

Foundations of Social Theory

JAMES S. COLEMAN

*The Belknap Press of Harvard University Press
Cambridge, Massachusetts, and London, England*

Contents

Preface	xv
1. Metatheory: Explanation in Social Science	1
Explanation of the Behavior of Social Systems	2
Components of the Theory	11
Conceptions of the Relations between Micro and Macro Levels	21
 <i>Part I / Elementary Actions and Relations</i>	
2. Actors and Resources, Interest and Control	27
The Elements	28
Structures of Action	34
Social Exchange	37
Simple and Complex Relations	43
3. Rights to Act	45
What Are Rights?	49
How the Free-Rider Problem Is Reduced for Rights	53
How Does New Information Bring About a Change in the Allocation of Rights?	54
How Does a Right Change Hands?	57
Who Are the Relevant Others?	58
How Are Rights Partitioned, and How Might They Be?	59
4. Authority Relations	65
The Right to Control One's Own Actions	67
Vesting of Authority	69
Conjoint and Disjoint Authority Relations	72
Transfer of One Right or Two: Simple and Complex Authority Relations	81
Limitations on Authority	82
Slavery	86
Authority without Intentional Exercise	88

5. Relations of Trust	91
The Placement of Trust	97
Actions of the Trustee	108
Multiple Trustors and Public-Goods Problems	115
 <i>Part II / Structures of Action</i>	
6. Systems of Social Exchange	119
What Is Money?	119
Media of Exchange in Social and Political Systems	124
Exchanges within Systems	131
7. From Authority Relations to Authority Systems	145
The Law of Agency	146
Sympathy and Identification: Affine Agents	157
Simple and Complex Authority Structures	162
The Internal Morality of an Authority System	172
8. Systems of Trust and Their Dynamic Properties	175
Mutual Trust	177
Intermediaries in Trust	180
Third-Party Trust	186
Large Systems Involving Trust	188
9. Collective Behavior	197
General Properties of Collective Behavior	198
Escape Panics	203
Bank and Stock Market Panics	215
Acquisitive Crazes	218
Contagious Beliefs	219
Hostile and Expressive Crowds	220
Fads and Fashions	230
Influence Processes in Purchasing Decisions, Voting, and Public Opinion	237
Specific Predictions about Collective Behavior	239
10. The Demand for Effective Norms	241
Examples of Norms and Sanctions	245
Distinctions among Norms	246
The First Condition: Externalities of Actions and the Demand for a Norm	249
What Constitutes Social Efficiency?	260
Systems of Norms	265

11. The Realization of Effective Norms	266
An Action-Rights Bank	267
Social Relationships in Support of Sanctions	269
Free Riding and Zeal	273
Heroic versus Incremental Sanctioning	278
How Are Sanctions Applied in Society?	282
Emergence of Norms about Voting	289
Internalization of Norms	292
12. Social Capital	300
Human Capital and Social Capital	304
Forms of Social Capital	304
Relative Quantities of Social Capital	313
The Public-Good Aspect of Social Capital	315
The Creation, Maintenance, and Destruction of Social Capital	318
 <i>Part III / Corporate Action</i>	
13. Constitutions and the Construction of Corporate Actors	325
Norms and Constitutions	325
Positive Social Theory	344
Change in a Disjoint Constitution: American High Schools	349
An Optimal Constitution	352
Who Are the Elementary Actors?	367
14. The Problem of Social Choice	371
Partitioning of Rights to Indivisible Goods	371
Constitutional Issues in Partitioning Rights to Control Corporate Actions	374
Intellectual Puzzles concerning Social Choice	376
Emergent Processes and Institutions for Social Choice	381
Ethical Theory: How to Determine the Right Action	384
Executive Decision Making	387
Community Decision Making and Conflict	390
Characteristics of Noninstitutionalized Social Choice	394
15. From Individual Choice to Social Choice	397
The Problem of Independence from Irrelevant Alternatives	398
Tournaments as Institutions for Social Choice	403
Multi-Stage versus Single-Stage Processes for Social Choice	405
The Nature of Rights in Social Choice	414

16. The Corporate Actor as a System of Action	421
Weberian Bureaucracy in Theory and Practice	422
The Formal Organization as a Specification of Transactions	425
Modes of Maintaining Viability in Formal Organizations	426
Explicit and Implicit Constitutions	435
Structures That Link Interest and Control	442
General Principles for Optimizing the Corporate Actor's Internal Structure	446
The Changing Conception of the Corporation	448
17. Rights and Corporate Actors	451
Allocation of Corporate Rights and the Public-Goods Problem	451
Exercise and Exchange of Rights	452
The Drift of Power toward Actors Having Usage Rights	456
Withdrawal of Usage Rights through Voice and Exit	463
18. Revoking Authority	466
Theories of Revolution	468
Comparative Macrosocial Research: Inequality, Economic Development, and Repressiveness	486
Ideology in Revolutions	487
A Theoretical Framework of Revolution	489
19. The Self	503
Problems Inherent in a Unitary Actor	504
Functional Components of the Self	507
The Dual Role of Interests	509
Processes of Change inside the Actor	515
Corporate Actors' Changes in Self	527

Part IV / Modern Society

20. Natural Persons and the New Corporate Actors	531
Individual Sovereignty	531
Changing Conceptions of Sovereignty	532
Emergence of Corporate Actors in Social Organization and Law	534
Examples of Interactions of Natural Persons and Corporate Actors	542
Types of Interactions Involving Corporate Actors and Persons	546
Displacement of Nature by Human Constructions	552
21. Responsibility of Corporate Actors	553
Responsible Actions of Natural Persons	556
Social Origins of Corporate Responsibility	558

Internal Changes and Corporate Responsibility	560
Tax Laws and Social Norms	573
Free-Rider Problems for Corporate Responsibility	574
Corporate Responsibility in Sum	575
What Conception of the Corporation Is Best for Natural Persons?	577
22. New Generations in the New Social Structure	579
The Conflict between the Family and the Corporation	579
Distribution of Income to Children in the New Social Structure	587
Consequences of the New Social Structure for Social Capital	590
The Direct Impact of the Two Social Structures on the Next Generation	597
23. The Relation of Sociology to Social Action in the New Social Structure	610
The Social Role of Social Theory	611
The World of Action and the World of the Discipline	615
The Structure of Society and the Nature of Applied Social Research	616
Applied Social Research and the Theory of Action	626
What Should Applied Social Research Be Like?	645
What Research Is Missing?	647
24. The New Social Structure and the New Social Science	650
The Replacement of Primordial Social Capital	652
Independent Viability, Global Viability, and Distribution in the New Social Structure	655
Modes of Organizing Action	658
Nation-States versus Multinational Corporations, or Voice versus Exit	660
The New Social Science	663

Part V / The Mathematics of Social Action

25. The Linear System of Action	667
Two-Person Exchange System with Divisible Goods	670
Restrictions on the Utility Function	674
Beyond a Two-Person System of Action	680
The Competitive Equilibrium and the Linear System of Action	681
Further Derivations and Use of the Model	687
Economic and Psychological Properties of the Utility Function	693
Open Systems	695
Appendix: An Iterative Method for Solving for r or v Given X and C	698

