of concentrating the decision to invest in the hands of a relatively small number of companies. In fact, it has been shown that in 1945 60 percent of all net fixed capital (capital assets less reserve) were held by large firms (with assets of \$ 5,000,000 or more) and that in manufacturing and mining large

firms make somewhat more than 50 percent of the total new capital expenditure for plant and equipment.¹⁶ Hence the strategic decision to invest is made by the managerial leadership of a relatively small number of firms (perhaps not more than 2,000 in the American economy), many of which, moreover, are interlocked" and hence capable of acting in unison after consultation. That 2,000 is a relatively small number (particularly from the point of view of the $1/\sqrt{n}$ rule) needs no emphasis. Certainly very little precision could be expected if we tried to forecast their decisions in analogy to the calculations of nuclear physics and hoped to achieve some measure of determinacy and regularity in the social world.

An additional reason why we cannot assume that social processes exhibit the determinacy and predictability observed in the macro-physical world and even in the world of living organisms is to be found in the nature of the social structure, particularly in the absence of constancy in the relationship between the whole and its parts. Unlike the electro-magnetic field, with its focal point and highly constant or at least continuous linear relationships and intensities of influence, the reciprocal relationships between the social system and its component parts or substructures must be regarded as typically non-constant and non-linear. Furthermore as Northrop has pointed out,¹⁷ there seems to be nothing in social affairs that could be compared with the principle of the conservation of energy which is at the bottom of the essential determinacy of natural processes. On the contrary, the corresponding social elements (such as human wants, purchasing power, prejudices) are all subject to expansion and to cumulative acceleration and deceleration, all of which stand in the way of a precise scientific prognosis.

Nor is this all. The thesis of a determinate, essentially unilinear, and hence completely, at least in principle, predictable development in social affairs is further contradicted by two additional factors: the reality and potency of autonomous social action (goal-directed volitional decisions of individuals and

¹⁶ M. Hastay, "The Cyclical Behavior of Investment, in *Regulation of Business Investment, National Bureau, Committee for Economic Research* (Princeton, Princeton University Press, 1954), pp. 21-24.

¹⁷ F. S. C. Northrop, *The Logic of the Sciences and the Humanities* (New York, The Macmillan Company, 1947), pp. 261-262.

groups) and the occurrence of seemingly uncontrollable random disturbances which may originate outside society and yet have the most far-reaching effects on the social process. In addition, such cognitive determinants of behavior as expectations, perception, and errors in perception, and the fact that decisions arrived at by some may induce others to follow suit (the bandwagon principle) and that all social processes may become cumulative and self-reinforcing rule out, in our estimation, any hope for complete predictability of social change and social events.

Finally, and not less important, there are the effects which scientific observations and the results of social inquiry may have upon social action and social events. Just as we cannot observe the position and course of the individual electron without disturbing it, social analysis and observation may affect and alter the initial situation and hence "disturb" the social process.

Strictly speaking, it is inevitable that social inquiry will affect the social process. The mere collection of data may change the situation under observation. This is explicit in "action research" and the participant-observer situation where the investigator is part of the social field he observes and by his very presence influences and often intends to change the situation.¹⁸ Even where the observer has no intention of changing the situation under observation the awareness of the fact that one is under observation may change one's performance. A study conducted to ascertain the effects of different working conditions on productivity may find that the effects, at least in part, are due to the responses of the worker to the fact that somebody is paying attention to his problems and not to a change in working conditions. This was the case in the study of work performances in the Hawthorne plant and accounted for some of its unanticipated results.¹⁹ Furthermore, since man has the capacity to learn, he may and probably will react differently after taking notice of the findings and forecasts of social inquiry. Cases in point are public-opinion polls and market-research surveys, where the results of the poll may influence the voter or purchaser of a particular

¹⁸ See F. H. Blum, "Action Research and Industrial Relations," *Proceedings, Industrial Relations Research Association* (1949), pp. 248-254, and *Toward a Democratic Work Process* (New York, Harper and Brothers, 1955).

¹⁹ See H. A. Landsberger, *Hawthorne Revisited* (Ithaca, N.Y., Cornell University Press, 1958).

brand. Finally, since the course of social processes can be influenced, if not actually controlled, by individual and collective action, scientific observations and prognoses may change the course of events by influencing individual behavior and social action. In short, the inevitable interaction between the observer and the situation under observation has the tendency of making any accurate description and measurement of the situation difficult, if not impossible.²⁰ If the present situation cannot be completely described, then the future cannot be completely predicted.

