

DO SOCIOLOGICAL THEORIES GROW?*

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ABSTRACT

Whatever their beliefs about the potentiality for theoretical progress in sociology, most observers assume that the amount of actual growth in our knowledge has been minimal. We argue that, in fact, there has been considerable theoretical growth in sociology. However, most of the evidence of that development is hidden because we generally (1) fail to distinguish different kinds of theoretical activity, (2) focus almost exclusively on growth by means of increasing empirical support, and (3) ignore the variety of theoretical contexts within which growth can occur.

These problems can be dealt with if we focus on theoretical activity at the level of theoretical research programs (i.e. sets of related theories). Within such programs we see at least five different types of relations among theories. Each of those types represents a different form of theoretical growth. In addition, three of the five relations often generate entire programs of theoretical work that are quite different in character. Theoretical growth, therefore, is a complex, multifaceted activity.

We first explicate and then apply these ideas about programs to several cases of ongoing theoretical activity in sociology. Our analysis enables us to "make sense of" these activities from the standpoint of theoretical growth (i.e. to understand how growth is involved in them). For example, it permits us to identify three different ways in which

theory integration, perhaps the most dramatic form of theoretical growth, is accomplished in sociology.

Cases like the ones we examine provide us with models or exemplars of theoretical growth from which we can learn and upon which we can build. Detailed analysis of these exemplars will aid significantly in promoting growth in other substantive branches of sociology.

1. THE PROBLEM.

Issues of theory growth and development provoke a great deal of debate in sociology. Almost everyone seems to have a position. For example, some consider such growth an essential characteristic of a cumulative sociological science (see, e.g., Parsons, 1954, and Freese, 1980). Others, following Kuhn, see theoretical growth as a deception; changes in scientific knowledge are generally revolutionary and non-progressive (see, e.g., Kitzer, 1975, and Bernstein, 1976).¹ Still others separate the natural sciences from the social sciences. Theoretical change may very well be progressive in the former; it may not be in the latter, since observation is assumed to be inherently more value-laden and the subject matter more reactive in the social sciences than in the natural sciences (see, e.g., Gouldner, 1970, and Winch, 1958).

Interestingly, despite the strong differences of opinion about the possibility of theoretical growth in sociology, there is general agreement about the reality of such growth. The consensus seems to be that little or no growth has occurred. Certainly, none of the sources we have cited see

¹ Actually, such followers are distorting Kuhn's argument. As Chapter VIII of The Structure of Scientific Revolutions makes quite clear, Kuhn does see scientific change as progressive. He describes that progress as "evolution-from-what-we-do-know" (i.e. from the less articulated and specialized theories of the past), rather than "evolution-toward-what-we-wish-to-know" (i.e. toward some sort of ultimate empirical truth). See Kuhn (1970:170-173) for a more detailed discussion of this point.

sociological knowledge as progressive to any significant degree. Many others concur (see, e.g., Bergner, 1981, and Alexander, 1982).

That those who question even the possibility of theoretical growth see little of it actually occurring is, of course, not surprising. What is much more intriguing is that those for whom theoretical growth is both possible and desirable see it as such a rare phenomenon. Extolling the virtues of a cumulative sociological science is an exceedingly difficult task when there is so little evidence that such a science exists. It is as though half the points at issue have been conceded before the debate has even been joined.

But should those points be conceded? Is there really as little growth as there appears to be? We think not. In fact, we believe there is both extensive and important growth of theoretical knowledge in sociology.

Why then is there so little evidence of that growth? There are several reasons, all resulting from certain assumptions sociologists mistakenly make regarding theoretical work. First, sociologists tend to treat all theoretical activity as having the same character and intent. Actually, there are several different types of theoretical activity, some of which involve growth and some of which do not. To see evidence of theoretical growth, therefore, one must first adequately distinguish these kinds of activity and the characteristics and intentions they involve.

Second, sociologists generally assume that all theoretical growth is empirical, that it involves primarily the relation between a theory and an increasingly supportive body of relevant observations. In fact, theoretical growth also involves the relation between one theory and another theory (e.g. one with increased scope or precision). Thus, one must consider theoretical context as well as empirical context in searching for evidence of theoretical development.

Finally, even when sociologists incorporate theoretical context in their assessment of theoretical work, they tend to treat all theoretical contexts as identical. Once more the underlying assumption is mistaken. There are several different ways in which theories may be related to one another. Furthermore, each of those types of relations embodies a different form of theoretical growth. Thus, to fully understand the character and extent of theoretical progress in sociology, one must appropriately conceptualize and distinguish theoretical contexts and the kinds of growth they embody.

In short, to see evidence of theoretical growth in sociology one must first know where to look and what to look for. What is it that is growing? In what ways is it growing?

Our thesis, then, is that growth of theoretical knowledge in sociology is not a rare phenomenon; it simply is hidden

by mistaken assumptions about theoretical work. In the sections which follow we attempt to correct those assumptions and to build a more satisfactory scheme for the analysis of theoretical growth. We begin in Section 2 with a discussion of different kinds of theoretical activity. For each activity we provide answers to two kinds of questions. First, to what extent does theoretical growth occur in that work? To what extent can it occur? Second, is theoretical context (i.e. the linkage between theories) represented in that work? Can it be? Our answers to these questions permit us to identify one of these activities, involving the development of theoretical research programs, as most appropriate for the analysis of theoretical growth. Then, through the analysis of actual cases in Sections 3 and 4, we explicate the different ways in which theoretical growth is occurring in such programs. Finally, in Section 5 we briefly consider how these ideas can be used to promote the growth of theoretical knowledge in different branches of sociology.

2. DISTINGUISHING TYPES OF THEORETICAL ACTIVITY.

"Theory" in sociology has come to include many different kinds of sociological work, from "commentaries on the classics" to "causal modeling." What Parsons (1954) and Zetterberg (1965), for example, mean by "theory" are clearly different things.

The failure to distinguish such different types of theoretical enterprises, we believe, seriously hinders any attempt to identify and understand theory growth in sociology; it simply becomes too easy to confuse one kind of activity with another. This is particularly evident in sociological usage of Kuhn's (1962, 1970) term "paradigm". Ritzer (1975) and Leinhardt (1976) both use the term, for example. Yet Ritzer is concerned with large, amorphous frameworks for theoretical activity (e.g. the "social facts" paradigm) while Leinhardt is concerned with a much smaller, more highly focused theoretical enterprise (i.e. the "social networks" paradigm).² It is highly unlikely that these two enterprises involve theory growth to the same extent or in the same way. Thus, various types of theory and theoretical work must be distinguished if we wish to observe and understand theoretical growth in sociology.

2.1 Orienting strategies.

Consider first the very large proportion of theory in sociology that is in the form of metatheory; it is discussion about theory—about what concepts it should include, about how those concepts should be linked, and about how theory

² Eckberg and Hill (1979) argue that such usages of Kuhn's concept are altogether misdirected. We would agree basically; in sociology the "paradigm" concept has been stretched almost beyond recognition. Part of our effort here, therefore, is directed toward the identification of more specific and more appropriate concepts for the analysis of theory and theory growth in sociology.

should be studied. Somewhat like Kuhn's paradigms, theories of this sort provide general guidelines or strategies for approaching social phenomena and suggest the orientation the theorist should take to these phenomena; they are orienting strategies. Textbooks in theory frequently focus on orienting strategies like functionalism, exchange, or ethnomethodology (see, e.g., Turner, 1982).

The activity involved in developing an orienting strategy may take a number of different forms. It may include, for example, the development of ontological and epistemological arguments (often metaphorically stated) concerning the subject matter of sociology, the nature of social reality, and the values and goals of sociological inquiry. It may also involve the articulation of the conceptual foundations to be employed in the description and analysis of social phenomena. Finally, it is also likely to incorporate the formulation of directives for the selection of theoretical problems for investigation and for the construction and evaluation of proposed problem solutions.

For example, in the conflict orienting strategy it is common to assert that "the history of all hitherto existing society is the history of class struggles" (Marx, 1848). Such a statement is primarily metatheoretical in character. It suggests that class struggles should be regarded as an inherent feature of social reality, that these struggles should be regarded as important in explaining social phe-

nomena, and that therefore such struggles constitute an important part of the subject matter of sociology.

Similarly, the explication of the A-G-I-L scheme in Parsons and Bales (1953) constitutes a major part of the conceptual scheme underlying the functional orienting strategy. In identifying adaptation, goal attainment, integration and management of latent problems as "survival problems" or "system requisites," Parsons and Bales were suggesting that all analyses of social systems should include specifications of social structures that meet these system needs.

Homans' (1961,1974) presentation of an exchange orienting strategy includes theoretical directives that are explicitly reductionist. Thus reasonable solutions to sociological problems are to be constructed that are based ultimately on psychological principles. Attempted solutions are considered successful to the extent that they can be strictly derived from psychological principles.

A very large proportion of theoretical activity in sociology is metatheoretical. However, for several reasons we generally do not find much growth at this level. First, orienting strategies are exceptionally stable, sometimes even rigid, in structure. Consider the functional strategy; its conceptual framework, its image of social reality, its directives for the solution of sociological problems have changed very little from Malinowski and Radcliffe-Brown to

Parsons and Merton. Similarly, the ontological and epistemological underpinnings of the exchange strategy as described by Homans and Blau differ very little from those proposed earlier by Durkheim and Mauss.

Perhaps more importantly, one orienting strategy is seldom, if ever, replaced by another. Established strategies may become more or less dominant from time to time, but it is quite rare for a strategy to disappear entirely. Certainly, the widely-heralded decline in functionalist theorizing (see, e.g., Gouldner, 1970) has not eliminated the strategy as a tool for sociological analysis. Nor has any other strategy achieved the disciplinary supremacy functionalism was assumed to have. Furthermore, comparatively new strategies like ethnomethodology seldom replace older strategies; more often they add to the list of metatheoretical options that are available in sociological analysis. Even when attempts are made to generate new strategies which adopt important elements of older strategies, the "replacements" are often strongly resisted. (See, e.g., Denzin's 1969 attempt to link elements of symbolic interactionism and ethnomethodology in a single strategy and Zimmerman and Wieder's somewhat indignant 1970 response.) In short, once a strategy has become entrenched, it is extremely difficult to replace it entirely. Polarization and politicization of the debate are more likely results.

Part of the reason for the rigidity both within and among strategies is that the differences between strategies are generally quite fundamental. Basically, the claims of an orienting strategy are directives; they are statements about values (e.g. the value of "function" as a conceptual tool), not statements about facts (e.g. the specific function performed by a particular institutional structure). Such prescriptive arguments are largely non-empirical, and conflicts between them are generally unresolvable by either fact or reason. For example, there is no test that can demonstrate that the A-G-I-L scheme is or is not empirically "true." The claim that goal attainment involves establishing priorities among system goals and mobilizing resources to attain them cannot be evaluated empirically in any way. It is true "by definition." Similarly, one does not demonstrate the empirical truth or falsity of reductionist theoretical directives; one employs reductionist directives in demonstrating the truth or falsity of other ideas. Marx's statement from The Communist Manifesto is, of course, often treated as a matter of contingent fact. Presumably, one can test whether or not history is rife with class conflict. However, as Turner (1982:192) points out, such a claim can only be supported if we "define conflict so broadly that virtually any social relationship will reveal conflict." So broad a definition renders the claim empirically untestable. The untestability of the claim does not render it useless; it merely demonstrates its strategic character.

Put most directly, most of the claims of an orienting strategy cannot be validated as either true or false; instead they are accepted or rejected a priori without recourse to conclusive empirical or logical evidence.

The non-empirical nature of metatheoretical arguments obscures the terms of comparison between one directive and another, between one strategy and another. While it is clear, for example, that symbolic interactionism and exchange compete for adherents and resources and engage in metatheoretical debate, it is not clear on what grounds adherents choose, resources are distributed, and, most importantly, debates are resolved. As a consequence, it is almost impossible to determine how a change in directives or in strategy dominance might be characterized as improvement.