26. Empirical Applications	701
Estimation of Value with Perfect-Market Assumptions	702
Estimation of Value When There Are Two Resources and More Than Two Actors	703
Estimation of Value When There Are More Than Two Resources	709
Arbitrary Zero Points for Resources	711
Sampling and the Importance of the Population and Resource Distributions	715
Estimation of Interests	717
27. Extensions of the Theory	719
A Perfect Social System	719
Psychic Investment	721
Dependence of Events	722
Partitioned Systems of Action	725
Losses in Exchange between Actors and between Resources	729
28. Trust in a Linear System of Action	747
Introducing Mistrust into a System	750
Lack of Complete Trust in Larger Systems	756
29. Power, the Micro-to-Macro Transition, and Interpersonal Comparison of Utility	769
Interpersonal Comparison	769
Cardinal Utility	778
Power, through a Market and Otherwise	781
30. Externalities and Norms in a Linear System of Action	785
When Will Actions Having Externalities Be Taken? The Coase Theorem Revisited	787
Externalities and Level of Affluence	796
What Is Meant by Efficiency?	799
The Rationality of Norms	800
31. Indivisible Events, Corporate Actors, and Collective Decisions	829
When Will Control of Events Be Collectivized?	829
The Constitutional Stage	830
The Postconstitutional Stage	844
Social Choice by Various Decision Rules	856
Conflict	869

32. Dynamics of the Linear System of Action	874
Exchange with Two Actors and Two Resources	875
Change in Resources Held by One Actor	878
Movement of a Resource among Actors	885
Logical Constraints on Transition Rates in Pairwise Exchange Systems	887
A Description of the Path of Values: Walrasian Adjustment	889
Dynamics of Systems with Social-Structural Barriers	892
How Do Power of Actors and Values of Events Change?	895
33. Unstable and Transient Systems of Action	899
Single-Contingency and Double-Contingency Collective Behavior	901
Transfer of Control in Single-Contingency Panics	903
Double-Contingency Panics	911
Evolution of Strategies	931
34. The Internal Structure of Actors	932
Event Outcomes as Actions of a Corporate Actor	933
Corporate Outcomes and Public-Good Problems	937
The Value of Resources and the Interests of a Corporate Actor	939
Subjective and Objective Interests of a Corporate Actor	941
The Internal Structure of Persons as Actors	946
References	951
Name Index	973
Subject Index	979

*Metatheory:
Explanation in Social Science*

A central problem in social science is that of accounting for the functioning of some kind of social system. Yet in most social research, observations are not made on the system as a whole, but on some part of it. In fact, a natural unit of observation is the individual person; and in the development of quantitative methods of research, the dependence on individual-level data—most often interviews, but sometimes administrative records of behavior, direct observation, or other forms of data—has increased greatly. This has led to a widening gap between theory and research: Social theory continues to be about the functioning of social systems of behavior, but empirical research is often concerned with explaining individual behavior.

This focus on individual behavior as the thing to be explained is not completely misplaced in social science. Much of contemporary social research focuses on explaining individual behavior. Voting behavior, consumer choice, occupational choice, attitudes, and values are all taken as phenomena to be explained. Factors used in explanation include both characteristics of the individuals being studied and characteristics of their social environments, ranging from family to friends to larger social contexts. One method of explanation in sociology is statistical association, used in much quantitative research aimed at explaining individual behavior and ordinarily based on samples of individuals who differ both in the behavior to be explained and in characteristics which are potential sources of explanation of that behavior.

A second method of explanation, used in both qualitative and quantitative research, depends on examining processes internal to the individual. Sometimes knowledge of these processes is arrived at through introspection or sympathetic understanding on the part of the observer; sometimes it is arrived at through quantitative monitoring of changes within the individual, as is done in some branches of psychology. In principle, these observations may be carried out with only a single individual.

These two modes of explanation differ in more than method. The former uses as explanatory factors principally factors external to the individual or factors characterizing the individual as a whole. The latter uses principally factors internal to the individual and focuses on processes through which these internal changes lead to behavior.

I will have more to say about explanation of individual behavior later in this book, for it bears a more complex relation to social theory than is immediately apparent. At this point, however, I want merely to note that the focus on explaining individual behavior, found in much social research, often leads away from the central problems of social theory, which concern the functioning of social systems.

Explanation of the Behavior of Social Systems

The principal task of the social sciences lies in the explanation of social phenomena, not the behavior of single individuals. In isolated cases the social phenomena may derive directly, through summation, from the behavior of individuals, but more often this is not so. Consequently, the focus must be on the social system whose behavior is to be explained. This may be as small as a dyad or as large as a society or even a world system, but the essential requirement is that the explanatory focus be on the system as a unit, not on the individuals or other components which make it up.

As with the explanation of individual behavior, there are two modes of explanation of the behavior of social systems. One depends on either a sample of cases of system behavior or observation of the behavior of the system as a whole over a period of time. The analytical methods are based on statistical association between the behavior of interest and other characteristics of the social system as the context for that behavior. An example of research involving a sample of cases is factor analysis, sometimes carried out at the level of nations to account for political change or economic development. An example of research involving observation of a system over a period of time is the "natural history" approach in sociology or business cycle analysis applied to aggregate economic data (see, for example, Burns and Mitchell, 1946).

A second mode of explanation of the behavior of social systems entails examining processes internal to the system, involving its component parts, or units at a level below that of the system. The prototypical case is that in which the component parts are individuals who are members of the social system. In other cases the component parts may be institutions within the system or subgroups that are part of the system. In all cases the analysis can be seen as moving to a lower level than that of the system, explaining the behavior of the system by recourse to the behavior of its parts. This mode of explanation is not uniquely quantitative or uniquely qualitative, but may be either.

This second mode of explanation has certain points to recommend it, as well as certain special problems. Because this is the mode of explanation I will use throughout this book, it is useful to list some of the points that favor its use before turning to its major problem. In order to have a label to designate this mode, I call it the internal analysis of system behavior.

Points Favoring the Internal Analysis of System Behavior

1. A major problem of data adequacy exists in confirmation of theories based on system-level data when the systems are large in size and few in number. There are too many alternative hypotheses which cannot be rejected by the data. In part for this reason, research data in the social sciences are often gathered at the level of units below the level of the system whose behavior is of interest. Perhaps the most common point of observation is the individual, whether by interview, direct observation, or another method. Much sociological research is based on sample surveys of individuals, and nearly all demographic research is based on individual-level data. Data used in the study of economic systems are ordinarily gathered from individual firms and individual households, though the data are often aggregated before being used in research.

Because data are so often gathered at the level of individuals or other units below the level of the system whose behavior is to be explained, it is natural to begin the explanation of system behavior by starting at the level at which observations are made, then "composing," or "synthesizing," the systemic behavior from the actions of these units.

2. Just as observations are often most naturally made at levels below that of the system as a whole, interventions must be implemented at these lower levels. Thus a successful explanation of system behavior in terms of the actions or orientations of lower-level units is ordinarily more useful for intervention than is an equally successful explanation which remains at the level of the system itself. Even where an intervention is at the level of the system, such as a policy change made by a nation's government, its implementation must ordinarily occur at lower levels, and that implementation is what determines the consequences for the system. Thus an explanation of system behavior which goes down as far as the actions and orientations of those who will implement the policy is likely to be more useful than one which does not.¹

3. An explanation based on internal analysis of system behavior in terms of actions and orientations of lower-level units is likely to be more stable and general than an explanation which remains at the system level. Since the system's behavior is in fact a resultant of the actions of its component parts, knowledge of how the actions of these parts combine to produce systemic behavior can be expected to give greater predictability than will explanation based on statistical relations of surface characteristics of the system. This need not be so, of course, if the surface characteristics are quite proximate to the behavior to be explained. In meteorology, for example, predictions based on immediately prior weather conditions in the vicinity may be better than predictions based on interactions among many component parts (various air masses and land and water

1. Schultze (1977) gives a number of examples in which a statutory change at the level of the federal government, not based on a theory or understanding of the orientations of those responsible for implementation of the statute, had consequences quite different from those intended.

surfaces). Similarly, macroeconomic predictions based on leading indicators having known statistical association with subsequent system performance may give better predictions than will economic models based on interactions among parts of the system. These illustrations, however, depend both on the incompleteness of the explanation (or "theory") based on internal processes and on the proximity of the system-level indicators. As the latter become less proximate, their predictive value falls off rapidly.