The whole problem may be restated differently: we cannot truly predict an event that we can control unless if we deliberately plan to bring it about. "If we could control it (e.g., an eclipse), we could not predict except contingently; just as we can predict a collision when we see two trains approaching on the same track – provided that a human being does not foresee the possibility and takes measures to avert its happening."²¹

The often expressed view (or hope) that indeterminacy and incomplete predictability is due to the incompleteness of our knowledge fails to consider that the knowledge required would include knowledge of the factors which shape the purposive decisions of acting individuals and governments. While it is possible to argue that there is no limit to our knowledge and that even human volition may one day be accountable in terms of neurology and physical laws, it is equally true that the search for an answer in terms of neurology may not give us greater certainty but may land us afresh into the uncertainty of the atom.²² But even if this particular hurdle could be overcome and

²⁰ The relationship between the observer and the observed is even more complex than the foregoing discussion indicates. Above all, it is a two-way relationship. Not only may the social scientist "disturb" the situation under observation but he may be "disturbed" by the situation. That is to say the efficiency of his observation may be influenced by his sentiments about the situation. Indeed, his reaction which may color his perception and cognition may be subconscious and may be not immediately apparent either to him or to others. O. Mannoni, *Prospero and Caliban* (New York, Frederick A. Praeger, 1956), p. 18. But whether apparent or not, the danger is always that where sentiments and emotions enter, "the conclusion precedes the premise not only historically but also logically... i.e., the premises are invented to give reasons for the conclusion." V. Pareto, *Mind and Society* (New York, Harcourt, Brace and Company, 1935), II, p. 788.

²¹ J. Dewey, *Social Science and Social Control*, in J. Ratner (ed.), *Intelligence in the Modern World* (New York, Modern Library, 1939), p. 953.

²² H. Margenau, "Physical versus Historical Reality," *Philosophy of Science* (July 1952), Vol. 19, p. 212.

if the causes of our action could become transparent, there would still remain the element of uncertainty due to the fact that the decision-making unit could discount the anticipation of its action and decide to act differently.

We hardly meet this dilemma of the indeterminacy and incomplete predictability of social processes by trying to convince ourselves that the indeterminacy is due to incomplete knowledge, or by withdrawing from any scientific preoccupation with the problem of social change, or by taking refuge in the certainty of mathematical models and linear constructs of development. Instead, it would be more realistic and fruitful to realize that incomplete determinacy and predictability in social affairs is not a sign of scientific bankruptcy. After all, nobody asserts that there is chaos in social processes. There are regularities in human affairs and there are organizing relationships in social systems. We defeat the goal of scientific discovery if we cling to the utopian notion that structure and cohesion in society are necessarily equivalent to complete determinacy and perfect predictability of social change. A social process (an event, a movement) may be incompletely predictable in the sense that its precise occurrence in time and its impact remain indeterminate, while the general direction of the development may be indicated with a high degree of accuracy. In a sense social inquiry faces difficulties and problems like those in the field of meteorology, where science also seems to be unable to take adequate account of the relative importance and influence of a great number of interacting variables. But while these difficulties put definite limits upon the possibilities of accurate prediction, they do not rule out general estimates of the direction of change.

4. The Importance of Real Types and Substantive Analysis

THE final question which confronts us concerns the degree of abstraction in integrated social inquiry. What kind of abstractions are appropriate and required for thinking in terms of social structures and functional interdependencies? To be more specific, how does one study complex social structures in which the interaction of elements of unequal strength brings about novel relationships and change the character of the social system? In

short, should our abstractions and symbolic representations be real types or fictitious constructs? Should our analysis be formal or substantive? We cannot hope to explore more than the surface of the problems posed by these questions. In doing so we hope to indicate at least the direction in which further research on the logic of integrated social inquiry may yield important results.

Until recently the tendency in many disciplines, especially in the natural sciences and pure economics, has been in the direction of greater rather than less abstraction; not only economics but other social sciences have tended to construct purely fictitious (ideal) models as a basis for their inquiries into the essential features and regularities of society. They seem to have done so for several reasons. First, there is, of course, the obvious and legitimate desire of the theorist to simplify and to concentrate on the so-called essential or strategic factors. Second, there is the old and increasing scepticism concerning the validity of sensory perception which does not disclose but rather conceals the physical underworld of the atom. We cannot trust our senses and the "data of our consciousness" in order to discover the "real."²³ Third, the construction of simplified mathematical models compels the scientist to define his basic concepts unambiguously and to make explicit the assumptions which underly his reasoning. Above all, such models make it possible to formulate determinate and precise conclusions – a desideratum which is in harmony with the sentiment of rationality of most investigators. A general trend toward greater abstraction for purposes of scientific inquiry would bring us ultimately to the point where all our concepts (and hence our theories) tend to become fictitious constructs or ideal types (to appropriate Max Weber's term but not necessarily his meaning²⁴). Such ideal types or constructs are not

²³ According to Einstein, "there is only one way from the data of consciousness to 'reality,' to wit, the way of conscious or unconscious intellectual construction. We happen to put more trust in these constructions than in the interpretations which we are making with reference to our sensations." A. Einstein, in Sir H. S. Samuel, *Essays in Physics* (Oxford, Basil Blackwell, 1951), p. 137.