When we consider the potentiality for theoretical growth through orienting strategy activity, therefore, we see that: (1) there is little change within strategies, (2) there is little change among strategies, and (3) even when change does occur, it is difficult to determine specifically how that change might constitute progress.

Of course, changes within and among orienting strategies do occur. There is revision and rethinking of ideas. There is certainly extensive discussion and challenge among ideas. However, in the sense of one strategy leading to, generating, or being replaced by a "better" strategy, theoretical growth simply does not occur very frequently. Since much of

the discussion of theoretical growth in sociology seems to focus on orienting strategies, it is not at all surprising that growth is not perceived. We have all been looking in the wrong place.

2.2 Unit theories.

As interest in sociological theory construction has increased over the past fifteen or twenty years, another sort of theoretical activity has become quite prominent. At this level theory is concerned with the presentation and evaluation of theoretical statements, rather than with the determination of which statements should be presented and evaluated. These statements, whether they are called "propositions," "axioms," "causal models" or whatever, are intended as "explanations" of specific sociological problems. Thus, we may have individual or unit theories dealing with a wide variety of sociological phenomena. Davis and Moore's (1945) theory of stratification, Scheff's (1966) theory of mental illness, Wallerstein's (1974) model of the modern world system, Blau and Duncan's (1967) analysis of the American occupational structure, and Cook and Emerson's (1978) theory of power in exchange networks all are reasonable examples of unit theories.

Unit theories are sometimes stated formally, sometimes discursively. In either case the basic structure of a unit theory includes a set of concepts (usually suggested by an

orienting strategy) and a set of assertions relating those concepts to each other in an account of some sociological phenomenon.³ Thus, Merton's (1968) account of "social structure and anomie" includes among its basic assertions that structural inconsistency between societal goals and the distribution of opportunities to acquire the legitimate means of achieving those goals results in deviant behavior. A set of concepts is then used to identify a number of different types of deviant behavior which may occur, each defined in terms of the particular kind of inconsistency between goals and means involved.

Unit theoretical claims are empirically testable, either directly or indirectly, and conflicts between them are frequently resolvable through appeal to fact or reason. Thus, while orienting strategies prescribe how to construct and evaluate theories, unit theories are the particular theoretical constructions that are to be evaluated.

The great bulk of activity at the level of unit theories involves empirical testing. To the extent that such testing provides support for our unit theories, growth or progress may be said to have occurred. Perhaps the clearest account of the manner in which growth may result from the empirical testing of unit theories is provided in Stinchcombe's chapter on "The Logic of Scientific Inference" in Constructing

³ See Gibbs (1972), Hage (1972) and Cohen (1962) for useful discussions of the specific features that are (or should be) exhibited in the structures of unit theories.

Social Theories (1968:15-56). Basically, (1) the more empirical consequences of a theory that are supported by observations, (2) the greater the variety of consequences supported, and (3) the more frequently those consequences are contradictory to the consequences of the most likely alternative unit theories, the more highly "developed" the unit theory. Growth, then, is a direct consequence of increasing empirical support.

Activity at the level of unit theories seems much more appropriate for the discussion of theory development. Empirical support--the relation of a theory to data--is an essential feature of all scientific knowledge, and increasing empirical support in the senses outlined by Stinchcombe seems to be a prominent characteristic of such that we call growth.

However, something is missing. To talk about theories changing, growing, developing implies, we believe, that one must talk about theories changing, growing, developing with respect to other theories. That is, change, growth and development are all relational terms. A theory that is "more precise" is more precise than another theory. A theory that is "greater in scope" is so relative to another theory. A theory that has "greater empirical support" has been evaluated in comparison with another theory. Even an otherwise isolated theory is compared with the theory that the phenomenon it attempts to explain is statistically random.

Furthermore, many theoretical comparisons involve closely-related theories. A more precise or better supported theory often shares much of its structure with its less precise or less well-supported alternative. It is intended as a modification or adjustment of the less satisfactory theory, not as a wholesale replacement for its basic account of sociological phenomena.

These problems do not invalidate what we have learned about unit theories from the theory construction literature. Rather, they require that we extend the concerns that are dealt with in that literature. While one can begin to talk seriously about theoretical progress in terms of unit theoretical activity, one cannot generate a full and accurate picture of that progress at the unit theoretical level. Unit theoretical activity focuses almost exclusively on theory-data linkages. To fully describe and understand theory growth it is necessary to look as well at the relations between theories, the theory-theory linkages.

2.3 Theoretical research programs.

Theoretical activity in sociology occurs at yet a third level, one that focuses on the context of related theories within which unit theoretical work occurs. Consider, for example, a unit theory that has recently undergone some form of empirical assessment. Suppose that the outcome of the assessment is negative, that the evidence does not support

the theory. Is the theory therefore scrapped as worthless? More than likely it is not. Rather some attempt is made to identify and correct errors in the formulation of the theory. If errors can be found, a revised formulation (technically a new, but closely-related, unit theory) is then likely to be constructed and tested. If the assessment outcome is again negative, further revision and testing may occur. This sort of "programmatic" activity may continue indefinitely, although at some point the bulk of negative evidence may come to outweigh the worth of further investigation and the theory may be evaluated more or less permanently as false.

Suppose, now, that the outcome of the assessment is positive, that the evidence does support the theory. Does theoretical activity cease? Again, more than likely it does not. Instead, attempts are made to improve the theory, perhaps by making its predictions more precise or by broadening its scope of application. The improved version (once more a closely-related, but technically new, unit theory) may then be tested and further revised. Here also such programmatic activity may continue indefinitely.

The collection of theories that emerges from this sort of activity comprises a theoretical research program. Basically, a theoretical research program is a set of interrelated theories, together with research relevant in evaluating them (including perhaps applied research grounded in the theo-

ries).⁴ Quite a bit of theoretical activity in sociology occurs at the program level. It includes, for example, work on sentiment networks, status attainment, mobility, mental illness, bargaining, and justice and equity, as well as our own work on expectation states processes. In all cases, a series of interrelated theories has been developed, along with research testing (and sometimes applying ideas from) those theories.

The program notion has become quite prominent in the philosophy of science through the work of Imre Lakatos (1968, 1970, 1978) on "scientific research programmes." Lakatos and his students have identified and analyzed programmatic theoretical activity in a number of scientific disciplines, most notably in the physical sciences (see Howson, 1976) and in economics (see Latsis, 1976). However, there has not been much discussion of such activity in sociology. We have freely adapted the idea to describe our own work on expectation states processes (see Berger, Conner and Fisek, 1974, and Berger, Wagner and Zelditch, 1983); aside from this material there has been very little study of programmatic theoretical activity in sociology.

⁴ By "relevant," we mean that the outcome of research activity potentially confirms, disconfirms, or suggests avenues of refinement for theories in the program. By "grounded," we mean that the applied research is based on, guided by, makes use of the theories in the program.

While we are clearly indebted to Lakatos for the program notion, our use of it is not intended as a strict application of his ideas. Rather we employ it as a heuristic for identifying specific ongoing cases of growth within sociology. The claims we make are developed most directly from investigations of those cases.

Our primary claim is that, if we study the interrelations among unit theories in a theoretical research program, we see that the change, growth or development among those theories is a multifaceted activity. That is, it takes several different forms that are manifested in different types of theoretical relations between unit theories. If we are to understand the different forms of growth that occur within the context of theoretical research programs, we must be able to distinguish the different types of relations that may develop among unit theories in such programs.

What then are the different types of relations among theories in a program?

3. TYPES OF THEORETICAL RELATIONS AND TYPES OF GROWTH.

3.1 The primary relations.

Three primary relations occur among theories in a program that we believe represent three types of theoretical growth. They are "primary" in the sense that entire programs may be built on the basis of each one of them. In addition, two other "special" relations sometimes also appear in a program

within the context of any of the three primary types. Each of the special relations also represents a different kind of theoretical growth. However, programs generally do not develop from either of these special types of relations alone; instead, programs based on one or another of the primary relations are likely to generate the special relations under very specific circumstances. We consider the primary relations first. Then, in Section 4 we look a little more closely at the ways in which entire programs may develop from the primary relations and at how the special relations contribute to that growth. In particular, we explicate three different ways in which theoretical integration may be accomplished, depending on the kind of relation that exists between the integrated theories.

With these ideas one can begin to make sense of the theoretical activity in sociology from the standpoint of theory growth; that is, one can adequately specify what it is that is growing and in what ways it is growing. To demonstrate this claim we apply the ideas to a number of cases of programmatic theoretical activity in sociology. The cases we analyze meet several criteria. First, they are programs of active and ongoing concern in sociology. Artificially-constructed cases and cases from other disciplines may have some value; however, the best cases are those which represent actual contemporary sociological work. Second, each program represents one of the major types of

theoretical research programs we identify. There may be more types and there almost certainly are more of one type than another. Finally, the programs are all ones about which we have intimate knowledge. As a consequence, all our cases come from within sociological social psychology. However, we firmly believe that our ideas apply equally well in other branches of sociology.

3.1.1 Theory elaboration.

Sometimes a new theory is used to make an older theory more general or specific. The new theory T(2) has a theoretical structure very similar to that of its predecessor T(1). It addresses a similar sociological problem or is applied to a similar base of empirical observations. However, T(2) is in some sense more comprehensive, more precise, more rigorous, or has greater empirical support than T(1), from which it was generated. Thus, the predictions of T(2) "say more" (i.e. they are more comprehensive or precise) or "fit better" (i.e. they are better supported empirically) than the predictions of T(1). Within their common explanatory domain the predictions of T(1) and T(2) either conflict over a small part of that domain or do not conflict at all.

This sort of relation, involving increases in the scope, rigor, precision, or empirical adequacy of a theory, is theory elaboration. Its properties are summarized in the Venn diagrams in Figure 1. The first diagram represents the

degree to which the theories share structural elements. The second diagram represents the degree to which the theories share problem foci. The third diagram represents the degree to which predictions of the theories conflict within the area of common problem focus.

FIGURE 1 ABOUT HERE

Examples of theory elaboration abound. For example, the general framework for modeling intragenerational occupational mobility developed by Mayer (1972) is an elaboration of the pathbreaking model proposed independently by Prais (1955) and Blumen, Kogan and McCarthy (1955). In social psychology the graph-theoretical formalization of Heider's (1944, 1946) principles of cognitive organization in Cartwright and Harary (1956) is also a form of elaboration. So too is the specification in Stinchcombe (1963) of some of the empirical consequences of Davis and Moore's (1945) functional theory of stratification.

Elaboration is the type of relation most sociologists think of as representing growth or development. Certainly, the refinement of knowledge in established areas is a common activity in sociology. Most often the elaboration is primarily empirical in nature (i.e. each new theory is designed to fit an established data base more closely). More direct theoretical elaborations (e.g. formalizations, chang-

es in scope or precision) are perhaps somewhat less common.⁵

3.1.2 Theory proliferation.

Consider now a situation in which ideas from one theory are used to generate a new theory concerned with a new or different sociological problem or data base. Again the new theory T(2) is similar in structure to T(1). However, in this case the predictions of the two theories are generally non-overlapping, since they apply to different explanatory domains. In a sense, here too the predictions of T(2) "say more" or "fit better" than those of T(1) --but only with respect to the newly-considered problem area. They have little or nothing to say about the original problem area, where the predictions of T(1) remain appropriate.

This sort of relation we call theory proliferation. In this case T(2) expands the range of application of ideas about social phenomena beyond the original domain of T(1). The properties of proliferation are summarized in Figure 2 as before.

FIGURE 2 ABOUT HERE

Theory proliferation is much less common in sociology than is theory elaboration. Still there are many appropriate examples. For example, proliferation is involved in

⁵ See Fararo (1973) for an impressive sampling of theoretical elaborations through formalization.

Hannan and Freeman's (1977) application of ideas from population ecology (see, especially, Hawley, 1950, and Levins, 1968) to deal with organizational phenomena. Burgess and Akers' (1966) use of Skinner's (1953) principles of operant behavior in their theory of criminal behavior is also an excellent example of proliferation.