4. As point 3 suggests, an internal analysis based on actions and orientations of units at a lower level can be regarded as more fundamental, constituting more nearly a theory of system behavior, than an explanation which remains at the system level. It can be said to provide an understanding of the system behavior which a purely system-level explanation does not. Still, this raises the question of what constitutes a sufficiently fundamental explanation. Is it any explanation that goes down to a level of units below that of the system itself? Is it one that goes down to the level of the individual person? Is it one that does not stop at the level of the person but continues below that level?

I will not attempt to answer this question in general, except to say that point 2 provides a satisfactory criterion in practice. That is, an explanation is sufficiently fundamental for the purpose at hand if it provides a basis for knowledgeable intervention which can change system behavior. Later I will suggest that a natural stopping point for the social sciences (although not psychology) is the level of the individual—and that, although an explanation which explains the behavior of a social system by the actions and orientations of some entities between the system level and the individual level may be adequate for the purpose at hand, a more fundamental explanation based on the actions and orientations of individuals is more generally satisfactory. For example, an analysis of the functioning of an economic system based on the actions and orientations of firms and households may be quite satisfactory, but for other purposes those actions and orientations of the firms and households must be explained in terms of the actions and orientations of individual persons who play some part in controlling them.

5. The internal analysis of system behavior is grounded in a humanistically congenial image of man. This cannot be said for much of social theory. For many social theorists social norms are starting points of theory. The image of man demanded by a theory that begins at the level of social systems is *homo sociologicus*, a socialized element of a social system. The questions of moral and political philosophy which address the fundamental strain between man and society cannot be raised. The freedom of individuals to act as they will, and the constraints that social interdependence places on that freedom, nowhere enter the theory. Problems of freedom and equality cannot be studied. Individuals as individuals enter only via their conformity to or deviance from the normative system. With this image of man as a socialized element of a social system, it becomes impossible, within the framework of social theory, to evaluate the actions of a social system or a social organization. Germany under Hitler or

Russia under Stalin is indistinguishable as a nation-state from Switzerland in any evaluative sense, and Charles Manson's and Jim Jones's communes, which were directed toward death, are morally indistinguishable from an Israeli kibbutz, which is directed toward life. This is especially curious, since many sociologists hold values that sharply distinguish among social organizations on the basis of humanitarianism yet are content with social theory that blinds them to these very values—a stance which probably derives more from intellectual superficiality than from any lack of moral righteousness.

There is, of course, a reaction against social theory which begins at the level of a social system and against the image of man it presents, both within social science and outside it. The wide popularity of works by social scientists and others that explicitly open the question of human freedom (*Escape from Freedom* [Fromm, 1941], *The Lonely Crowd* [Riesman, Glazer, and Denney, 1953], and *The Organization Man* [Whyte, 1956]) and the question of human rights and the alienation of those rights (the works of Marx, Engels, and Marcuse) indicates the importance of these questions to persons in society.

The theory presented in this book is, as suggested above, not unique among social theories in taking individuals as its starting point. The problems it addresses are, however, just as close to those raised by the seventeenth- and eighteenth-century political philosophers Hobbes, Locke, and Rousseau as they are to questions dealt with by much of current social theory. More than any other single question, this theory addresses the question of the peaceful coexistence of man and society, as two intersecting systems of action.

A Note on Methodological Individualism

Those readers familiar with debates and discussions on methodological holism and methodological individualism will recognize that the position taken above on explanation is a variant of methodological individualism. But it is a special variant. No assumption is made that the explanation of systemic behavior consists of nothing more than individual actions and orientations, taken in aggregate. The interaction among individuals is seen to result in emergent phenomena at the system level, that is, phenomena that were neither intended nor predicted by the individuals. Furthermore, there is no implication that for a given purpose an explanation must be taken all the way to the individual level to be satisfactory. The criterion is instead pragmatic: The explanation is satisfactory if it is useful for the particular kinds of intervention for which it is intended. This criterion will ordinarily require an explanation that goes below the level of the system as a whole, but not necessarily one grounded in individual actions and orientations. This variant of methodological individualism is perhaps closest to that used by Karl Popper in *The Open Society and Its Enemies* (1963), although Popper is primarily concerned with explanation of societal-level phenomena, rather than behavior of social systems of any size.

The Major Problem

The major problem for explanations of system behavior based on actions and orientations at a level below that of the system is that of moving from the lower level to the system level. This has been called the micro-to-macro problem, and it is pervasive throughout the social sciences. In economics, for example, there is microeconomic theory and there is macroeconomic theory; and one of the central deficiencies in economic theory is the weakness of the linkage between them, a weakness papered over with the idea of "aggregation" and with a ubiquitous concept in macroeconomic theory, that of the "representative agent."

In this section I will show some of the problems involved in making a proper micro-to-macro transition, point to some instances where the transition has been correctly made, and indicate steps toward making the transition correctly in some areas where this has not been successfully done.

MAX WEBER AND THE SPIRIT OF CAPITALISM To show something about what is involved in making a proper micro-to-macro transition, I will turn first to an instance in which it was not made properly. This example is a classic in sociology, Max Weber's *The Protestant Ethic and the Spirit of Capitalism* (1958 [1904]).

At one degree of detail, Weber is simply expressing a macrosocial proposition: The religious ethic which characterized those societies that became Protestant in the Reformation (and particularly those that were Calvinistic) contained values that facilitated the growth of capitalist economic organization. Diagrammatically, the proposition can be put as shown in Figure 1.1. This proposition, if there were nothing more, would exemplify the first mode of explanation described earlier, which remains at the level of the system. For any degree of confirmation the proposition would require one of two kinds of evidential basis. One would be a systematic comparison of the economic systems of Protestant and non-Protestant societies to determine if the former were more likely to be capitalist. A second basis would be an examination over time of the economic organization of societies which became Protestant, to determine whether capitalism developed shortly after the advent of Protestantism. Weber presents evidence of both these sorts, comparing countries according to their religious composition and the degree and timing of their capitalist development. This evidence, however, is far from conclusive, and Weber does not base most of his effort on it.

The deficiencies of this approach are among the points described earlier as favoring internal analysis. The empirical deficiencies (point 1 given earlier) are probably the most glaring: The societies that can be compared are few in number, and those in which capitalism developed most rapidly differed not only in



Figure 1.1 Macrosocial proposition: Calvinism encourages capitalism.

religion but in many other ways as well. Statistical comparisons would be subject to many different interpretations, *even if* the association between Protestantism and capitalism were high.

But Weber does not remain with this proposition alone. He examines the content of Calvinist doctrine, in particular, the kind of moral prescriptions it imposes on its adherents. Then he examines the "spirit" of modern capitalism and, using a number of other periods and other economic institutions for comparison and contrast, singles out the idea of diligence in performing one's duty in a calling (p. 54) and opposition to traditionalism (pp. 58–63) as the central elements which distinguish it. Finding the same antitraditionalist orientation and the same precept of diligence toward one's calling in Calvinist doctrine, he uses this as evidence that the growth of this religious doctrine provided the value system which allowed capitalism to develop. This second kind of evidence allows further specification of the relation shown in Figure 1.1. The content of the Protestant ethic can be described as values deriving from the religious beliefs of a society, and the content of what Weber calls the spirit of capitalism can be described as values governing the economic activities of the society. These values are two components of the value system of a society, governing activities in two different institutional areas.