²⁴ Weber's "ideal" types were essentially real types. They were empirical in origin and abstractions from reality. Even his concept of economic rationality and the abstraction of a Robinson Crusoe economy were intended to portray real historical conditions. For an opposite point of view, see W. Eucken, *The Foundations of Economics* (Chicago, The University of Chicago Press, 1951), pp. 347-349. See also A. C. Spiethoff (1953 and 1955) and J. W. N. Watkins (1953).

designed to be "true" representations of anything that is believed to exist anywhere. It is not even asserted that they refer directly to any actual phenomena. Hence, to say that our propositions are true or correct can mean only that it is hoped that they will turn out to be relevant and adequate for the comprehension, interpretation, and prediction of some parts of our experience.

In order to judge the fruitfulness of these ideal constructs and formal models for social inquiry it is important that their origin and purpose be kept in mind. For it is significant that the invention of nonempirical concepts and the construction of abstract models originated in and seems to be peculiarly relevant to the nonobservable and nonobserved world of the atom. In fact no other method except the free invention of fictitious models seems to be available for formulating hypotheses concerning this part of the physical universe. Furthermore, and this is the important point, the relevance and adequacy of the freely constructed models and postulates of mathematical physics rests precisely upon the preconceived notion of the essentially simple and consistent structure of a physical universe in which the relationships between various parts are constant. In the last analysis, the secret of the success of mathematical models in theoretical physics is in the structure of the cosmos – in the apparent constancy of the relationships between variables and the essential linearity of physical processes which suggested the construction of the mathematical models in the first place.²⁵ We believe that it is this essential harmony between the mathematical model and the actual structure of the cosmos which accounts for the fact that the freely invented model can again be connected with some parts of our experience. Thus, while these models are freely

²⁵ Thus Einstein attributed the origin and special usefulness of mathematical concepts for scientific discoveries in the physical sciences explicitly to the belief that natural phenomena are essentially simple and the realization of the simplest mathematical ideas: "I am convinced that we can discover by means of purely mathematical constructions the concepts and the laws connecting them with each other, which furnish the key to the understanding of natural phenomena. Experience may suggest the appropriate mathematical concepts, but they most certainly cannot be deduced from it. Experience remains, of course, the sole criterion of the physical utility of a mathematical construction. But the creative principle resides in mathematics. In a certain sense, therefore, I hold it true that pure thought can grasp reality, as the ancients dreamed." A. Einstein, *The World as I see It* (New York, Covici, Friede, Publishers, 1934), pp. 36–37.

invented, they are not merely the products of our fantasy but have counterparts in physical reality. The question which confronts the social sciences is precisely whether the assumption of a similar simplicity can be justified for social structures. We have advanced the reasons for a negative answer in the preceding section. We have shown that all social systems and social processes manifest a unique complexity and are in a constant process of flux. Nor are social structures marked by either linearity or constancy of relationships between the whole and the component parts. In the absence of such linearity and constancy of relationships, the construction and analysis of fictitious models may become an intellectual game with entities which have no existence outside our fantasy and hence no relevance for the comprehension of reality. Ideal constructs of great simplicity are inherently incapable of incorporating the reality of social action. Only by radically eliminating any concern with questions of actual human motivation and by ruling out all nonlinear relationships does the formal analysis of social processes achieve its apparently determinate solutions of theoretical problems. Neither the action patterns of individuals in custom-dominated pre-industrial societies, nor the behavior of consumer households under conditions of rapid change and deliberate manipulation of all standards and norms of consumption, nor the increasingly important collective action of various groups and political entities can be adequately accounted for in terms of formal constructs which impute rationality and maximization into decision-making, and disregard institutional behavior patterns and uncertainty.