Although proliferation is seldom discussed (either in sociology or in the philosophy of science) the theoretical expansiveness it represents is a critical feature of theory development. For knowledge to grow, it seems important that we both (1) refine our accounts of established problems and (2) reach out to account for new and different problems. It is through proliferation that knowledge can spread into such new domains.

3.1.3 Theory competition.

In still other cases a new theory is generated in an attempt to capture at least some of the explanatory domain of another theory. In these situations the theoretical structure of T(2) is essentially dissimilar to that of T(1). T(1) and T(2) are related theoretically only in that they have similar problem foci or similar data bases. The major differences in theoretical structure, coupled with the similarities in focus or data base, lead to relatively large sets of conflicting predictions over at least some portion of the explanatory domain of each theory. If the structure

of T(2) is entirely different from that of T(1) and if the explanatory domains are identical, the predictions of the two theories could conceivably conflict at every point. Both theories may claim to "say more" or to "fit better."

This sort of relation, theory competition, is especially important in sociology. It is the activity through which theory comparison and choice is most frequently made. T(2) proposes an entirely new or different set of theoretical tools for dealing with an established problem; it is intended as a replacement for T(1).⁶ Proponents of each theory claim the other is wrong. Eventually one or the other theory may win out in the conflict and become the primary vehicle for further development. A third theory may also emerge that is more successful than either of the original competitors, and which therefore replaces both as a vehicle for further development. The properties of competition are summarized in Figure 3.

FIGURE 3 ABOUT HERE

⁶ Replacement is also involved in theory elaboration, but in a much more congenial sense. There T(2) may replace T(1), but it retains much of the character of the earlier theory. T(1) may even remain a viable theory if the most refined analysis is not always needed. In physics, Newtonian mechanics remains viable despite the superiority of relativity theory, since the predictions of the former are satisfactory for most purposes (i.e. for any analysis not involving appreciable fractions of the speed of light).

Note that replacement is absent from theory proliferation altogether.

Theory competition describes quite well the relation between Scheff's (1966) labelling theory and Gove's (1970) psycho-physiological theory of mental illness. It also occurs in the relation between Davis and Moore (1945) and critics of their functional view of stratification (see, e.g., Tumin, 1953).⁷ Competition appears in the debate over the relative importance of power elites and veto groups in political decision-making. It is basic to the conflict between genetic and environmental accounts of the bases of intelligence.

Competition is a particularly complex form of theoretical growth. The structures of competing theories often are based on the directives of different orienting strategies. Consequently, conflicts are not limited to differences in predictions. They also may arise with respect to the relevance or interpretation of evidence, the meaning or value of concepts used in the theories, or the importance of accounting for some specific feature of the common explanatory domain. It should not be surprising therefore that theory competition is a slow and arduous means of developing theoretical knowledge. Its commonality belies its difficulty.

⁷ This example demonstrates that a single theory may generate development in several different ways. Stinchcombe (1963) elaborates Davis and Moore (1945) while Tumin (1953) competes with it.

That there are several different kinds of theoretical relations suggests that we should treat theory change, growth and development as a multifaceted activity. Put in other words, there is no single method by which our theoretical knowledge grows. When we focus our attention on only one kind of growth (usually theory elaboration) or only one criterion of evaluation (usually empirical support) we obscure the amount and diversity of growth that actually occurs in our field.

4. TYPES OF THEORETICAL RESEARCH PROGRAMS.

Isolated instances of theory elaboration, proliferation and competition all contribute to the growth and development of theoretical knowledge. In addition, each of these kinds of growth may occur in series, or in combination with other kinds, in making a contribution. Consider, for example, theory elaboration. A theory that has been elaborated may undergo still more elaboration; it is always possible to increase the scope, precision, rigor or empirical adequacy of a theory. Each new elaboration "says more" or "fits better" than the previous one. Consider also theory proliferation. Laying claim to an explanatory domain may establish a competitive relationship with a theory based on entirely different principles. Further, claiming the domain is only the first step in developing the account of that domain. Determining the ultimate value of any proliferant theory depends

heavily on articulating its explanatory accounts through elaboration.

This sort of collective and systematic effort to develop theoretical knowledge creates the much larger unit of theoretical activity we have called a "theoretical research program." Each elaboration, proliferation or competition constitutes a step in the development of the program; together they define the nature of the "interrelations" among the theories in the program. In short, the sequence of elaborations, proliferations and competitions in a theoretical research program constitutes the program's anatomy.

Using these concepts we can isolate and describe three basic types of theoretical research programs, depending on which relation is the primary mode of development in the anatomy of the program. Programs in which the primary mode of development is theory elaboration we designate as linear, those in which theory proliferation is primary we designate as branching, and those in which theory competition is primary we designate as competing.

4.1 Two linear programs: conflict spiral and deterrence.

There are many examples of linear programs; one of the most interesting concerns the role of threats in bargaining relationships. The program is based originally on the work of Thibaut and Kelley (1959) on interpersonal behavior of all sorts. Their account, built primarily on principles of

social exchange, focused on interdependence as a basis for relationships of power and conflict among actors. A's behavior depends directly on B's behavior, and vice versa. For example, if A is bargaining with B (say over a union contract or an arms treaty), the likelihood that A will threaten B depends on B, not just on A. So too the consequence of A's threat depends on B, not just on A.

In 1960 Deutsch and Krauss proposed a theory that makes use of this interdependence in explaining the behavioral outcomes of threats in bargaining relationships. Unlike most exchange-based theories, the theory Deutsch and Krauss developed assumes the explanatory mechanism is non-rational. Basically, threats are assumed to constitute a form of impression management specifically concerned with saving face (i.e. avoiding the appearance of weakness). Thus, if A has some punitive capability (e.g. warheads), s/he will be tempted to use that capability to threaten B; using punitive capabilities to threaten maintains an impression of strength for A. However, A's usage of punitive capabilities also causes a loss of face for B. To restore face, therefore, B responds to A with a threat of his or her own; not to do so would be to give the appearance of powerlessness. Thus, the availability of punitive capability prompts its use against the other; further, threat is met with counterthreat, creating a spiral of conflict. The more one party threatens, the more the other party threatens, the conflict in the bargain-

ing relationship escalating with each threat.⁸

A few years later Shomer, Davis and Kelley (1966) revised the Deutsch and Krauss formulation, arguing that threat should be distinguished from harm (i.e. punishment or actual damage). Actual harm, they proposed, always generates the conflict spiral. However, threat alone might be used under some circumstances as a means of communication through which the parties could coordinate their behavior. For example, a union's warning to management that it is prepared to call a strike might lead to concessions from management sufficient to avoid the strike. Generally, this sort of result would be expected when the threatened party anticipates less loss of face from conceding at this point than would result from having to concede once harm had actually occurred. Under such circumstances, no spiral of conflict would occur. Shomer, et al.'s research supported these revisions.

An additional revision in Brown (1968) clarified the nature of the face-saving activity involved in the conflict spiral process. Brown focused exclusively on the use/counteruse aspect of the process. He suggested that the evaluations of audiences affect the need to save face (and therefore the likelihood of retaliation). Specifically, the more foolish a party has been made to appear to the audience, the more s/he is likely to try to save face through retaliation. Thus, conflict spiral is more likely to occur

⁸ Extensive testing (see, e.g., Deutsch and Krauss, 1962) provided support for these arguments.

when one or both parties have been publicly humiliated than at other times. Brown's test of these ideas yielded considerable support.*

Interestingly, starting from similar underlying exchange premises, a somewhat different account of the use of threats in bargaining has emerged. Deterrence theory assumes that parties in the bargaining behave "rationally" (i.e. in their own self-interest). Basically, the more punitive capability A has, the more B will fear retaliation in response to B's use of that capability. Hence, it is in B's interest to avoid actions which might provoke A into using that capability (e.g. actions such as B using his or her own capability). Increases in A's punitive capabilities constitute potential threats to B which deter B's use of his or her own capabilities.

The deterrence process is described very loosely in Schelling (1960, 1966). A much more specific account of part of the process has been developed by Tedeschi and his associates. First, Horai and Tedeschi (1969) proposed a mechanism involving subjective expected utilities for governing one's response to threats and punishment. The subjective expected utility of a threat is a function of the magnitude of the threat multiplied by its credibility (i.e. its probability of occurrence). These dimensions of subjective expected utility then determine compliance behavior.

* Additional theory and research along this path of development is reported in Deutsch (1973).

Specifically, the greater the magnitude and credibility of A's threat, the greater B's compliance with A's demands. The consequence of the use of threat is therefore often compliance, not counterthreat. The use of threat deters others, rather than provoking them, and no spiral of conflict occurs.

The development of Tedeschi's theory has been primarily empirical. Each new study has specified an additional set of structural and situational conditions (e.g. attractiveness, prestige, esteem or status of the threatening party) that affect compliance.

Tedeschi, Bonoma, and Schlenker (1972) consolidated these findings in a revised version of the theory. Basically, each structural or situational condition constitutes a parameter used in calculating the subjective expected utility of compliance with another party's demands. The higher the utility, the greater the deterrent effect of A's threats.¹⁰

Recently, Bacharach and Lawler (1981) have proposed a way of resolving the discrepancies between deterrence theory (including much of the Tedeschi work) and conflict spiral theory. First, they reconstructed both theories to demonstrate more clearly that their core conceptual structures are virtually the same. Thus, deterrence theory is represented as in Figure 4 and conflict spiral theory theory as in Figure 5. With deterrence theory, each actor's attempt to in-

¹⁰ See Morgan (1977) for additional work on deterrence principles.

crease punitive capability is met with a corresponding increase by the other party. However, a spiral of conflict is avoided because each such increase reduces the likelihood that the other will use that capability. By contrast, with conflict spiral theory, increases in punitive capability increase the likelihood both of threats to use that capability and of actual attempts to punish the other. Since each increase in punitive capability and in use of threat and punishment tactics by one party is met with a corresponding increase by the other party, the result is an escalating spiral of conflict.

FIGURES 4 AND 5 ABOUT HERE

Although the conceptual structures are the same, the mechanisms by which the theories operate are clearly different. Bacharach and Lawler reconcile these differences by conditionalizing the operations of the two theories. Basically, deterrence is assumed to be applicable in situations where the stakes in the bargaining are relatively low. As the stakes increase, the likelihood that tactics of threat and punishment will prompt counteruse increases. Once this has occurred, the conflict spiral predictions become more appropriate. Furthermore, it is impossible to return to the deterrence conditions without restructuring the bargaining situation. Bacharach and Lawler then go beyond the conditionalization of deterrence and conflict spiral theory to

develop more specific propositions concerned with the effects of the use of punitive tactics by one party on the concession behavior of the other party. Thus, their theory both consolidates and extends the earlier theories of bargaining behavior.

Both conflict spiral and deterrence theory constitute linear theoretical research programs. The primary means of development for each is theory elaboration. Consider the conflict spiral theory first. Deutsch and Krauss (1960) constitutes an elaboration of Thibaut and Kelley (1959); it refines the latter's account of bargaining relationships, using a face-saving mechanism to generate specific predictions regarding the consequences of using threats in such situations. Deutsch and Krauss "says more" than does Thibaut and Kelley in this context. Shomer, et al. (1966) is an elaboration of Deutsch and Krauss. It distinguishes threat from harm conceptually and makes specific predictions regarding the latter (most of which are supported). Thus, Shomer, et al., both "says more" and "fits better" than does Deutsch and Krauss. Similarly, Brown (1968) elaborates the theory by distinguishing threat initiation from counter-threat and makes specific predictions regarding the latter which are well-supported. Again, the newer version of the theory "says more" and "fits better."

Horai and Tedeschi (1969) elaborates Thibaut and Kelley in much the same way as does Deutsch and Krauss (1960). In

this case, however, the refining mechanism involves subjective expected utilities. Some of the predictions made are also different, with deterrence commonly the outcome rather than conflict spiral. Nevertheless, relative to Thibaut and Kelley, deterrence theory "says more" about bargaining behavior. Tedeschi, et al.'s (1972) consolidation of previous research is, of course, also an elaboration (this time of Horai and Tedeschi). It "says" somewhat more and "fits" considerably better.