When Weber's thesis is seen in this way, some of its vulnerabilities to criticism become apparent. A major criticism, expressed by Tawney (1947) as well as others before and since, is that the shared content of the religious and economic values is not evidence of the effect of the former upon the latter, but may be an indicator of other changes which altered both religious and economic value systems. Alternatively, the shared content could arise from an effect of new values in economic activities in reshaping those religious values that were most susceptible to such an effect, that is, the values of Calvinists.

Part of Weber's discussion in support of his argument goes far beyond comparisons between nations to include comparisons between regions within nations, religious subgroups within regions, and even individuals in families (see especially his footnotes in chapter 1). For example, he quotes extensively from the writings of Benjamin Franklin to express the essence of the spirit of capitalism and points to the religioethical precepts taught to Franklin by his Calvinist father. Weber also compares the taxable wealth of Protestants and Catholics in a region in Germany.

The use of this material raises further questions about just what kind of proposition Weber was attempting to demonstrate and, in particular, what unit or units were involved in the proposition. Did he really mean to specify the proposition at the individual level? It appears, from his use of this individual-level evidence and from some of his statements, that this is exactly what he intended.² If so,

2. For example, Weber states that "this peculiar idea . . . of one's duty in a calling is what is most characteristic of the social ethic and capitalist culture, and is in a sense the fundamental basis of it. It is an obligation which the individual is supposed to feel and does feel towards the content of this professional activity" (p. 54). In later chapters Weber shows that this sense of "duty in a calling" was central to Protestant, and particularly Calvinist, doctrine.

then the proposition of Figure 1.1 must be revised. The single proposition breaks into three: one with an independent variable characterizing the society and a dependent variable characterizing the individual; a second with both independent and dependent variables characterizing the individual; and a third with the independent variable characterizing the individual and the dependent variable characterizing the society. Thus the proposition system begins and ends at macro levels, but in between it dips to the level of the individual. The three propositions may be put, somewhat crudely, as follows:

1. Protestant religious doctrine generates certain values in its adherents.
2. Individuals with certain values (referred to in proposition 1) adopt certain kinds of orientations to economic behavior. (The central orientations to economic behavior are characterized by Weber as antitraditionalism and duty to one's calling.)
3. Certain orientations to economic behavior (referred to in proposition 2) on the part of individuals help bring about capitalist economic organization in a society.

Figure 1.2 shows a way of diagramming such multilevel systems of propositions. The upper horizontal arrow represents the macro-level proposition. The three connected arrows—of which the first begins at the same point as the macro-level proposition and goes down to a lower level and the third goes back up to the final point of the macro-level proposition—represent the three linked propositions.

In this set of propositions, the third is of most interest, because it moves back up from the individual level to the societal level. The independent variable characterizes an individual, and the dependent variable characterizes a social unit, in this case the society. Obviously, a proposition of this sort, unless it is

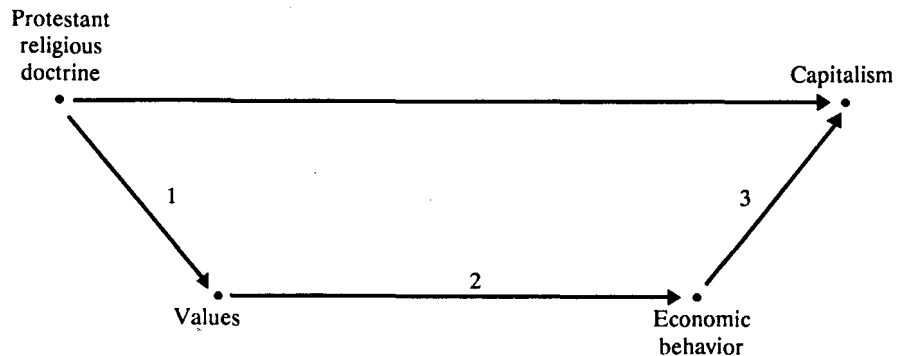


Figure 1.2 Macro- and micro-level propositions: effects of religious doctrine on economic organization.

one of those historical propositions which attribute major social changes to particular individual leaders, is not suggesting that a single individual's attributes are effective in bringing about social change. Rather, some sort of combined or joint or aggregate effect of the economic behavior of many individuals in bringing about capitalistic development is being proposed. It is here, however, that Weber's analysis is almost totally silent.³ What kind of combination or aggregation brought about the development, even supposing the propositions of Figure 1.2 to be correct?

Whose economic behavior is at issue here—that of prospective workers in capitalist enterprise, that of prospective entrepreneurs, or that of both? And if that of both, is it proposed that the religious values were precisely appropriate for the economic behavior of the workers *and* for that of the entrepreneurs? For some values, particularly the antitraditionalism central to the “spirit of capitalism,” it is clear that Weber is arguing that this is so. But the absence of a serious consideration of this question shows a major element to be missing from his theory.⁴ What is necessary to account for the growth or occurrence of any social organization, whether capitalist economic organization or something else, is how the structure of positions constituting the organization comes into being, how persons who come to occupy each of the positions in the organization are motivated to do so, and how this interdependent system of incentives is sustainable. These are the central problems of the analysis of social organization. Marx's analysis of the emergence of capitalism from feudalism, polemically marred though it was, came closer to doing this than did Weber's analysis in *The Protestant Ethic*.

A considerable body of theoretical work, which might be called cultural psychology, attempts to explain social change by use of culture or values alone, without reference to social organization. Possibly the work of Abram Kardiner (1945) expresses this orientation most fully, but it can also be found in the work of other cultural anthropologists, such as Margaret Mead and Ruth Benedict. Just as in proposition 3 of Figure 1.2, essential elements of an explanation are

3. This is not to say that Weber said nothing about these matters elsewhere. The example being used here is a particular work, not Weber's total works. Yet the very fact that Weber's thesis has been questioned almost from the beginning indicates that his further work did not lay to rest the doubts raised by this work.

4. It could well be argued, and Weber's text would in many places support the argument, that Weber was concerned in this work only with showing the effects of the content of Protestant religious values on the content of values characteristic of capitalist enterprise. But this interpretation leads to other problems. Showing that two sets of values held by individuals have shared content does not provide evidence that either set affected the other; and the absence of any excursion from the realm of values to mundane activities means no mechanism is provided through which such effects might take place. On the other hand, if the “spirit of capitalism” is to be regarded as not merely a property of individuals but a property of the society, that is, a shared norm, then Weber has failed to show the processes through which the individuals' beliefs give rise to the social norm (as well as to demonstrate the relevance of such a norm to the actual practice of capitalism).

missing—precisely those elements that constitute the analysis of social organization.

THEORIES OF REVOLUTION A contemporary instance of the attempt to make the micro-to-macro transition through simple aggregation of individual attitudes or orientations can be found in certain theories of revolution. These are theories which can generally be termed frustration theories.

The problem addressed by frustration theorists of revolution is the puzzling one of why revolutions often seem to occur during periods of social change in which conditions are generally improving. The frustration theorists resolve this problem by arguing that the improving conditions in the society create frustration on the part of individual members of the society, leading to revolution. Like Weber's propositions in *The Protestant Ethic*, there are three linked relations: The first is from the system level to the individual level; the second is wholly at the individual level; and the third is from the individual level to the system level. Figure 1.3 shows these propositions diagrammatically.