However, the most important objection to the increasing use of freely invented constructs derives from the fact that they make it particularly easy to evade the empirical test and thereby contribute to the survival of false propositions in, and the progressive compartmentalization of, the social sciences. In the first place the more abstract the model, the easier it becomes to evade disproof by introducing simply *ad hoc* auxiliary hypotheses or by changing *ad hoc* a definition. Secondly, the more abstract our propositions, the greater the temptation to discount and disregard empirical evidence that bears adversely on the conclusions – a tendency which is greatly aided by the fact that the social

evidence is frequently abundant and rarely unambiguous and hence requires subtle interpretation.²⁶ The ease of evading the empirical test explains not only why certain theories in the social sciences never die but at best seem to fade temporarily into the background until they are revived again but also accounts for the much greater calamity that theoretical systems become self-sealing and closed. In the end abstractions may be pushed so far that they lose any relationship to particular social contexts. When this happens, we have reached the point where the theory is withdrawn from the scientific test altogether. This is, of course, the end of scientific inquiry and the very negation of the scientific or critical attitude.

We are thus led to the conclusion that the social scientist must be much more sceptical in his utilization of fictitious constructs and formal analysis than the physicist. If we are to follow the lead of our subject matter and if we want to circumvent the calamity of erecting self-sealing theoretical systems, we must deal with the actual problems of human behavior, human needs and social processes. Not the logical implications of the means-ends relationship and the formal problem of rational choice but the substantive problem of man's interaction with and dependence on his natural and cultural environment must be the point of departure and the goal of integrated social inquiry. Not freely constructed models but real types and concepts which retain their connection with the observable and observed phenomena of the world of experience must be the tools of an integrated social science. Ideal types and mathematical models are no substitutes for the substantive study of the complex interrelationships of social structures. Such substantive study must proceed in terms of real types which, far from being descriptive in the sense of a photographic reproduction of reality, are abstractions which remain, nevertheless, connected with the world of experience. Their "real" character stems from their connection with what is empirically given. They are derived from the observed regulari-

²⁶ We need hardly add that it is always logically possible either to refuse to acknowledge empirical evidence that bears adversely on our conclusions or to hold that "the discrepancy which is asserted to exist between the experimental results and the theory are only apparent and that they will disappear with the advance of our understanding." K. R. Popper, *The Logic of Scientific Discovery* (London, Hutchinson and Co., 1959), p. 50.

ties of the social process, which are, however, isolated from their historically unique and accidental context. What is retained for purposes of analysis are regularities as they are observed within the sociocultural context. There is a constant temptation to combine the substantive and the formal approach to the study of social affairs and to consider them complementary. And yet nothing could be more confusing and more harmful than to consider as complementary what are radically different kinds of approaches to social inquiry.²⁷

²⁷ For a more detailed analysis of the contrast between the formal and the substantive approach in the cognitive process in general see P. Tillich, *op. cit.*, p. 89. With special reference to economic analysis see M. Weber, *The Theory of Social and Economic Organization*, T. Parsons (ed.) (New York, Oxford University Press, 1947), pp. 35, 184-186 and 211-212; E. Egner, *Der Haushalt, Eine Darstellung seiner Volkswirtschaftlichen Gestalt* (Berlin, Duncker and Humboldt, 1952), pp. 144-154; K. Polanyi, "The Economy as Instituted Process," in K. Polanyi *et al.* (eds.), *Trade and Market in the Early Empires* (Glencoe, Ill., The Free Press, 1957), pp. 243-269.

CHAPTER XI

Toward a Science of Man in Society

I see the tasks of social science... to discover what kinds of order actually do exist in the whole range of the behavior of human beings; what kinds of functional relationships between different parts of culture exist in space and over time, and what functionally more useful kinds of order can be created.

R. S. LYND*

THE preceding chapter has dealt with the broader implications that the use of unifying conceptual frameworks have for the strategy of social inquiry. Instead of viewing social processes more or less in isolation, social inquiry focuses attention on the context in which all social events are embedded. Such a widening of the scope of social inquiry inevitably forces the social scientist to take note of and draw the methodological consequences from the existence of interlocking (i.e., structural) interdependencies which account for the typically cumulative or self-sustaining character of social processes. Closely connected with the cumulative character of social causation is the fact that social processes are likely to remain incompletely predictable – a fact which, as we have indicated, need not be considered as a sign of scientific bankruptcy. Finally, we have shown why social inquiry has to be substantive rather than formal and why it is necessary to stay closer to the facts by using “real” rather than “ideal” types and concepts.