Note that the relation between theories in the deterrence program and theories in the conflict spiral program is not one of theory elaboration. Tedeschi's work especially is intended as a challenge to part of the account of bargaining behavior proposed by Deutsch and Krauss. In a sense the two theories are competitors. However, unlike competitors, these two theories are closely related conceptually, having both emerged as elaborations of the same earlier theory. Consequently, the relation between them is a "special" one not covered by our typology in Section 3 above.

Note also that the Harsanyi and Lawler theory elaborates both deterrence and conflict spiral arguments. Not only does it "say more" than either version does individually, it does so more compactly. Once again, we have identified a special relation not satisfactorily covered in our original typology. We will discuss the character of both of these special relations below.

Figure 6 summarizes the course of development of both conflict spiral and deterrence theory. Each arrow represent an elaboration of the theory on the left in the theory to the right. In each case, the later theories proceed in a "direct line" from the earlier theories. Hence, we describe programs of this sort as "linear."

4.2 A branching program: expectation states.

Work on expectation states processes provides a good example of a branching program. Expectation states theories are concerned with the processes by which individuals come to develop expectations (i.e. stable anticipations of future behavior) on the basis of general societal and situationally-specific information they have about themselves and others with whom they interact. The theories also deal with the consequences of the development of such expectations for the actual behavior individuals exhibit in interaction with those others.

Originally, expectation states theories focused exclusively on the emergence and maintenance of inequalities in power and prestige among members of discussion groups who were initially equal in status (as in Bales-type groups). In such situations power and prestige theory argues that actors make unit (i.e. individual) evaluations of their own and each other's past contributions to the group. Over time, these evaluations may often come to be rather consis-

tent. The more consistent the evaluations of the contributions of a particular member are, the more likely the members of the group will develop expectations for the future performance of that actor. Once these expectations emerge, all later unit evaluations (as well as a number of other power and prestige-related behaviors, such as deference) are based on the expectations for that actor, rather than on actual performance. The process becomes circular, with unit evaluations reinforcing expectations and expectations reinforcing unit evaluations.

The original power and prestige theory (Berger, 1957) described a sequence of interaction within which this "evaluation/expectation" process occurred. Later versions of power and prestige theory (Berger and Conner, 1969, and Berger and Conner, 1974) have generalized this theory and have described its consequences for the emergence and maintenance of expectation states more formally and in greater detail.

A second branch of the program, called status characteristics theory, has come to deal with task situations in which actors are already unequal in terms of status (as for example, is the case in Strodtbeck's studies of mock juries). In these situations a "status/expectation" process is posited; information that is culturally associated with the status differences in the situation is used by actors in the formation of overall expectations for those situations. Power and prestige behavior is then a direct function of the

actors' expectations relative to the other (i.e. their "expectation advantage"). Thus, if an actor sees himself as having higher status than another (e.g. is a male in a professional occupation working with a semi-skilled female), he will come to expect to perform more capably than he expects the other person to perform. Since he expects (and is expected to) perform more capably, his position in the power and prestige hierarchy of the group will be higher; his contributions will be evaluated more highly, his opinions deferred to, and so on. Once again, the process is circular.

Berger, Cohen and Zelditch (1966), the first status characteristics theory, considered only the effect of information about one status difference. There the status difference generates expectations and power and prestige behavior. A later version of the theory expanded it to consider information about multiple statuses operating at the same time and about statuses of different kinds (Berger and Fisek, 1974). This version assumed that, in forming expectations, actors combine information from all the statuses they and others possess that have become salient in their immediate situation. Consequently, a person with inconsistent statuses (e.g. a black female doctor) is likely to develop expectations that are an "average" of all the statuses, rather than expectations that are based only on a subset of the status information (with some of statuses eliminated as irrelevant). A considerable amount of research supports the

"combining" argument. However, an alternative formulation by Freese and Cohen (1973) that assumes that "eliminating" occurs under at least some circumstances has also generated empirical support.

The most recent version of the theory (Berger, Fisek and Norman, 1977), which refines the basic combining argument, considers status information about more kinds of actors, not all of whom are interacting at the same time. The 1977 version also restates the status characteristics ideas in graph-theoretical terms. This formalization permits the derivation of more precise predictions about behavior and makes feasible the detailed analysis of a much larger class of status situations.

A third branch of the expectation states program deals with the manner in which actors come to develop expectations for reward allocations and with how those expectations affect their evaluations of the justice or injustice of actual reward allocations. Status value theory proposes that reward expectations are based on the activation of referential structures. Basically, referential structures are generalized beliefs about how the distribution of rewards is related to statuses in society at large. The general belief that men are paid more than women constitutes such a referential structure.¹¹ Given that this sort of societal and cultural

¹¹ A referential structure need not reflect the actual state of affairs in society. Most people believe that highly educated people are more highly rewarded than less highly educated people, even though this is often not the case

information is activated (i.e. becomes significant) in the immediate situation of action, people develop expectations for themselves and others in the situation in terms of what they assume "people like them" (i.e. those with similar statuses) obtain in general in society. Further, if a referential structure has certain properties, "what is" on the societal level determines "what ought to be" (in the moral sense) in the immediate situation of action. Finally, as Berger et al. argue, if the reward allocation an actor actually receives matches these reward expectations, the immediate action situation is assessed as just; otherwise, it is assessed as unjust.

Most of these ideas are developed in some detail in Berger, Zeiditch, Anderson and Cohen (1968, 1972). The same authors consider possible responses to injustice in Anderson, Berger, Zeiditch and Cohen (1969). A later statement in Cook (1975) considers more specifically the impact that responsibility for the unjust allocation and control over future allocation have on responses to injustice. Basically, the more responsibility the actor feels and the more s/he has control over future allocations, the more s/he is likely to attempt to correct the injustice.

Status value theory generates a "referential structure/reward expectation" process. The process is parallel to the evaluation/expectation and status/expectation processes, ex-

actually.

cept that here the expectations involved concern rewards rather than task performance capabilities. Thus, information from referential structures is used in generating reward expectations; these expectations then determine reward allocation (or reallocation) behavior, as well as the assessment of such allocations when they are controlled by an external source.

Finally, theoretical work in yet another branch of the expectation states program is intended to capture ideas about the effects of significant others on an actor's self-evaluations. This work, called source theory, treats significant others as "sources" (i.e. individuals with the right to evaluate whose evaluations "matter" to the actor). Not all individuals with the right to evaluate are sources for an actor. The likelihood that a particular evaluator will become a source for an actor is based on that actor's expectations for the evaluator; the higher the expectations, the more likely the evaluator is to become a source. Once a source has emerged, his or her evaluations determine the actor's self-evaluations (which, in turn, determine expectations and behavior).

The "source/expectation" process specified in source theory is, of course, parallel to the processes specified in the theories in the other branches of the program. Here source evaluations determine unit evaluations of self, which determine expectations, which determine behavior.

Webster (1969) provided the first account of this process, focusing only on cases in which one source evaluator is present. Later versions of source theory (see Sobieszek, 1972, and Webster and Sobieszek, 1974) extended the argument to multiple source situations, including ones in which source evaluations are inconsistent. Once again, combining seems to be the primary method for handling inconsistent information.

FIGURE 7 ABOUT HERE

Figure 7 summarizes the basic structures of explanation in the various branches of the expectation states program. In all cases some sort of behavioral or informational input is organized into expectation states which then determine the character of some sort of behavioral output. In the figure the left-most column identifies the kind of behavioral and informational input for each branch, the center column identifies the kind of expectation that organizes each kind of input, and the right-most column identifies the kind of behavioral output that is determined by the expectations formed. Clearly, the character of explanation in any one branch of the program is parallel to that in other branches.

A recent formulation by Berger, Fisek, Norman and Wagner (1983) makes use of the parallel character of two of the expectation states arguments to construct a new theory that

unites much of the expectation states accounts of status characteristics phenomena and reward expectation phenomena. Specifically, the new theory incorporates consideration of both expectations for task performance and expectations for reward allocation, specifying structural conditions under which these two types of expectations become interdependent. As a consequence, Berger, et al. are able to incorporate some of the concerns of status value theory in the graph-theoretical structure of the latest version of status characteristics theory. Thus it becomes possible to talk about the effect of reward expectations on task behavior and of task expectations on reward behavior.

FIGURE 8 ABOUT HERE

Figure 8 reviews the development of the various branches of the expectation states program. Each branch represents the application of the basic underlying principles of the program to a new explanatory domain, with little overlap in those domains. In other words, each branch represents a theory proliferation.

Theory elaboration is also quite evident in this particular case through its role in the development of each branch of the program. For example, Berger, Fisek and Norman (1977) is an elaboration of Berger and Fisek (1974), which is in turn an elaboration of Berger, Cohen and Zelditch (1966). Similarly, Berger and Conner (1974) is an elaboration

tion of Berger and Conner (1969), which is in turn an elaboration of Berger (1957). However, proliferation is the more basic relation, as it defines the relation between the theories in the different branches of the program.¹²

Two relations are again not adequately captured in our basic typology. First, the Freese and Cohen (1973) theory is definitely neither an elaborant nor a proliferant of Berger and Fisek (1974). Rather it competes with Berger and Fisek (1974) in much the same way that Horai and Tedeschi (1969) competes with Deutsch and Krauss (1960). The two theories in each pair are closely related conceptually. Both are elaborated from the same earlier theory in each case. Thus, we have another example of one of our special relations.

Second, the relationship between the Berger, Fisek, Norman and Wagner (1983) theory and its predecessors also is not adequately covered in our basic typology. This special relation seems to share many of its basic properties with the Bacharach and Lawler theory in the bargaining programs; both seem to unite previously distinct theories. We now seem to have two examples of the other of our special relations as well. As we have suggested, we will look at these

¹² Note that branching programs exist in which there is either little or very uneven elaboration of the different branches. This is the case, for example, in the "balance theory" program founded on the work of Heider (1946, 1958). The proliferant theories of Newcomb (1953), Festinger (1957) and Secord and Backman (1961) are quite different in the extent of their elaboration.

special relations a little more closely below.

4.3 A competing program: distributive justice.

Finally, we turn to a program based on competition. The program we have chosen focuses on issues of distributive justice and injustice. Here there are two very different accounts of justice phenomena. One has already been introduced; it is the status value theory discussed in the previous section. The other approach, equity theory, has a very different conceptual structure.

Equity theories assume that assessments of justice and injustice are based on direct comparisons of individual actors' inputs and outcomes. For example, Homans (1961) proposed that the determination of justice and injustice involves a comparison of actors' ratios of inputs (i.e. effort expended or "investments") to outcomes (i.e. compensation for effort, or "rewards"). Thus, justice is represented as in equation (1) below.

$$(1) \quad A's \text{ reward}/A's \text{ investment} = B's \text{ reward}/B's \text{ investment}$$

Injustice then is represented as an inequality in the ratios (in either direction). All comparisons are "local" comparisons; that is, actors A and B are both present in the immediate situation. (e.g. both may be teachers in the same public school).

A revision of this theory by Adams (1965) incorporated consideration of behavioral reactions to unjust situations. More recently, Walster, Bersheid and Walster (1973) suggested a more adequate specification of the justice equation that eliminates potential problems with "negative" inputs.

By contrast, the status value theory of Berger et al. assumes that assessments of justice or injustice are based on comparisons of actual with expected rewards, given the activation of a referential structure. Thus, the status value theory predicts justice when

(2) Actual reward = Expected reward

and injustice otherwise. If the actual reward is less than expected, the actor feels underrewarded; if the actual reward is greater than expected, the actor feels overrewarded.

As noted earlier, revisions of status value theory consider possible reactions to various types of injustice (see Anderson, Berger, Zelditch and Cohen, 1969) and the effects of responsibility for the injustice on attempts to redress the injustice (see Cook, 1975).