The first relation takes several forms, depending on where the theorist sees the frustration arising: from short-term setbacks, relative deprivation, rising expectations induced by rapid change, or some other cause (see Chapter 18). The second relation is merely a frustration-aggression proposition from psychology. The third relation is implicit, a simple aggregation of individual aggression to produce a social product, that is, a revolution. Yet a revolution involves organization and the interplay of actions on the part of a number of actors.

In both the analysis by Weber and that by the frustration theorists of revolution, the micro-to-macro transition is made simply by aggregation of individual orientations, attitudes, or beliefs. If, however, the theoretical problem is one involving the functioning of a social system, as it is in explaining the rise of a capitalist economy or the occurrence of a revolution, then it should be obvious that the appropriate transition cannot involve the simple aggregation of individual behavior.

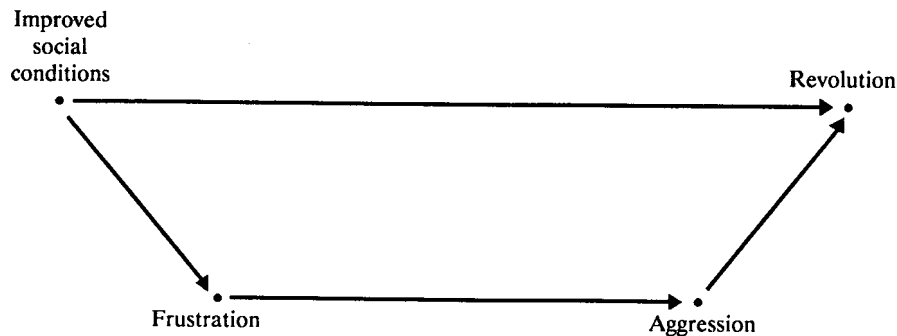


Figure 1.3 Macro- and micro-level propositions: effects of improved social conditions on potential for revolution.

Components of the Theory

There are three kinds of components to any theory in which system behavior derives from actions of actors who are elements of the system. These correspond to what are shown as relations of types 1, 2, and 3 in Figure 1.2. Relations of types 1 and 3 involve movement from macro to micro and micro to macro, respectively, and relations of type 2 are based on the principle of action describing actions of the actors. This principle of action constitutes a necessary fixed kernel, which gives rise to different systemic behavior—that is, different social phenomena—when located in different social contexts and when different persons' actions combine in different ways.

There is, in fact, a good rationale for arguing that social theory, as distinct from psychological theory, consists of theory about the working out of various rules within which sets of persons act.⁵ This view, as well as the character of macro-to-micro and micro-to-macro transitions, can be understood by imagining a social-simulation game of the sort that is sometimes used in education.⁶ Such a game is composed of the following:

- A set of roles that players take on, each role defining the interests or goals of the player
- Rules about the kinds of actions that are allowable for players in each role, as well as about the order of play
- Rules specifying the consequences that each player's action has for other players in the game

If the playing out of the game is viewed as simulating the behavior of some aspect of a social system (as it will if the game is well constructed), then there are two naturally separable components: the players and the structure of the game. The players contain within themselves some principle of action (which could hardly be described as other than purposive), and the game comprises the structure which sets in motion these actions and combines them to produce behavior of the system.

It is this structure which corresponds to the two transitions I have described: macro to micro and micro to macro. The first of these transitions is mirrored in the game by all those elements that establish the conditions for a player's action: the player's interests, given by the goal established by the rules; the constraints on action, which are imposed by other rules; the initial conditions, which provide the context within which action is taken; and, after the game is in play, the new context imposed by others' actions. The second transition is mirrored by

5. See Brennan and Buchanan (1985, pp. 1–18) for a discussion of the role played by rules in a social order.

6. It was the development and use of such social-simulation games which led me away from my previous theoretical orientation, of a Durkheimian sort, to one based on purposive action. It seemed clear that both in development of the rules of the game and in observation of the consequences of those rules in play of the game, an enterprise leading in the direction of the development of social theory was taking place.

the consequences of the player's action: how it combines with, interferes with, or in any other way interacts with the actions of others (which in the play of the game as in reality may be simultaneous with or precede or follow the given player's action), thus creating a new context within which the next action takes place.

But if this description of the play of the game is intended to mirror transitions from the macro to the micro level and back again, where is the macro level? Although it is clear that the play of the game can represent the micro level, there is no tangible macro level. The answer is that the macro level, the system behavior, is an abstraction, nevertheless an important one. If, for example, the game is *Diplomacy**, a commercial game in which the players represent the European powers in 1914, the "system behavior" is the alliances and conflicts that develop, the emergence of war, and the changes in the map of Europe as a consequence of the players' actions.

It is useful to interject that in *Diplomacy** the players represent not individual persons but nations, exemplifying the case in which the actors at the micro level are not individuals but corporate actors. In this game the macro level is the level of Europe as a whole, and the micro level is that of the individual nation. One objection to such diplomatic games, in which a nation is represented by a single goal-oriented player, is that they do not mirror reality sufficiently well, that, in reality, actions of nations may express some internal conflict. For example, the point is commonly made that rulers sometimes provoke external conflict to generate internal cohesion.⁷ For this reason, in more complex diplomatic games nations are sometimes represented by more than one player, with each player responsible for certain internal activities of the nation, activities which may affect the nation's actions toward the outside. In such a configuration the nation itself is treated as a system of action, which is in effect an actor in the larger system of action.

The system behavior, the macro level in the terminology of this book, sometimes is appropriately conceived as being merely the behavior of a system of actors whose actions are interdependent. In some cases the system behavior can be regarded as the action of a supra-individual actor, for example, the action of a nation resulting from the interdependent actions of actors internal to the nation. Similar to this is the case in which the macro level is a formal organization and the micro level is made up of departments in the organization or persons occupying positions in it.

Somewhere between the case in which the system behavior is purely an abstraction resulting in certain macro-level outcomes (such as changes in the map of Europe) and the case in which the macro level is a formal organization that can be conceived of as an actor is the case in which no unitary actor emerges at the macro level but there are well-defined properties or concepts characterizing

7. See Lederer (1940) for a discussion of Mussolini's venture against Ethiopia prior to World War II as such an action.

that level. The determination of price in an economic market is an example which illustrates this case well. The micro-level actors are the individual traders, and the price of each good gives the exchange rate (relative to some medium of exchange, or numeraire) for that good when there is equilibrium, that is, when no additional trades will take place beyond those already arranged. The relative prices of two goods as a concept characterizing the market as a whole (rather than merely the exchange rate at which a transaction involving those goods takes place between two particular traders) is an abstraction made possible by the fact that market competition compresses the various exchange rates for the same pair of goods among different trading partners toward a single rate, as each trader attempts to get the best exchange possible for the good or goods that trader holds.

The Individual-Level Theory of Action

The examples introduced earlier do not use the same theory of action. The frustration theorists of revolution use a model of expressive action, with aggressive behavior being the expression of frustration, unmodified by any goal or purpose. The psychological model underlying the study of suicide carried out by Emile Durkheim (1951 [1897]) was similar to that of the frustration theorists. Durkheim's analysis regarded suicide as an expressive act resulting from a psychological state brought about by one's relation to one's social environment. Max Weber's analysis of Protestantism and capitalism, in contrast, implicitly assumed that persons act purposively toward a goal, with the goal (and thus the actions) shaped by values or preferences. For Weber economically productive actions were modified by Calvinism through its effect on values that were relevant to economic actions. The economic actions followed directly as "reasonable" or "understandable" or "rational" actions for persons holding the values embodied in Calvinism.⁸

The individual-level theory of action I will use in this book is the same purposive theory of action used in Weber's study of Protestantism and capitalism. It is the theory of action used implicitly by most social theorists and by most people in the commonsense psychology that underlies their interpretation of their own and others' actions. It is ordinarily the dominant model of action we apply when we say we understand the action of another person: We say that we understand the "reasons" why the person acted in a certain way, implying that we understand the intended goal and how the actions were seen by the actor to contribute to that goal.