We have thus reached the end of a discussion which started with an examination of the symptoms and causes of the departmentalization of social knowledge. In the course of a critical review of various approaches to the reconstruction of our social disciplines, we have endeavored to show why an integration of social inquiry can be achieved neither by imitating the physical and biological sciences through the use of analogies nor by historiography, interdepartmental cooperation, or logical empiri-

* R. S. Lynd, *Knowledge for What?* (Princeton, N.J., Princeton University Press, 1939), pp. 125-126.

cism or dialectical materialism. The reconstruction of social knowledge calls for the elaboration and judicious use of complementary unifying concepts or integrating frameworks in terms of which it would be possible to cope (both theoretically and practically) with the social problems of our time. The particular frameworks of man and culture which we have outlined in the preceding chapters were based upon the observed regularities of human behavior and the structural pattern of interaction characteristic of modern cultures.

The last and final task which confronts us in this concluding chapter is to set forth the ultimate promise and goal of an integration of social inquiry in terms of the common-denominator concepts of man and culture. We have to make explicit what we think is likely to be the outcome of the intellectual reconstruction of the social sciences envisaged here. Needless to say we cannot do more than draw a few inferences from the preceding discussion. In addition it may be worthwhile to indicate briefly what we believe to be the relationship of a science of man in society to specialized research on the one hand and to a scientific ethics on the other.

In the light of our discussion it must be clear that we cannot hope to deal successfully, either theoretical or practically, with social problems in terms of the narrow frameworks of the traditional academic disciplines. Neither economic nor political issues can be adequately dealt with as long as they are viewed solely as economic or political problems. The same holds true for such sociological problems as juvenile delinquency, racial discrimination, the problem of old age, or any other major social problem that confronts us today. The truth of the matter is that there are no purely economic or political problems in the real world. The unreal character of the problems which are traditionally defined as economic or political becomes evident as soon as we realize that we cannot distinguish, for instance, between economic and noneconomic satisfactions or between economic objectives and the search for power in international politics. Since there are no purely economic problems, there can be no legitimate boundary lines which separate economic analysis from the allied and related fields of social investigations.*

* There is no autonomous problem of economic growth and development.

If the specialized disciplines nevertheless insist that the traditional lines of demarcation be maintained and if they continue to view their respective subject matters as belonging to essentially autonomous institutional systems, they can do so only at the price of narrowing the scope of their analyses, or by defining their problems in a formal manner and by viewing them from a particular perspective. Almost inevitably the result will be that the preconceived perspective and method will determine the selection and definition of the problems to be investigated. Other problems which cannot be treated in this manner are likely to be ignored or shifted back and forth in the no-man's land between the disciplines. In short, instead of following the lead of the subject matter, the specialist – as we have indicated before – is inclined to investigate only selected aspects of social events from the perspective and with the aid of the particular methodology which the discipline has preselected for him as appropriate and proper.

Implicit in our whole attempt to look for common-denominator concepts is the conviction that the intellectual reconstruction of the social sciences cannot be left to any of the autonomous disciplines. Neither economics, nor political science, nor historiography can be expected, of and by themselves, to make major contributions to the unification of social inquiry and social knowledge. Historiography, although concerned with the question of how institutions and social structures have evolved, cannot hope to make such a contribution because the historical treatment of the emergence of a social institution and of an entire social structure does not automatically lead to an understanding of their contemporary functioning. The only disciplines that can claim to have made any headway in the analysis of social structures and institutional interdependencies are cultural anthropology, social psychology, and perhaps sociology. It is from these disciplines that we expect the greatest contribution to the emergence of an integrated science of man in society.

As soon as we try to ascertain why some countries are "underdeveloped" and others are not, we come upon interconnecting circles within a process of cumulative causation rather than purely "economic" factors such as scarcities or shortages. In short, the so-called problem of economic development turns out to be not an economic problem but a socio-cultural and political problem involving far-reaching structural changes.

However, it would be a mistake to think that the emergence of an integrated or unified science of man in society falls within the province of any of the presently existing social disciplines or depends upon the particular contributions which any such discipline is capable of making. Apart from the fact that it would probably be fatal if any existing discipline proceeded to assume this responsibility (any such attempt would immediately be suspect as a form of academic imperialism), such a procedure would always involve the imposing of unification from the outside. Such an imposition would run counter to the value commitments of science, which demand that we arrive at conclusions or truth not by persuasion or authoritarian prescription but by "finding" and examining (or testing) them in the light of evidence.