Equity theory and status value theory make conflicting predictions in a number of instances. In fact, the status value theory was developed in part because the authors felt that many of the justice situations characterized by equity theory were inaccurately handled. For example, suppose that teacher A and teacher B are both paid a salary of \$15,000

per year. Suppose further that both have the same amount of training, seniority, and whatever other qualifications the school system might deem relevant to their pay. Under these circumstances, equity theory would describe the situation as just; neither A nor B is likely to have cause to complain or to try to change the reward allocation. Suppose, now, that A and B also know that teachers in general in the United States with their level of training and seniority ordinarily earn \$19,000 per year. Given this information, status value theory would predict that both A and B will feel injustice; in particular, both are likely to feel unjustly underrewarded and are likely to work collectively to try to redress the injustice (e.g. to join a union that proposes a reallocation of rewards in the school system).

Collective injustices of this sort are simply not defined in equity theory (and therefore cannot be predicted by the theory). Similar inadequacies are identified with respect to (1) collective overreward, (2) distinguishing collective injustice from individual injustice generally, (3) distinguishing overreward from underreward generally, (4) distinguishing self-injustice from other-injustice, and (5) identifying conditions in which not enough information is available for the actor to make an assessment of the justice or injustice of the situation. Furthermore, in situations where both theories can make predictions, the predictions often differ. Although the predictions of the two theories

do not conflict at every point, the differences are deep and widespread.

Recently, Jasso (1978) has developed a new approach to justice issues that incorporates elements of both equity theory and status value theory. Jasso points out many of the weaknesses of both earlier theories. For example, she agrees with many of the Berger et al. criticisms of the equity approach, especially the inability of equity theory to distinguish overreward from underreward consistently and to handle collective injustice (whether involving overreward or underreward) at all. She also suggests a major weakness in status value theory. Specifically, she points out that the equation used there results in justice evaluations that are stated in terms of units of the particular reward commodity, rather than in units of "justice." The latter is necessary, she argues, if a comprehensive theory of distributive justice is to be developed.

Jasso then rearranges the equity and status value equations as a step in her development of a justice evaluation function which can be applied to any socially-distributed good. In equity theory, for example,

(3) justice evaluation =

$$A's \text{ reward} / A's \text{ investment} - B's \text{ reward} / B's \text{ investment}$$

whereas, for status value theory,

(4) justice evaluation = actual reward - just reward.

Jasso's generalized justice evaluation function is then specified as

(5) justice evaluation =

$$\ln (\text{actual amount of good/just amount of good})$$

That is, an evaluation of the justice of a reward distribution is a function of the natural logarithm of the ratio of an actor's actual rewards to the rewards he or she assesses as just. Alternatively, the evaluation may be seen as the difference between the logarithms of the actual and just amount, which is mathematically equivalent. Jasso supposes that equity theorists would be more likely to prefer the logarithm of the ratio, while status value theorists would prefer the difference between two logarithms. However, since the forms are mathematically equivalent, the justice evaluation function has adequately captured critical features of both theories.

Jasso makes no attempt in her theory to cover all the explanatory domain of the two earlier theories. For example, equity theorists are frequently concerned with predicting specific means of redressing an injustice. Jasso makes no predictions in this respect. Similarly, status value theory makes predictions regarding the assessment of situations where the injustice involves only others. Jasso specifically excludes this issue from her conceptualization.

Jasso's theory does make some predictions not made by either the equity or status value theories. For example, the use of a logarithm results in a weighting that makes underreward more keenly felt than overreward, a phenomenon all justice theorists have assumed occurred, but which has not previously been incorporated in their theories.

Jasso elaborates her argument considerably in Jasso (1980). Among other things, she separates evaluations involving "quality goods" (e.g. beauty) from those involving "quantity goods" (e.g. salary) and considers the application of the justice evaluation function to more than one good at a time. She also develops a justice evaluation distribution within a social or conceptual aggregate by assuming consensus about the goods valued within the aggregate. A variety of empirically testable hypotheses are then suggested relating properties of the distribution to particular social conditions (e.g. to rates of crime and mental illness).

Finally, Jasso (1983) analyzes the circumstances under which the individual assessments of justice embodied in the justice evaluation function may or may not generate an assessment of collective justice, as embodied in the justice evaluation distribution.

FIGURE 9 ABOUT HERE

The development of work on justice processes is presented in Figure 9. Homans (1961) and Berger, et al. (1972) present clearly different theoretical structures; the two theories are therefore competitors. Each elaboration of the two theories furthers the competition, creating a competing research program.

As might be expected, theory elaboration occurs frequently in this program as well, although theory competition is the defining characteristic. It may be reasonable to think of some competing programs as composed of two (or more) linear programs related to one another through competition. A competing program is probably the most complex form of theoretical growth, since it involves bringing two or more different theoretical arguments to bear on a problem or issue at the same time.

In this case as well we see that a development in the program is not adequately covered by our typology of three basic theory relations. The relation between Jasso's theory and the earlier equity and status value theories is neither theory proliferation nor theory competition. Rather it elaborates both earlier theories, unifying them in the process. This is similar to what was involved in the Bacharach and Lawler (1981) case and the Berger et al. (1982) case identified earlier. In all three cases the new theory unifies consideration of issues dealt with separately in the earlier theories. In one sense or another, the new theories go bey-

and the theories they unify. However the degree to which they unify and amplify is different depending on the kind of program within which they occur. We shall look at this phenomenon specifically in our analysis of special relations below.

4.4 The special relations: theory variation and theory integration.

Each of the three primary types of theory relations, we have argued, generates a different form of growth of sociological knowledge. Theory elaboration creates a linear research program through increases in scope, precision, confirmation or empirical control. Theory proliferation creates a branching program through increases in range; (i.e. the application of a theoretical theme to new problems or phenomena). Theory competition creates a competing research program through the generation of a new or different set of theoretical tools to deal with an established problem or phenomenon.

However, not all growth in research programs is elaboration, proliferation or competition. There are at least two special theoretical relations within the context of the theoretical research programs we have considered that are not covered by our basic typology and which appear to be crucial in describing the growth of these programs. Neither of these relations is likely to appear in the absence of established research programs; in fact, by their very mean-

ings, they depend on the primary relations which generate such programs. We now turn our attention to these special relations.

4.4.1 Theory variation.

In some situations the construction of an elaborant, proliferant or competitor reveals slightly different ways in which the theory's account may be specified. Under these circumstances the original theory is likely to generate a new theory which incorporates one of those slightly different conceptualizations. Ordinarily the theoretical structure and the focus of explanation of the new theory T(2) are almost identical to those of the earlier theory T(1). The theories differ only in that they incorporate slightly different working mechanisms. Consequently, they differ only on a very limited set of grounds in such a way that the theories make directly conflicting predictions in that limited area. However, unlike elaboration, neither theory initially "says more" or "fits better" than the other; the predictions of both are usually equally comprehensive or equally supported by previous data.

FIGURE 10 ABOUT HERE

The properties of this special relation, termed theory variation, are summarized in Figure 10. Variation is hard to justify (or even to see) from the point of view of "out-

siders" (i.e. those not intimately familiar with the program). Often much of the structure of T(2) is left implicit since it is so similar to T(1). Further, the changes in structure are often quite subtle. Those not thoroughly familiar with the theories may frequently fail to see any important distinction between them. The grounds of difference, at least to the outsider, may simply be too small to be noticed. Finally, precisely because the conceptual grounds of difference are small, a theoretical resolution of a conflict in predictions (given that it is amenable to empirical investigation) is likely to occur relatively rapidly. Variant theories can appear and disappear so quickly they are not even noticed.

Theory variation, as we have described it, captures the nature of the relation between the Deutsch and Krauss (1960) and the Horai and Tedeschi (1969) theories of bargaining behavior. They have common theoretical ground in the exchange principles of Thibaut and Kelley (1959). They make differential predictions over a limited portion of their shared domain, depending on the choice of a "non-rational" or "rational" mechanism for dealing with reactions to threats. If the mechanism is "face-saving," the consequence should be a spiral of conflict; if the mechanism is "subjective expected utility," the consequence should be deterrence. Variation also clearly represents the relation between the combining argument in Berger and Fisek (1974) and the eliminating ar-

guent in Freese and Cohen (1973). Both rely on the basic theoretical structure of status characteristics theory. However, in multicharacteristic status situations involving status inconsistencies the two make somewhat different predictions.

Although theory variation often appears to be a minor, even a trivial, form of growth, it is actually quite important, particularly in the refining of theoretical structures. By constructing variants the theorist is able to make close comparisons of subtle differences in his or her thinking. Resolution of those differences can occur relatively quickly (as is seldom the case with theory competition). Further, resolution can occur in at least two different ways. First one variant may come to be seen as superior in all cases. Second, as Bacharach and Lawler (1981) have shown in bargaining theory (and as may still be the case with status characteristics theory) each variant may come to be seen as superior under specified conditions. Conditionalization is just as likely as replacement. Both increase our knowledge.

4.4.2 Theory integration.

In a sense, this sort of relation is the opposite of theory variation. Sometimes two different theories (elaborants, proliferants, or competitors) suggest very similar ways of dealing with the same sociological problem. Under

these circumstances, a new theory may emerge which incorporates much of the conceptualization of both theories. In such cases at least three theories, which may or may not have similar theoretical structures, are involved. One theory T(3) consolidates many of the ideas found in T(1) and T(2) in a single formulation, usually suggesting interrelationships between those ideas. Generally speaking, predictions of T(1) and T(2) are subsumed in the structure of the new T(3), although it is unlikely that all will be subsumed (especially if the earlier theories are competitors). Also, the new theory ordinarily generates some additional predictions not made by either earlier theory.

With this relation, theory integration, T(3) "says more" or "fits better" than either T(1) or T(2) individually. However, T(3) is not just a conjunction of the other two theories (a trivial accomplishment logically). Rather, T(3) is a distinct theoretical structure whose form depends on the nature of the relationship between the integrated theories. If T(1) and T(2) are variant theories, T(3) is likely to involve the specification of conditions for the application of each variant; T(1) is seen to apply under some circumstances, T(2) under others. This is what has occurred, for example, in Bacharach and Lawler's (1981) use of both conflict spiral and deterrence principles in their theory. The latter applies when stakes are low, the former when stakes are high. If T(1) and T(2) are proliferants, inte-

gration is more likely to entail the identification of properties which permit the interrelation of disparate phenomena. Such is the case with the integration in Berger, et al. (1983) of status and reward phenomena on the basis of the interdependence between task expectations and reward expectations. Finally, if T(1) and T(2) are competitors, integration is likely to require a new theoretical language (with new concepts) that enables the selection and incorporation of theoretical principles from each competitor in a coherent new formulation. Jasso's (1978) theory of distributive justice represents an integration of the equity and status value approaches to justice phenomena in precisely this way. Although her "justice evaluation function" captures some of the ideas in equity theory and in status value theory, it does not directly correspond to the form of justice evaluation proposed by either. Further, there are no direct parallels to her "justice evaluation distribution" (or to the hypotheses relating to it) in either earlier theory.

FIGURES 11, 12, AND 13 ABOUT HERE

The properties of theory integration are summarized in Figures 11, 12 and 13. Three figures are needed since the properties of integration differ, depending on the differences between T(1) and T(2) that are involved.

Theory integration often constitutes the "major advance" that is the clearest evidence of progress, since it both unifies and deepens our knowledge. Thus, although integration (especially of competitors) is rather rare, when it is successful its impact may be quite dramatic. However, successful integration depends at the very least on the development of an established research program. Significant elaboration, proliferation, competition (and variation) is likely to be necessary for the theorist to know which principles are important enough to include in a single theoretical structure. In short, theoretical impact probably requires extensive preparation.

5. SUMMARY AND CONCLUSIONS.

Is there theoretical growth in sociology? Yes--and there is quite a bit of it. Unfortunately much of that growth is obscured by our rather limited (and limiting) view of the growth process. To clearly observe, understand, and characterize the growth of our knowledge, we have argued it is necessary to

1. distinguish between different types of theoretical activities, especially regarding the degree to which they do or do not involve growth,
2. consider the relationships that exist between theories, not just the relationship between a theory and the data that is used to evaluate it, and

3. to identify the different kinds of relationships that may occur among theories, and therefore the different kinds of growth that may occur.