For some purposes in the theory of this book, nothing more than this commonsense notion of purposive action is necessary. For much of the theory, however,

8. This statement does not take into account the micro-to-macro problem discussed in the preceding section. The actions of an individual depend not only on preferences or values but also on opportunities and incentives provided by the environment. The growth of capitalism involved changes in these opportunities and incentives.

a more precise notion is required. For this I will use the conception of rationality employed in economics, the conception that forms the basis of the rational actor in economic theory. This conception is based on the notion of different actions (or, in some cases, different goods) having a particular utility for the actor and is accompanied by a principle of action which can be expressed by saying that the actor chooses the action which will maximize utility.

There are a number of points of clarification to be made about the use of this somewhat narrowly conceived version of purposive action as the individual-level component of a social theory. Some of these are in the form of caveats. First, this is clearly a particular specification of the broader idea of purposive action; other specifications are also compatible with that broader idea. For example, Tversky's (1972) theory of elimination by aspects (which appears to correspond better than standard rational choice theory to the way certain choices are made) implies that purposive choice is made in stages, with selection at each stage made according to a particular dimension or aspect on which the objects of choice differ. The standard theory of rational choice has no way for such dimensions to emerge, and no place for hierarchically structured choice.

In other work Kahneman, Tversky, and others (see, for example, Kahneman, Slovic, and Tversky, 1982) have shown conclusively that persons, when intending to act rationally, have systematic biases that lead their actions to be less than rational, according to some objective standard. That is, individuals act systematically to yield outcomes they regard as less good than outcomes that would have been obtained from other actions. One such systematic bias is the overestimation of probabilities of unlikely events.⁹ Another is allowing one's perception of a situation in which a choice must be made (and thus the choice made) to be influenced by elements in the description that are irrelevant to the outcome.¹⁰

Another deviation from rationality lies in the inconsistency between resolving not to carry out some action and then later carrying out that action (in which case it might be said that one has "succumbed to temptation"). Elster (1979) describes such cases, cases in which persons may precommit themselves in order not to succumb. In these cases, as in the cases that can be explained

9. For example, people tend to overplay long shots in betting on races or choose to play a lottery having a larger prize but a lower expected value than another lottery.

10. For example, Tversky and Kahneman (1981) used an experimental situation in which it is stated that the United States is preparing for the outbreak of a rare disease that is expected to kill about 600 persons. Version 1 of the hypothetical situation is stated as follows: If program A is adopted, 200 people will be saved. If program B is adopted, there is a probability of 1/3 that 600 people will be saved and a probability of 2/3 that no one will be saved. Which program would you favor? Version 2 of the hypothetical situation is stated as follows: If program C is adopted, 400 people will die. If program D is adopted, there is a probability of 1/3 that nobody will die and a probability of 2/3 that 600 will die. Which program would you favor? In their experimental work Tversky and Kahneman show that many fewer persons choose program B than choose program A, but many fewer choose C than choose D; yet the situations in versions 1 and 2 are the same.

through a hierarchical structuring of choice, it appears that choice may be better conceived as resulting from an organization of components of the self than from a simple maximization of utility.

Apart from different specifications of how individuals act purposively and deviations from the objectively best action when intending to act rationally, there are other actions which appear to be better described as expressive or impulsive (that is, without a goal in mind), actions which lead to outcomes the actor does not prefer, even actions that can be described as self-defeating. The frustration-aggression hypothesis discussed earlier and Durkheim's theory of the impact of social context on psychic states leading to suicide are attempts to capture this. Although I will argue in Chapter 18 that the frustration-aggression model of action is incorrect as a component of theories of revolution, this does not mean that frustration never leads to aggression. Without commitment to a position for or against the thesis that such actions can be reconceptualized in a way that is compatible with purpose or rationality, one must accept that certain actions are most straightforwardly described in a way that does not involve purpose.

Still another objection to purposive action as a basis for social theory is an objection to the use of teleology in any theory of action. The concept of purpose is explicitly teleological. It explains current states in terms of (desired or intended) future states, rather than in terms of antecedent states. It gives rise to explanations based on final causes rather than on proximate causes. It is antithetical to the usual causal explanations in science. In other disciplines teleological explanations, when they have proved useful at all, have served as way stations, or intermediate points on the way to a theory which eliminates teleology.¹¹

Given these and other deviations from, exceptions to, and objections to either the very concept of purposive action or the narrow conception of rationality given by the principle of maximization of utility, what is my rationale in using it as a basic component of social theory? The question can be divided in two: Why use a theory of purposive action at all, rather than a theory that is agnostic concerning individual action? Why use the narrow and especially simple specification of purposive action developed by economists, that is, maximization of utility?

11. An example used by Nagel concerns the question of why the angle of reflection of light from a surface equals the angle of incidence. A teleological explanation is that the reflection occurs in such a way as to minimize the total distance traveled from source to receptor. This obviously is only a superficial explanation, if it can be called an explanation at all. It leaves unanswered the question of why the distance should be minimized (unless the answer is given as a generalization of Le Châtelier's principle of least effort, a teleological principle used in chemistry) and serves, in effect, merely to describe a regularity in the behavior of light. See Nagel (1970) for a more extended discussion of teleological principles in science, their logical character, and their role in scientific theory.

WHY USE A THEORY OF PURPOSIVE ACTION? The objection to the use of teleological principles in scientific theory is in general well taken. There are two reasons, however, why it has much less force in this case.

First, the methodological individualism which characterizes the theory to be presented here vitiates much of the antiteleology case. The action to be explained is at a higher level of social organization than the level at which purpose is specified. If it were not, if the theory were holistic, that is, remaining at the level of the system, then introduction of teleology at that level would explain a component of the system in terms of the function it performs for the system. This assumes what should be problematic for social theory—the integration and organization of the system. Such explanations, or “theories,” are labeled functionalism in social science, and functionalist explanations are subject to all the objections made against teleological explanations.¹²

Psychological theories intended to explain the actions of individuals are subject to the same objections if they are purposive, for in that enterprise purpose is introduced to characterize the action to be explained, not an action at some lower level.¹³ Theories in psychology which use the concept of reward are of this sort, since reward is defined in terms of its function, thus yielding an explanation that is at least partly circular in character. When the actions treated as purposive are actions of individuals, however, and the action to be explained is the behavior of a social system, behavior which derives only very indirectly from the actions of the individuals, then the explanation of system behavior is not in terms of final causes but in terms of efficient causes.

A second reason why a purposive theory of action at the level of individuals and based on a teleological principle is not harmful to social science, but desirable, lies in the peculiar relation of social science to its object of study. Social scientists are human beings, and the object of their study is actions of human beings. This means that any other kind of theory of human behavior poses a paradox for the theorists themselves. The paradox can best be seen by supposing a fully developed theory of human behavior which is not based on purposive action but on a causal framework into which individual goals or purposes never enter.