How then are we to envisage the emergence of a unified science of man in society? The answer can only be given if we consider once more the basic nature of social reality. We have left no doubt throughout our discussion that the essential characteristics of society are those of structural interdependence. Social structure is primary and from it all social inquiry must derive its basic scientific strategy. Once this realization is accepted and permitted to mold the general orientation of social scientists, there is no longer any danger that social research will degenerate into a series of meaningless, isolated, and trivial studies. By focusing attention on the interaction between the whole and the parts of the social system, the concept of social structure is likely to leave a similar impact on social analysis as did the new discoveries in the physical sciences which impressed upon the physicist the strategic importance of the whole. It is this feature of wholeness and its structural properties which must be given primacy over all other concepts, including that of causation which derives its meaning from the structure of the whole. Just as the mechanical theory of nature has lost its general and central relevance so too the time-honored principle of self-correction will be found to be only a partial theory, which, in many fields of investigation, has blocked rather than furthered our understanding of social processes in their circular interaction and their tendency toward cumulative movements in the same direction. As soon as the search for levels of equilibrium is supplemented or replaced by the study of cumulative social causation, there

will open up before our eyes a vast array of processes which the older and narrower "net" of concepts and theories was never able to catch.

The acceptance of the concept of social structure and the common conceptual frameworks of man and culture would make for a new systematization of the materials commonly studied by independent disciplines. In this way, hitherto isolated and independent subject matters and partial institutional systems will be shown to be subject to much greater order and logical coherence than the independent social disciplines could have ever hoped to discover in the light of their partial and autonomous networks of concepts and theories. Thus, the integrating concepts of man and culture would not merely act as organizing principles for a mass of data hitherto thought to be unrelated but would prepare the ground for a general simplification of our explanatory theories. Indeed, by showing that events formerly thought to be unrelated can actually be accounted for in terms of a more general theory and by reducing numerous *ad hoc* explanations of social phenomena viewed in isolation to one or two general principles, we not only unify our theories but simplify and hence improve them. Thus, as we have pointed out earlier, the widening of our conceptual frameworks helps us to restore order within and between various branches of knowledge and thus serves the general purpose of scientific discovery: to provide a more and more coherent representation of reality.¹

It goes without saying that the use of common conceptual frameworks and the acceptance of social structure as the generic and key concept of social inquiry would bring the social disciplines closer together. By making it clear that all social analysis deals with events and processes which occur within a broader and indeed unitary context, scholars working on special problems are forcefully reminded of the essential unity of their subject matter and come to see their special problems within the broader social context. In this way and not by imposition from the

¹ "As a science matures, its theories reduce in number but broaden in scope.... This integrating tendency, as it progresses, not only within a given science but also among its bordering disciplines, gives substance to the hope of an eventually unified science and a richer understanding of ourselves and the world." R. F. Hefferline, *Dynamic Structure in Human Behavior, Main Currents in Modern Thought* 1955, Vol. XI, p. 116.

outside, lines of communication and real cross-fertilization will become possible and will actually take place. The traditional division of labor will then no longer block the way to interdisciplinary cooperation but will give rise to a tendency toward a general unification of scientific endeavors and results. In short, it is the unity of the subject matter and of the results of scientific research which will bring the social sciences closer together and induce social scientists to push their researches to the point where the present compartmentalization is replaced by a unified science of man in society. The ultimate hope for such a unified social science is based upon the belief that it will be possible to relate systematically and unambiguously in terms of a relatively simple and economical set of ordering principles what so far has been considered as separate and unrelated.

Are we then to understand that the emergence of such a science of man in society means the end of autonomous social disciplines, and imposes upon the social scientist of the future the obligation to master the whole field of social inquiry with all and everything that has ever been written in what are now independent fields of research? Upon the answer to these questions may well depend the future of an integrated social science. For if integration calls for mastery of the entire field of social research, it may indeed place an impossible burden upon the individual social scientist and invite an amateurish dilletantism. Such fears, however, are unjustified. While a unified science of man in society implies the end of autonomous social disciplines for which there was never any justification in the first place, it leaves ample room for a division of labor and specialization in scientific work. Indeed, there is no need for everybody to master everything that has ever been written or to concern himself with every social problem. There can and must be specialization. In fact, there will be experts who devote themselves to the full-time study of particular problems but such specialization will be in accordance with the nature of the problems under investigation. Instead of studying merely separate aspects of vital social problems from the perspective of a particular discipline as in the past, the social scientist trained in the techniques of integrated social analysis is committed not only to view the problems within the social context but to follow his problems wherever they

may lead. To repeat, what determines the scope of specialized social research is no longer what an autonomous social discipline decrees as the proper study of economics or politics but rather the nature of the problem. If the nature of the problem calls for historical treatment or an anthropological investigation, this will have to be done. However, the social scientist who has decided to specialize in a particular problem area will be well advised to ignore all traditional boundaries and instead to master ideas and methods that happen to be relevant for the solution of the problem under consideration. Instead of limiting his analysis to those aspects which can be dealt with only in the narrow confines and canons of accuracy of an autonomous discipline, he will have to acknowledge that the strategy of scientific inquiry demands that no evidence which may be relevant to the problem at hand be excluded. As J. M. Clark reminded us more than thirty years ago "this comprehensiveness is scientific even if it involves some sacrifice of other qualities for which science likes to strive."²