We have accomplished the first of these objectives by differentiating between orienting strategies, unit theories and theoretical research programs. Strategies, we have argued, are primarily metatheoretical in character. Their manifold, basic and generally non-empirical differences make them rather rigid; whatever changes do occur within or among strategies are not likely to be progressive. Hence, a focus on orienting strategies is inappropriate for the analysis of theoretical growth in sociology.

A focus on unit theories is considerably more satisfactory. Differences here can ordinarily be resolved logically or empirically. Further, much of what we think of as growth of knowledge is represented by the increases in empirical support that a unit theory may generate; empirical confirmation of our theoretical ideas is a form of progress.

However, empirical confirmation is not the only form of progress. Other forms include increases in scope, precision, range, and so on. All of these forms require consideration of the linkages between theories, not just the linkage between theory and data. Such consideration is possible only with a focus on theoretical research programs, on sets of related unit theories (together with the research that supports and the research that applies them).

We have used that focus in analyzing the theoretical activity in several programs that are of current interest in sociology: the deterrence and conflict spiral programs, the expectation states program, and the distributive justice program. Our analysis suggests that theoretical growth is a multifaceted process; we can make sense of the theoretical growth that occurs in sociology only if we pay attention to its multifaceted character.

More specifically, our analysis indicates that there at least five different kinds of relations between theories that occur in theoretical research programs. Three of these relations—theory elaboration, theory proliferation and theory competition—represent distinctly different forms of theoretical growth. Each of these types of relations may serve as the primary mode of development for entire large-scale programs. The anatomies of such programs correspond to the primary mode of growth. In linear programs (e.g. the deterrence and conflict spiral programs) the primary mode is elaboration; in branching programs (e.g. the expectation states program) it is proliferation; in competing programs (e.g. the distributive justice program) it is competition.

Two other relations—theory variation and theory integration—are more specialized in their impact. Each again represents a distinctly different form of theoretical growth. However, neither is ordinarily a primary mode of development for entire programs. Rather, each occurs within

the context of established programs based on other kinds of relations. Integration, perhaps the rarest and most dramatic form of theoretical growth, depends especially on the existence of a well-developed program based on other relations; such development is probably necessary to determine which concepts and principles in the integrated theories are important enough and promising enough to be included in a single theoretical formulation.

Perhaps the most surprising and unexpected result of our analysis is that theory integration may, in fact, occur in any one of three different ways, depending on the nature of the relation between the integrated theories. If T(1) and T(2) are variants (as in the deterrence and conflict spiral programs), integration is likely to involve the specification of conditions for the application of each variant. If T(1) and T(2) are proliferants (as in the expectation states program), integration is likely to involve identification of properties which permit the interrelation of disparate phenomena. Finally, if T(1) and T(2) are competitors (as in the distributive justice program), integration is likely to involve the creation of a new theoretical language that enables the theorist to select and incorporate principles from the competing theories in a coherent new theory.

Our understanding of the tripartite character of theory integration emerged only in the analysis of specific concrete cases of theoretical growth in sociology. The analy-

sis of actual cases, we believe, is critical to the understanding of theoretical growth. With Kuhn, we believe that a discipline needs exemplars. Each of the cases we have analyzed provides an exemplar of theoretical growth in sociology. Any further development of our understanding of theoretical growth in sociology must be anchored in the analysis of such exemplars.

Thus, whatever one's substantive interest in the particular cases considered, these cases (and probably many others that can be identified) merit attention and careful analysis and study. They provide us with valuable information about the nature of theoretical growth as it is now occurring in our field. They also provide us with models that we can use in realizing theoretical growth in the different branches of sociology.

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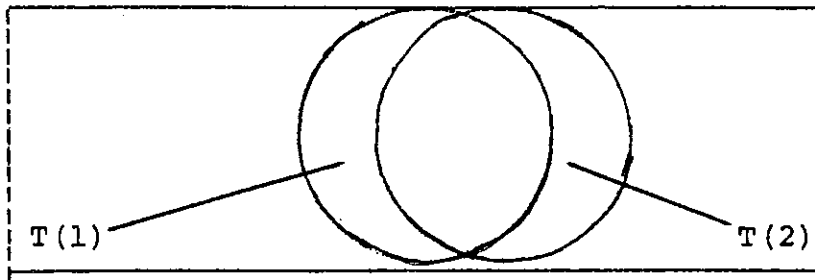
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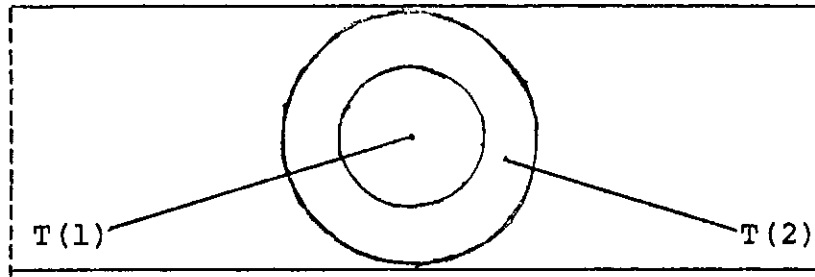
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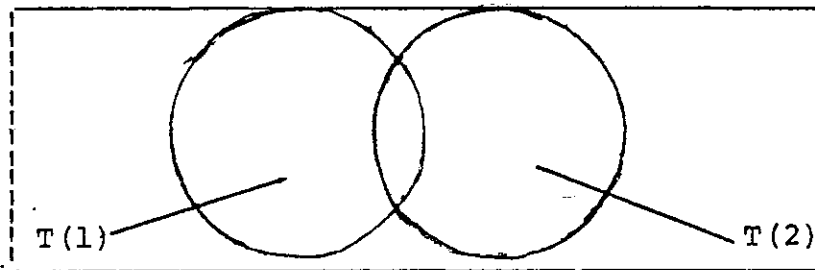
THEORETICAL STRUCTURE

Theories T(1) and T(2) share large parts of their theoretical structures.



DOMAIN OF EXPLANATION

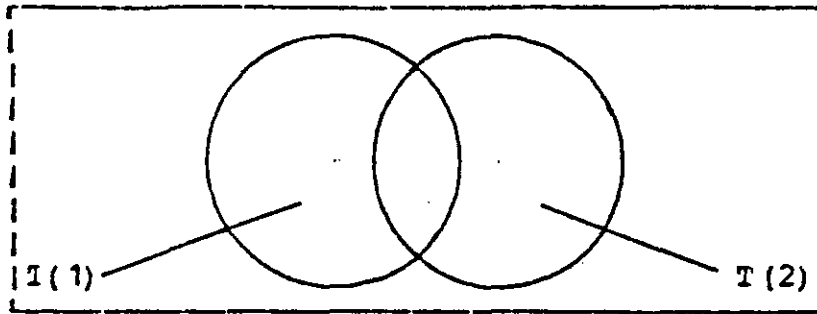
The phenomena explained by theory T(1) are a subset of those explained by T(2).



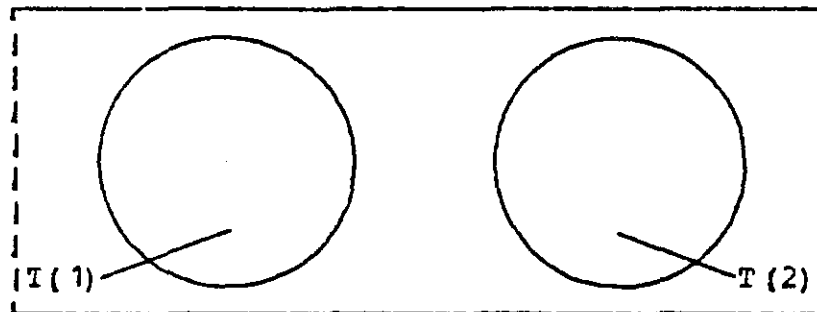
CONFLICT IN PREDICTIONS

The predictions of theories T(1) and T(2) do not conflict or conflict only over a very small part of their common explanatory domain.

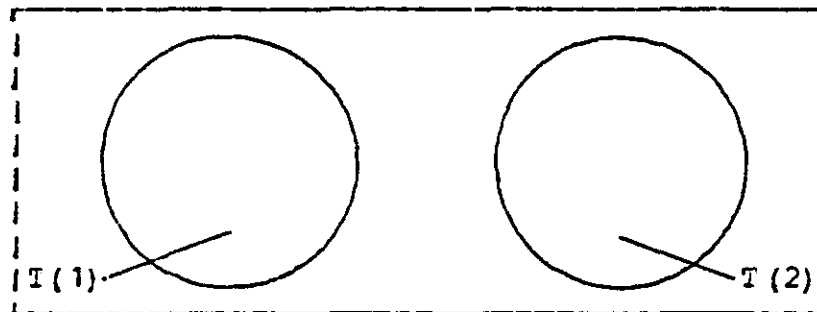
Figure 1: Elaboration.



THEORETICAL STRUCTURE
 Theories T(1) and T(2) share a limited portion of their theoretical structures.

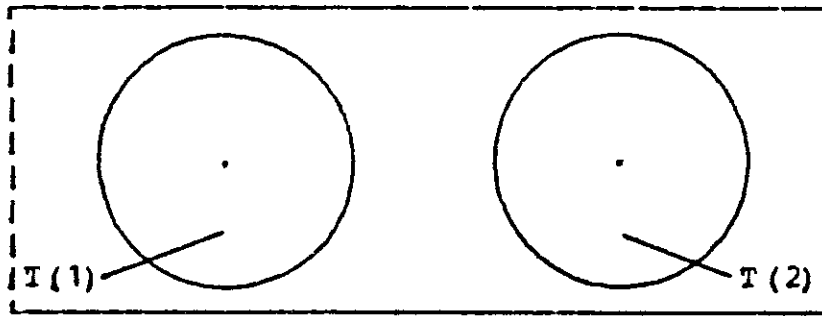


DOMAIN OF EXPLANATION
 The phenomena explained by theory T(1) are entirely different from the phenomena explained by theory T(2).

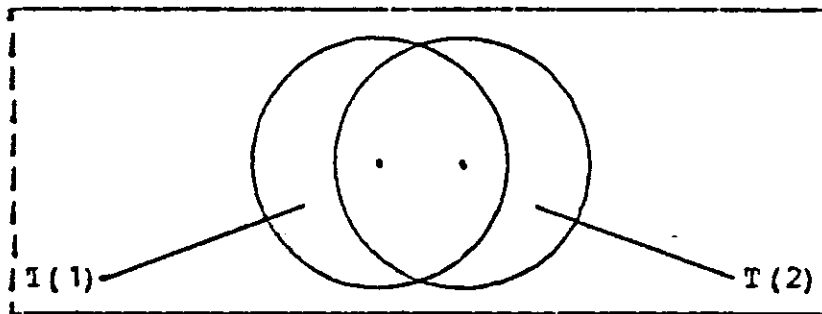


CONFLICT IN PREDICTIONS
 There is no conflict in predictions between theories T(1) and T(2).

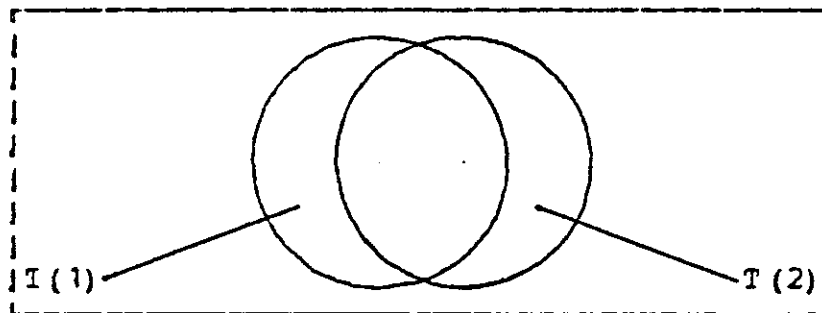
Figure 2: Proliferation.



THEORETICAL STRUCTURE
 The theoretical structures of theories T(1) and T(2) are entirely different.



DOMAIN OF EXPLANATION
 The phenomena explained by theory T(1) and T(2) overlap to a large extent.



CONFLICT IN PREDICTIONS
 The predictions of theories T(1) and T(2) conflict over a very large part of their common explanatory domain.