For example, consider approaches to social theory which base social change on technological change or on forces of nature. If such a theory is taken seri-

12. For discussion of functional analysis in social science, see Stinchcombe (1968) and Nagel (1970).

13. Some work in psychology suggests that it is not a difference in levels of action that is crucial but any difference between the action to be explained and the action for which purpose is invoked. Berne (1964), for example, showed that apparently irrational adult behavior can be explained in terms of actions learned at a young age, when they constituted rational responses to the child's social environment. In that explanation teleology is involved in accounting for the early behavior (for example, the child's goal of escaping punishment or gaining a reward), but it is the learning of such actions, and the assumption that they are not easily unlearned, which constitutes the explanation for actions that are not rational in a subsequent and different social context.

ously, this implies a fatalistic view of the future, in which humans are the pawns of natural forces. Still other theories do not have an individualistic base but have their foundation at a macrosocial level, taking as given the very social organization that is problematic in a theory based on purposive action of individuals. In theories of this sort the proposed causes of action are not persons' goals or purposes or intents, but some forces outside them or unconscious impulses within them. As a consequence, these theories can do nothing other than describe an inexorable fate; they are useful only to describe the waves of change that wash over us. At the mercy of these uncontrolled external or internal forces, persons are unable to purposefully shape their destiny.

The paradox arises because such theories imply that the theory itself, a result of purposive action, can have no effect on future action. Any attempt to use the theory purposefully will consequently be, according to the theory, destined to fail. A further paradox lies in the image of man implied by a nonpurposive theory. Since the conception is one into which purpose, goal, and will do not enter, it is incompatible with the very orientation of the theorist, who sets as a goal the development of such a theory. All of this arises because the subjects of the theory are persons, and that includes the theorists and the users of the theory.

There is another closely related value to basing social theory on purposive actions of individuals. In a certain range of scholarly endeavor, including ethics, moral philosophy, political philosophy, economics, and law, theory is based on an image of man as a purposive and responsible actor.¹⁴ Among these fields there exists a degree of fruitful interchange which has been denied to most sociologists, simply because sociologists have not chosen to ground their theoretical work in that same way. Moral philosophers from Kant to Rawls have grounded their work in a conception of purposive responsible individuals, as have political philosophers such as Bentham, Rousseau, Mill, and Locke. Some theorists, such as Bentham and Hayek, have been able to span all these fields because of the common conceptual base. Social theory which uses that base stands to profit from the intellectual discourse this common ground makes possible.

It is also important to answer the objection that individuals do not always act rationally. I will not dispute the point, for it is clear that persons sometimes act self-destructively and at other times act with questionable rationality. I will say this, however: Since social scientists take as their purpose the understanding of

14. Throughout these disciplines there is a terminological problem which should be made explicit here. Often, especially in philosophy, one who acts is termed an “agent,” and indeed is the agent of action. However, the term “agent” is also used in another way in economics and in law. The law of agency concerns principals, agents, and third parties, and the economic analysis of agency concerns the relation between principal and agent. In these branches of law and of economics, an agent is explicitly a person other than a principal, in whose interest the agent acts. Because I treat problems of principal-agent relations in this book, I will restrict use of the term “agent” to this meaning. I will use the term “actor” to refer to the individual (or corporate actor) who takes action. Thus I will be using actor to mean what philosophers refer to as agent.

social organization that is derivative from actions of individuals and since understanding an individual's action ordinarily means seeing the reasons behind the action, then the theoretical aim of social science must be to conceive of that action in a way that makes it rational from the point of view of the actor. Or put another way, much of what is ordinarily described as nonrational or irrational is merely so because the observers have not discovered the point of view of the actor, from which the action *is* rational.

The position I will take in this book, then, is that success of a social theory based on rationality lies in successively diminishing that domain of social activity that cannot be accounted for by the theory. Another way of viewing a theory based on rational actors is to specify that the theory is constructed for a set of abstract rational actors. It then becomes an empirical question whether a theory so constructed can mirror the functioning of actual social systems which involve real persons.

WHY USE MAXIMIZATION OF UTILITY? Even if purposive action is accepted as the appropriate principle of individual action for social theory, this does not imply the narrow specification of purpose as maximization of utility. First, I need to say that neither in the qualitative form of the theory (as developed in Parts I through IV of this book) nor in the use of this qualitative theory in research is the idea of maximization of utility explicitly introduced. The assumption of utility maximization is necessary only for the quantitative development of the theory (carried out in Part V), both for mathematical modeling and for the quantitative research which makes use of those models. Nevertheless, it is useful to spell out here the two reasons why such a narrow specification is valuable for social theory.

First, by making precise what is meant by "purposive action," such a specification provides greater power. Any teleological principle which specifies that some quantity is to be maximized or minimized is more powerful than a less specific principle. This is apparent for the teleological principle (see footnote 11) that light will be reflected from a surface in such a way that its total length of path is minimized. This principle allows precise prediction of the angle of reflection of light from any surface: It will equal the angle of incidence since that is the angle which minimizes the total length of path. This predictive power of a minimization or maximization principle is somewhat vitiated when measurement of the quantity to be minimized or maximized is less unequivocal than it is in this physical example, as is the case for utility.¹⁵ Nevertheless, the increased power is not entirely vitiated since utilities are not free to change arbitrarily or capri-

15. There are parallels in natural science. Le Châtelier's principle of least effort, which states that a system will react to any change in such a way as to minimize the effect of the change, was long subject to objections based on equivocation about what was minimized. The principle was nevertheless used in chemistry, because of its heuristic value in suggesting how physical systems react to external actions upon them. (See Glasstone, 1946, for a discussion of Le Châtelier's principle.)

ciously, and the principle thus lends greater predictive power to those theories in which it plays a part.

A second reason favoring the use of this narrow specification of purposive behavior lies in its simplicity. For a social theory made up of three components—a macro-to-micro component, an individual-action component, and a micro-to-macro component—it is especially important that the individual-action component remain simple. This does not imply, of course, that the specification of purposive behavior is the best one of those at the same degree of simplicity. It is true, however, that a trade-off between complexity in the other two components and complexity in this component must be made if the overall theory is to remain manageable. I have chosen to trade off as much psychological complexity as possible in order to allow introduction of greater amounts of complexity in the other two components of the theory, the "social organizational" components. Even so, as Chapter 2 will show, this principle of action, when employed in the context that will be used here, gives rise to several different types of action, and these different types of action constitute building blocks for different kinds of social organization.

The Macro-to-Micro and Micro-to-Macro Transitions

The two other components of the type of social theory under consideration, through which the transition from macro to micro and the transition back to the macro level occur, can be conceived of as the rules of the game, rules which transmit consequences of an individual's action to other individuals and rules which derive macro-level outcomes from combinations of individuals' actions. How a theory might encompass this can be seen by examining somewhat more deeply the three-part paradigm for explaining macro-level phenomena, which consists of type 1, type 2, and type 3 relations: the macro-to-micro transition, purposive action of individuals, and the micro-to-macro transition.

For many macro-level relations this paradigm provides precisely the appropriate imagery. The relation between improving economic conditions and revolutions, used as an example earlier, illustrates this appropriateness. But in other cases what is to be explained at a macro level is not a relation between one macro-level variable (such as change in economic conditions) and another (such as revolutionary activity). Instead, a macro-level phenomenon is to be explained. The following example will illustrate.

In England in 1720 it appeared that a kind of speculation madness had infected a part of the population. Speculation in the stock of the South Sea Company, which had been formed to engage in trade with islands in the Pacific and the Spanish colonies of Chile, Mexico, and Peru (Mackay, 1932 [1852]), was widespread, and a host of minor stock companies had arisen as well. Slowly, trust in the company's directors and in the ability of the company to succeed was withdrawn, and the bubble of speculation collapsed, despite extensive moves by the Bank of England and the British government to prevent that. In this case what is

to be explained is not a macro-level empirical generalization with independent and dependent variables, but the rise and fall of widespread stock speculation in England around 1720. This is a macro-level phenomenon, and the theoretical task is to account for it by going down to the level of individual actions and coming back up to the macrosocial level, as suggested in the diagrams of Figures 1.2 and 1.3. In this case the explanation might consist of a system involving micro-level actions, their combinations, the feedback from those combinations that affects further micro-level actions, followed by further combinations, and so on, producing the bubble of speculation and then the bursting of the bubble.