Specialization in problems or problem areas rather than along the lines of pre-selected perspectives, aspects, or methodologies in no way demands the sacrifice of the canons of serious scientific work. On the contrary, they are called for by the requirements of the scientific method and the discipline of science. We may still see the day when the term dilettante and amateur refers to those who insist upon viewing social problems in isolation from their social context and are willing to analyze models with linear relationships without reference to the social space or time (or sociocultural environment) in which such relationships may actually occur.

Nothing in the foregoing account should be understood to imply that the emergence of a unified science of man in society will occur automatically. On the contrary, there are serious difficulties which are likely to stand in the way of an integration of social inquiry and social knowledge. These obstacles and difficulties are deeply ingrained in the conduct of specialized research along the lines of our traditional academic disciplines. In fact, they are institutionalized in our educational system, where they

² J. M. Clark, "The Socializing of Economics," in R. Tugwell (ed.) *The Trend of Economics* (New York, Appleton-Century-Crofts, 1930), pp. 74-75.

are powerfully entrenched and determine the manner in which we train social scientists. This educational process, as we should expect, is cumulative and self-sustaining. Here as elsewhere in social processes the chain of causation is circular. It runs from graduate schools to the undergraduate college and back again to graduate training. Graduate schools train specialists along the traditional lines of dominant schools in the academic disciplines. Undergraduate training is dominated by the one-discipline textbook prepared by those who receive their advanced (specialized) training in the graduate school. Throughout this circular process the emphasis is placed on the training of specialists and not upon the integration of social knowledge and social inquiry. The process is also self-sustaining because teaching positions in undergraduate schools call for specialization which is, in itself, the result of the training of the scholars who write the textbooks that have to be taught. Once under way, the movement becomes circular and self-supporting.

This cumulative process of training in the social sciences also accounts for the fact that various attempts to institute integrated social science courses in American colleges and universities have left little impact. Many of these courses are in difficulties precisely because they cannot be staffed adequately by the members of the traditional academic departments who received their training as specialists in autonomous disciplines and who must look for their academic recognition and advancement in traditional departments. This explanation of the current decline of general social science courses does not deny the validity of the criticism that has frequently been advanced against them. In many instances these interdisciplinary courses in "general education," as they are significantly called, have never aimed at a systematic integration. The courses were either dominated by the concept and methods of one or another discipline and then quickly degenerated into academic imperialism, or the whole interdisciplinary effort exhausted itself in the collation of information in roughly equal amounts from different social disciplines represented on the campus. Such emphasis on the acquisition of a smattering of information from all the social sciences is not integration but interdepartmentalism at its worst. Here again the institutionalized obstacles and difficulties are corroding an

effort that could have the most far-reaching effect on the training of social scientists if it were properly conceived, organized, and supported.³

Work in integration and efforts aimed at the emergence of a unified science of man in society calls for a concerted and full-time effort at all levels of learning and research. What is required is something that might be called "specialization in integration." Such specialized research in integrative studies would have to concern itself with an interdisciplinary exploration of such fundamental concepts as social context, social structure, social process, social causality, social law, social reality, social action, and time and space, to name only a few. It would aim at an understanding of the similarities and differences between the physical, biological, and social sciences. New findings and new concepts in the physical and biological sciences need to be examined with reference to their possible implications for the social sciences. This work has to be undertaken by scholars working outside the narrow grooves of traditional "autonomous" academic disciplines. Indeed, it would require the full time commitment of scholars trained in several disciplines.⁴ But above all we need to reform our graduate and undergraduate curricula with a view to breaking the circular process which at present trains specialists who, for all practical purposes, study models of partial systems such as the economy or the political structure without reference to the specific broader socio-cultural environment of which these systems are integral parts.

In addition, a unified science of man in society holds out the promise of overcoming many of the shortcomings of specialized knowledge which have crippled the usefulness of such knowledge as a tool for the improvement of the human situation. By replacing the fragmentary view of social reality, a comprehensive

³ Another case in point are foreign area courses. Here too domination of the conduct of the courses by one discipline (usually history) or the mechanical collation of information from several disciplines is in danger of defeating an educational effort at reform which possesses considerable educational potentialities for the integrative analysis of foreign cultures as a whole and at a distance.