Figure 3: Competition.

PARTY A

PARTY B

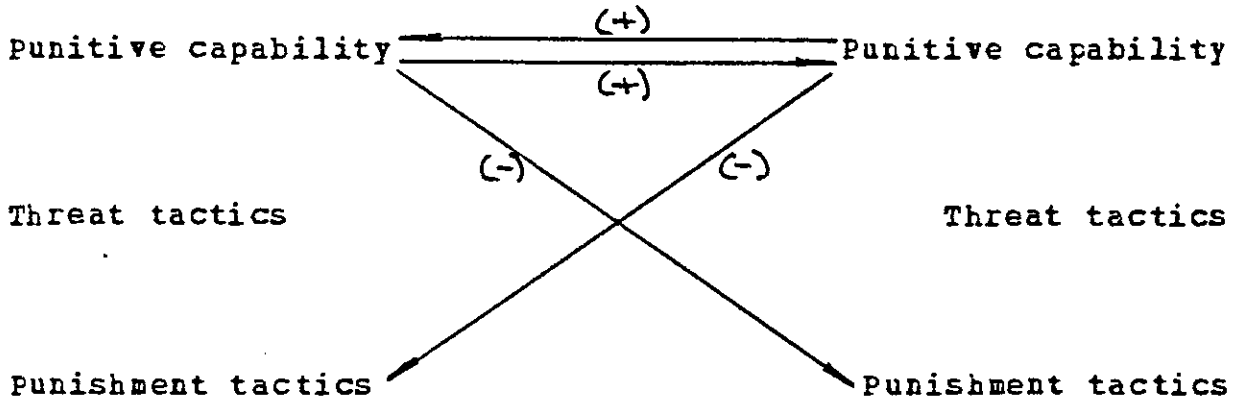


Figure 4: Deterrence theory (Bacharach & Lawler, 1981:118)

PARTY A

PARTY B

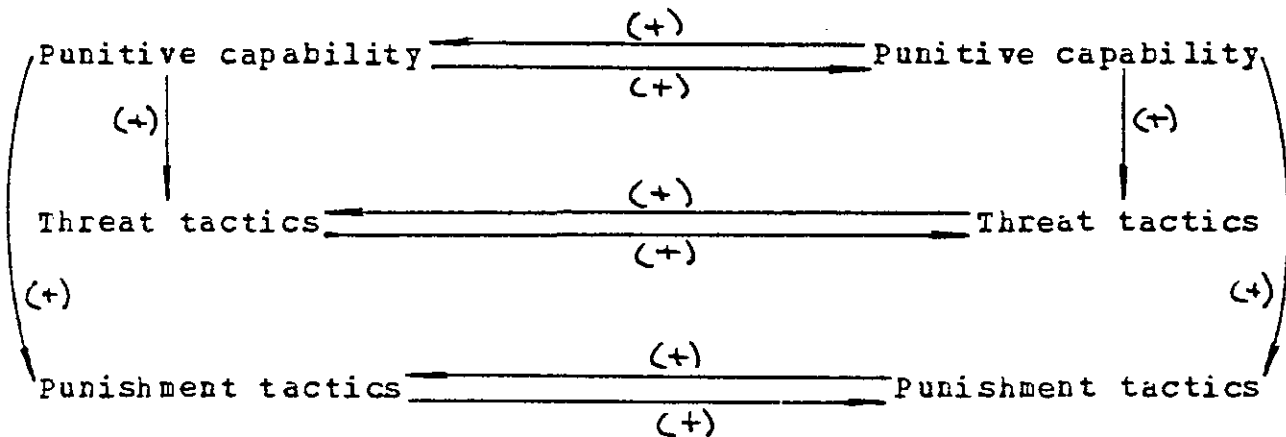


Figure 5: Conflict Spiral Theory (Bacharach & Lawler, 1981:126)

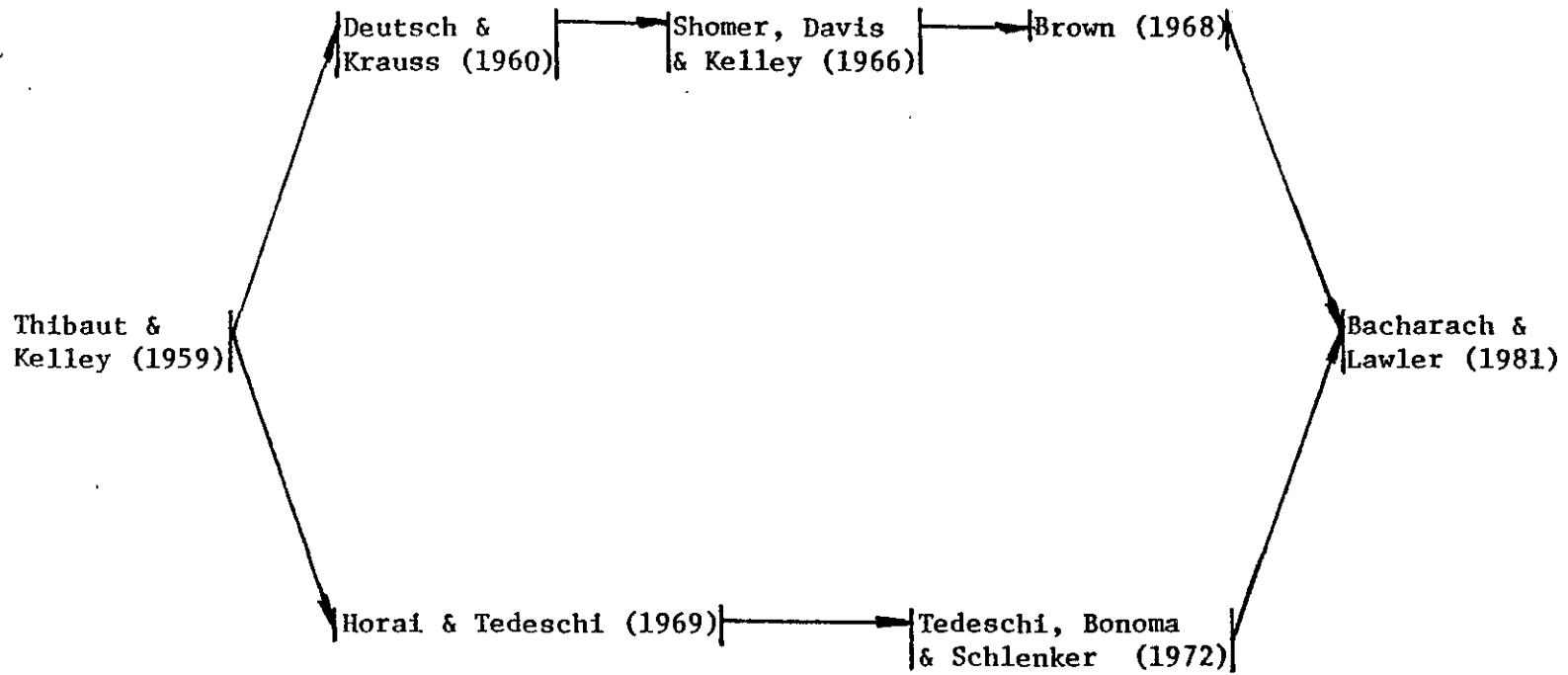


Figure 6: The conflict spiral and deterrence linear research programs.

Column 1:
Kinds and sources of behavioral and cognitive information input.

Column 2:
Mechanisms mediating and stabilizing relations between inputs and behavioral outputs.

Column 3:
Types of assessment and behavioral consequences output.

performance outputs, disagreements, exercises of influence, etc.

performance expectations

power and prestige behaviors

status characteristics

aggregated expectation states

power and prestige behaviors

referential structures

reward expectations

assessments of and reactions to justice and injustice

sources of evaluation

performance expectations

power and prestige behaviors

Figure 7: The structures of explanation in the expectation states research program.

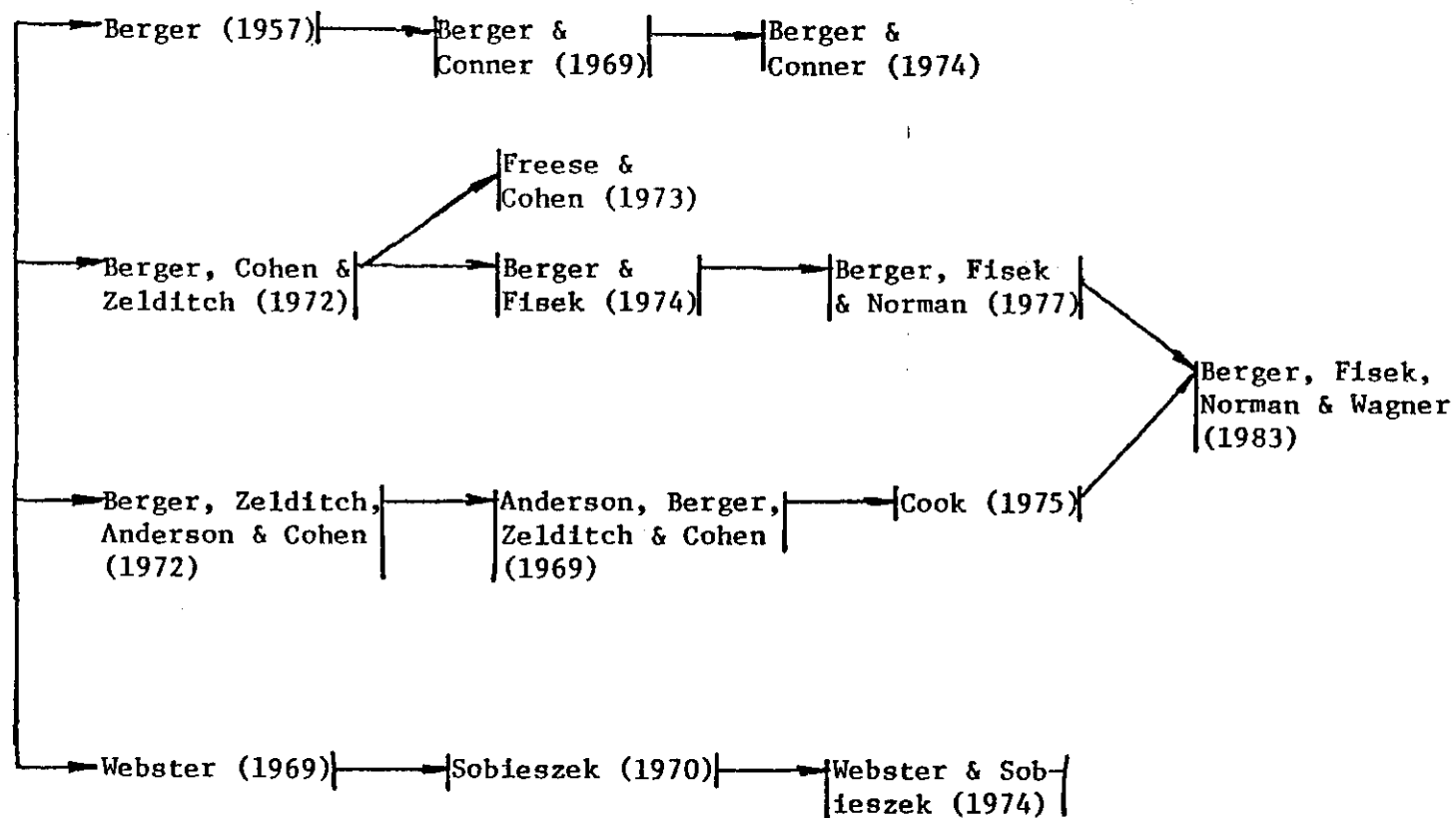


Figure 6: The expectation states branching research program.