This example illustrates a more general situation, in which the theory describes the functioning of a system of action from which the three types of relations are not easily separable. Although such explanatory systems involve both individual-level actions and system-level behavior, they are not appropriately conceived of as the linking together of relations of these three types. Relations of the sort described by Figure 1.1 or Figure 1.2 are ordinarily best thought of as macro-level empirical generalizations which might be predicted as deductions from a theory. The theory which can generate such relations as specific propositions may be thought of as a theory of individual action together with a theory of how these actions combine, under specific rules, to produce systemic behavior.

Interdependence of Actions

There are various ways in which actions combine to produce macro-level outcomes, and it is useful to discuss some of these briefly. This cataloging of forms of interdependence of actions is not intended to be exhaustive.

A simple case is that in which one actor's independent action imposes externalities (positive or negative) on others and thus changes the structures of incentives confronting them. An example is the classic "tragedy of the commons" (see Hardin, 1968), in which the grazing of each farmer's sheep reduces the availability of pasture for the sheep of other farmers. But there are many very different kinds of examples. Such phenomena as the South Sea bubble or the panics that may be caused by theater fires also illustrate the case.

A second case is that of bilateral exchange, as in union-management bargaining. The resulting "system" is composed of only two actors, but there are systemic outcomes: the exchange agreements or contract arrived at by the two parties.

A third case is the extension of bilateral exchange to a competitive structure in a market. The outcomes of the market, that is, prices and transactions, depend on the particular institutional rules within which the market operates; for these rules govern the form of interactions between actors (for example, closed bids or open bids, presence or absence of recontracting, price-setters and price-takers, barter, exchange with a numeraire, and so on). (See Plott and Smith, 1978, and Smith, 1982, for results with experimental markets.)

A fourth case is that of collective decisions or social choice, in which the systemic outcome is the result of votes or other expressions of preference by individuals, combined by means of an explicit decision rule and resulting in selection of a single alternative.

A fifth case is the structure of interdependent actions that constitutes a formal organization producing a product. The organizational structure consists of a set of rules and incentives, which give rise to asymmetric interdependencies that could not come about through two-party exchange.

A sixth case is the establishment (through some poorly understood process) of a collective right to exercise social control over certain actors' actions, via norms enforced by sanctions. Once established, these norms come to constitute auxiliary "rules of the game," enforced more or less fully by the actors in the system.

These several forms of interdependence of actions show the wide variety of ways in which the micro-to-macro transition occurs. The macro-to-micro transition is in some of these cases implicitly contained in the interdependence of actions. In other cases, however, it is not. For example, in a market there is extensive variation in the flow of information by which offers are communicated throughout the system. The transmission of information from the macro level to individual actors can greatly affect the actions they take and thus affect system behavior. More generally, in any large system information is transmitted via media which are themselves actors in the system, with their own interests. This shapes the quantity and character of the information available to other actors, and different communication structures will alter this information in different ways.

The variation in information transmitted from the macro level to individual actors is just one example of possible variations in the macro-to-micro transition. In general, the environment, or social context, in which a person acts affects the relative benefit of different actions; and it is the macro-to-micro transition which shapes this social context.

Conceptions of the Relations between Micro and Macro Levels

Before going on, in Chapter 2, to explicit development of the theory itself, I will indicate here just how the proper conception of the relation between individual and systemic levels can be important to social research.

A first observation is that good social history makes the transitions between micro and macro levels successfully. Good social history attempting to establish a causal connection between, for example, the advent of Calvinistic religious doctrine and the rise of a capitalist economy in the West would show not only how the doctrine gets transmitted to individuals and then has an effect on their behavior, but also how that behavior comes to be combined, that is, how the social organization which constitutes capitalist enterprise takes place. After reading such history the reader would not be left in doubt about the character of

the argument—about whether a change in workers' behavior, an increase in entrepreneurial behavior, more diligent behavior on the part of managers, all of these, or something else, was claimed to be the result of Calvinism and to lead to the growth of capitalism.

But it is one thing to be able to trace the development of social organization in a particular instance, as a historian might do, and quite another to develop generalizations about such processes. It is still another to construct models of the macro-to-micro and micro-to-macro processes. Quite clearly, some form of interdependence must be modeled in cases like those I have described, for the phenomena to be explained involve interdependence of individuals' actions, not merely aggregated individual behavior.

One arena which has some similarities to economic markets and in which some work has been done is the so-called marriage market. There is a demographic phenomenon known as the marriage squeeze. When there is a sharp increase in the birth rate, as there was, for example, after World War II, a problem exists for the cohorts of females born about the time of the increase or shortly thereafter—there will not be enough men for them to marry. Men marry women who are, on average, two years younger than themselves. This means that the normal mates for females born in 1946 would be males born in or around 1944. But the 1946 cohort was large, and the 1944 cohort was small. Thus there was a marriage squeeze for women beginning in the mid-1960s, with a larger number never marrying and a larger number marrying younger men or much older men who were divorced or widowed. Something like the reverse occurs if there is a sudden drop in the birth rate—a subsequent marriage squeeze for men.

The problem lies in the fact that when there is a marriage squeeze produced by a sudden birth-rate change, it is not at all clear what will give, that is, how the scarce men will be distributed among the surplus women. (Nor is it clear what other kinds of effects will occur; how the availability of large numbers of marriageable women will affect the divorce rate, for example, or how it will affect standards of sexual morality.)¹⁶ The absence of a model for assortative mating by age when there are fluctuations in cohort size means that demographers have been stymied in their goal of developing what is called a two-sex population model for moving a population forward through generations.

It is clear that marriage can be seen as taking place in a kind of market, but one that is quite special, with each actor having only one commodity—himself or herself—to barter and with exchange rates governed by the constraint of monogamy, which prevents variations in quantity to achieve equal value in exchange. Models for the micro-to-macro transition in marriage markets have been developed, and there are theorems about the stability of particular matching algorithms. (See Gale and Shapley, 1962; Becker, 1973, 1974; Schoen, 1983; and Roth 1984a, 1985a.) Thus a beginning has been made—but only a beginning—

toward solving the marriage-squeeze problem of demographers, facilitating a two-sex population model.¹⁷

In this chapter I have examined what I see as the structure theory should have in the social sciences. The chapter constitutes a background to, and a rationale for, the theory to be presented in this book. In Chapter 2 I begin to lay out the theory in qualitative verbal form and will continue that enterprise throughout the remaining chapters of Parts I to IV.

17. An illustration which shows the feasibility of models relating micro and macro levels in matching markets is the procedure by which graduates of medical schools are matched with hospitals for residency training. Hospitals submit lists of first choices, second choices, and so on, for their residency positions, and applicants submit rank-ordered choices of hospitals. A computer algorithm, in use since 1957, matches hospitals and applicants. The algorithm constitutes a matching process, and a stability theorem for this process has been proved, showing that, assuming no changes have occurred in preference orders, no resident and hospital would prefer each other to the hospital and resident, respectively, with which they have been matched (see Roth, 1984b).

16. In *Too Many Women?* (1983) Guttentag and Secord argue that such periods lead to looser standards of sexual behavior for women.