⁴ On this whole question see E. Kahler, *The Tower and the Abyss*, (New York, George Braziller, 1957), pp. 265-266. Kahler advocates the establishment of permanent centers for integrative studies devoted 1) to the interdisciplinary clarification of basic concepts; 2) the evaluation of the findings of any one discipline with regard to their implications for other disciplines; and 3) the elaboration of 'strategic hypotheses' for the advancement of social knowledge and the improvement of social institutions.

view of man in society would foster a rational or critical attitude toward social reality, social institutions, and society. Instead of withdrawing into "objective" neutrality and directing their critical judgment only against institutions and societies which happen to be on the other side of the various imaginary "curtains" of the cold war, social scientists on both sides of these "curtains" will be called upon to subject the *status quo* of their own institutions and their society to the empirical and pragmatic test.

Furthermore, by stating their problems in a substantive and unambiguous manner, social scientists could advance unambiguous answers and definite propositions which can be critically discussed and refuted. Indeed, a unified science of man in society would invite the refutation of its theories and would welcome the detection of error as a challenge and an opportunity because, above all, it is committed to the values and discipline of science and the rational attitude. It knows no higher authority than that of the scientific test.

Finally, a unified science of man in society would have to reject such traditional dualisms as those of science and ethics, matter and mind, ends and means, facts and values. It would have to reject the traditional insistence that ethical judgments and norms derive their validation from a separate world of knowledge or a super-natural authority. Values and ethical standards have their origin in history. They are manifestations of human nature and social life; in short, they are social questions which can be decided in terms of evidence and disciplined research into the consequences of different ethical standards. Their ultimate validation depends upon a scientifically established theory of man. Far from denying the possibility of a scientific treatment and validation of rules of conduct, the reconstruction of social knowledge here envisaged would make it possible and necessary to extend the scientific test to moral and ethical questions. In other words, it calls for a critique of rules of conduct in terms of their empirical (observable) consequences. In this sense an integrated science of man in society will serve as the scientific foundation for the rational analysis and appraisal of ethical standards of conduct with a view to bringing about their modification whenever it is possible to demonstrate that they have unintended, unwanted, or destructive consequences.

Thus, by subjecting our institutions and rules of conduct to the scientific test and the sanction of reason, the science of man in society would also open the way to an understanding of the causes of individual and social maladjustments. It would thus live up to the Baconian ideal that knowledge can be and must be a tool of human and social improvement. In the last analysis it is this knowledge of human nature and man's role in society which gives man his unique position in nature and may make him, as Huxley has suggested, an agent of all future social and biological evolution rather than the puppet of blind fate and the willing or unwilling subject of a super-natural power.⁵

To conclude, the idea of a unified science of man in society supports the fundamental optimism of modern science without succumbing to the utopian illusion that the prospects of human survival and progress are necessarily secure. Only the optimism generated by the scientific-rational attitude can save us from the logical fallacy of the romantic pessimist who decries as futile any ameliorative social action on the ground either that the human situation is tragic or because man is believed to be the powerless victim of inevitable and cataclysmic waves of the future. Against this dehumanizing pessimism, which favors an attitude of inactive nihilism and despair, an integrated science of man in society supports a fundamental belief in man's capacity to apply reason and the method of science to the amelioration of the conditions of human existence. It may be true that the human situation, in its individual aspects, is inevitably bound up with existential anxiety and ultimate loneliness. And yet, if our individual condition is tragic, it does not follow that our social condition is tragic and preordained by fate. There is much in our social condition which can be improved and against which we would be less than human not to struggle.⁶

In this way then, the science of man in society would reverse the general trend toward the "dehumanization" of social inquiry which regards social processes as subject to natural forces over which man has but little control. While this dehumanization is the ultimate outcome of the departmentalized and formal analy-

⁵ J. Huxley, "Man's Place and Role in Nature," in L. Leary (ed.), *The Unity of Knowledge*, (New York, Doubleday and Company, 1955), p. 95.

⁶ C. P. Snow, "The Two Cultures and the Scientific Revolution," *Encounter* (June 1959), Vol. XII.

sis of models of autonomous fictitious systems, an integrated social science would make man and human needs both the starting point and the intellectual center of its scientific preoccupations. Indeed, by making man and his essential needs for the first time the measure of our institutional arrangements and moral standards, a unified science of man in society would be one of the most important steps in the direction of a true scientific humanism that will be capable of humanizing not only social inquiry but human society as well.

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