Berger, Zelditch,
Anderson & Cohen
(1972)

Anderson, Berger,
Zelditch & Cohen
(1969)

Cook (1975)

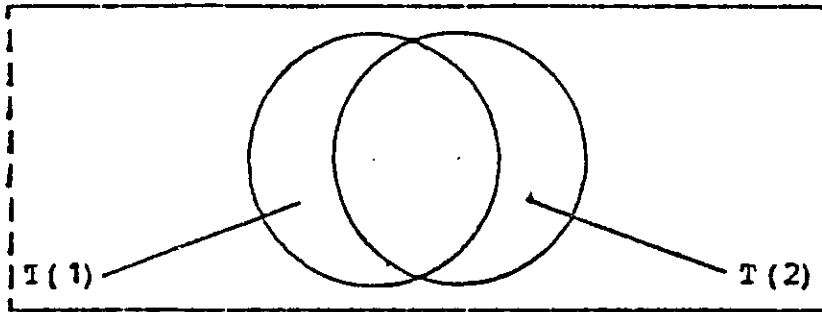
Jasso (1978, 1980, 1982)

Homans (1961)

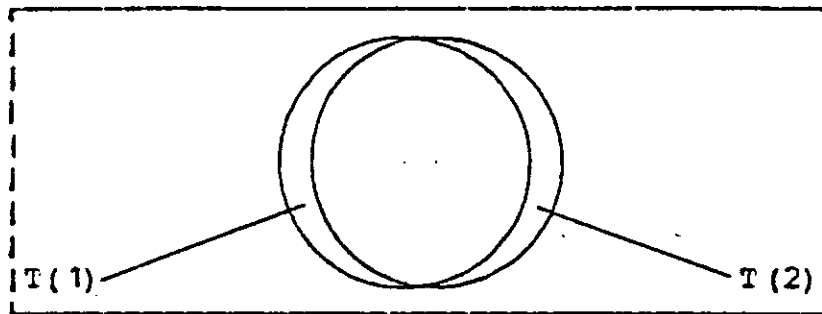
Adams (1965)

Walster, Bersheid &
Walster (1973)

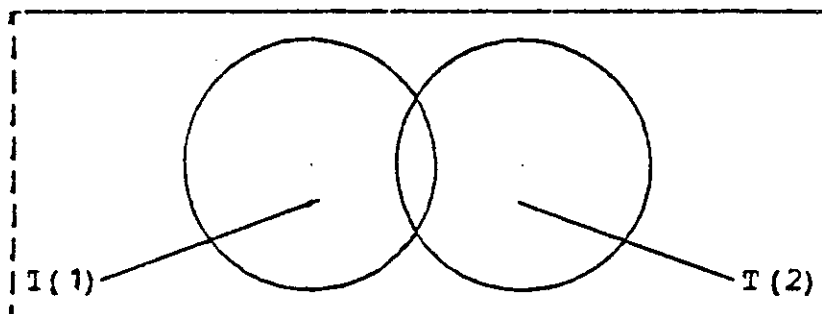
FIGURE 9: The distributive justice competing research program.



THEORETICAL STRUCTURE
 Theories T(1) and T(2) share large parts of their theoretical structures.

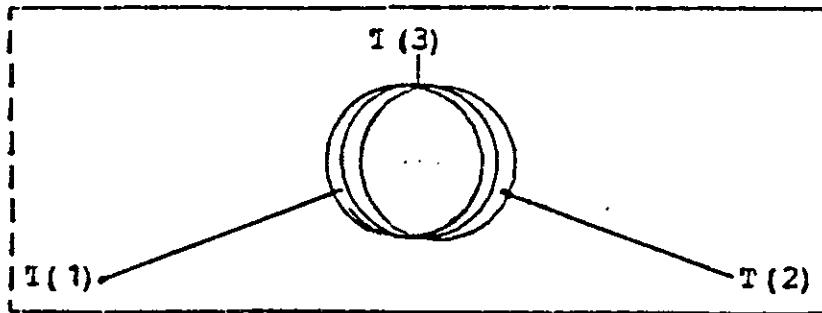


DOMAIN OF EXPLANATION
 The phenomena explained by theories T(1) and T(2) are virtually identical.

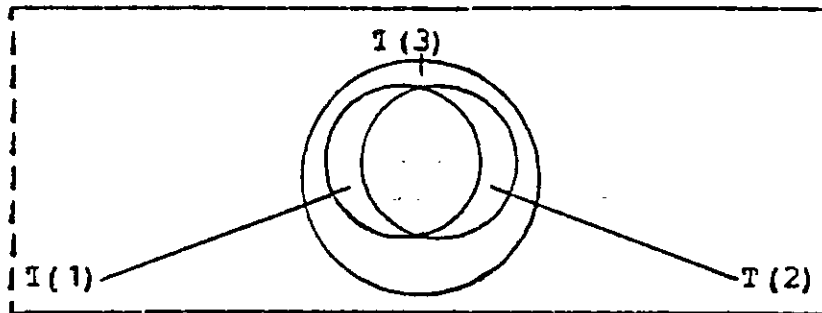


CONFLICT IN PREDICTIONS
 The predictions of theories T(1) and T(2) conflict only over a very limited part of their common domain.

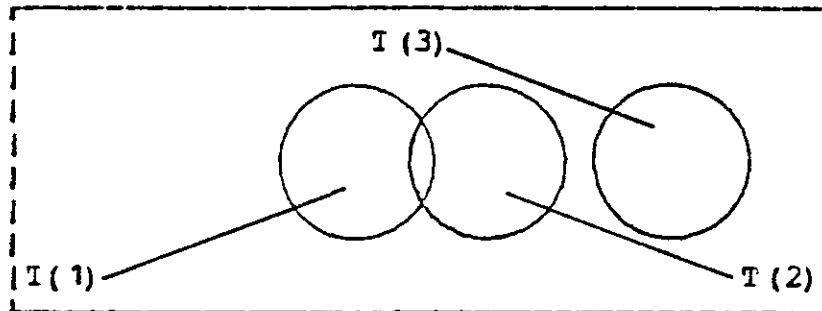
Figure 10: Variation



THEORETICAL STRUCTURE
 The theoretical structure of T (3) incorporates most of the important ideas in the variant theories T (1) and T (2).

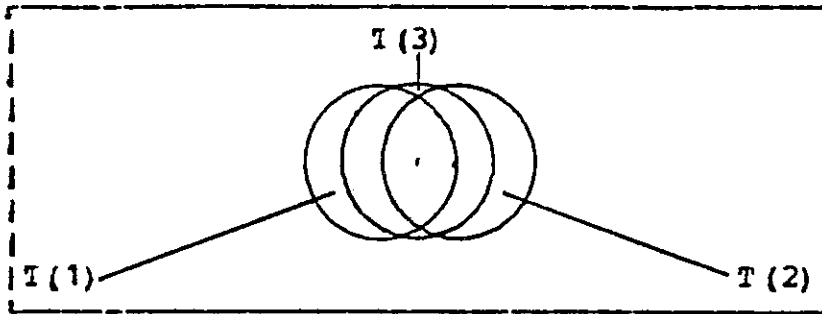


DOMAIN OF EXPLANATION
 The phenomena explained by theory T (3) include as a subset the phenomena explained by both variants T (1) and T (2).



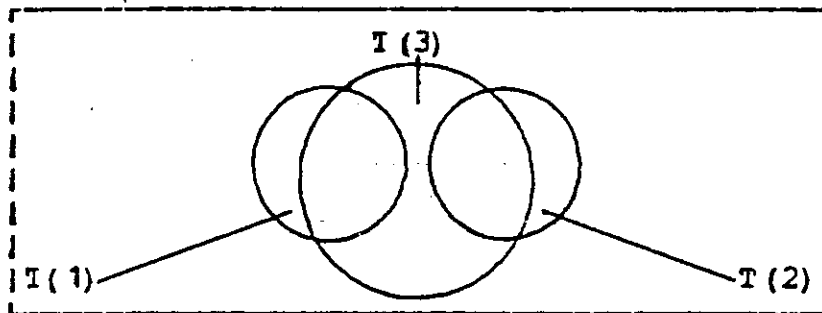
CONFLICT IN PREDICTIONS
 There is no conflict in predictions between T (3) and variants T (1) and T (2).

Figure 11: Integration of Variants.



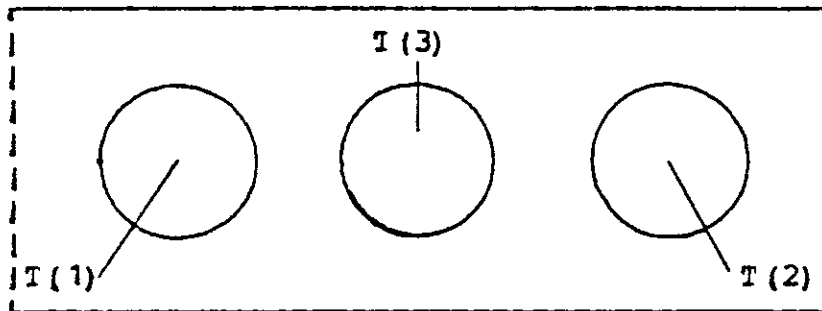
THEORETICAL STRUCTURE

The theoretical structure of T(3) incorporates many of the important ideas in the proliferant theories T(1) and T(2).



DOMAIN OF EXPLANATION

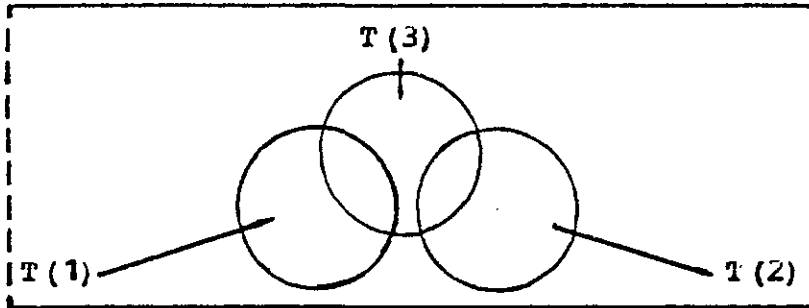
The phenomena explained by theory T(3) include most of the phenomena explained by both proliferants T(1) and T(2).



CONFLICT IN PREDICTIONS

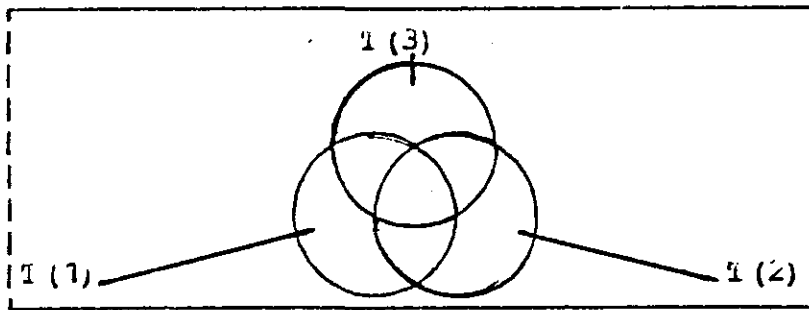
There is no conflict in predictions between T(3) and proliferants T(1) and T(2).

Figure 12: Integration of Proliferants.



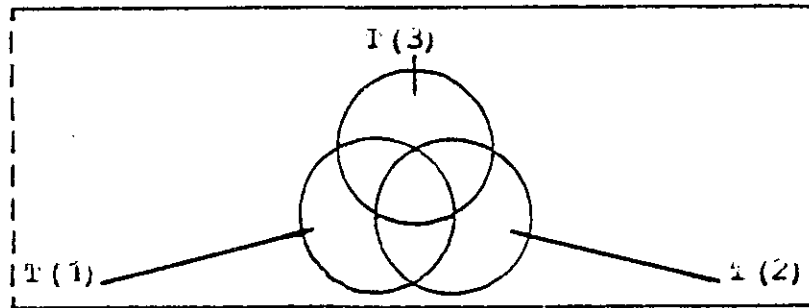
THEORETICAL STRUCTURE

The theoretical structure of T(3) incorporates some of the important ideas in the competing theories T(1) and T(2).



DOMAIN OF EXPLANATION

The phenomena explained by theory T(3) include some of the phenomena explained by both competitors T(1) and T(2).



CONFLICT IN PREDICTIONS

There is at least some conflict in predictions between T(3) and competitors T(1) and T(2).

Figure 13: Integration of Competitors.