

CURRENT RESEARCH IN SOCIAL PSYCHOLOGY

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THEORY, SCIENCE, AND "MICRO-MACRO" BRIDGES
IN STRUCTURAL SOCIAL PSYCHOLOGY

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ABSTRACT

Social psychology stands to benefit from multilevel theories that link it to both lower and higher levels of analysis. Making the link, however, requires a level of theoretical rigor heretofore relatively uncommon in the social sciences. After refuting several common objections to this brand of theorizing, I offer a rationale and a set of criteria for multilevel theory construction.

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INTRODUCTION

Several years ago, just before flying out to give a series of talks, I went to see a doctor. I had a lingering cold and wanted to see if there was any precaution--or drug--that I could take to prevent the changes in cabin pressure from making my head explode. The doctor asked where I was going and I responded, half facetiously, that I was going to give some talks on making sociology more scientific. He was surprised. He said, "I thought sociologists use a lot of statistics." I told him that they do, but that using statistics is not the same as being scientific. The key, I said, is how they state their claims and what they then do with those claims. In the 45 seconds he spent with me I could not really explore the idea. Consequently, I think he didn't really understand what I meant. But had he understood he might have been a better doctor, and my head would not have exploded during the plane's descent that evening.

In sociology and elsewhere, working in a scientific mode has little to do with the stereotypical trappings of science. Quantitative data analysis is not essential. Neither are laboratories, mathematical theories, journals or conferences--though all of these can be put to

good use. If there is an essence to science, it lies in how we express our claims and in what happens to them as a result of that expression.

There is now an emerging body of perspectives and theories that some of us have dubbed "structural social psychology" (Lawler, Ridgeway and Markovsky 1993). It is bursting with potential, and will have some sort of a life span whether or not its proponents operate scientifically. Here, however, I will argue that the quality of that life will be compromised if we do not devote special attention to the expression of claims and to how those expressions are treated. In other words, the integrative, multilevel approach that is implied by the label "structural social psychology" is even more subject to pitfalls of pseudo-scientific temptations than less integrative, single-level approaches.

PSEUDO-CRITICISMS

To anticipate some familiar criticisms, I want to first emphasize that it is neither arrogant nor fetishistic to argue this position. On the contrary, most sociologists who adopt scientifically rigorous methods tend to be very modest. They know that they cannot accept credit for inventing their approach and that their work is but a fine thread in a very broad fabric. Furthermore, it seems that some formal theorists become more concerned with building theoretical castles in the air than with explaining empirical phenomena. However, much too frequently we see reviewers and critics tarring any formal theory with this same brush, even those associated with long-standing programs of empirical research.

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Second, the position is not narrow. On the contrary, it is boundless. Narrowness would imply that it rules out too much. But what actually gets ruled out includes claims that cannot be tested; claims that can be tested, but have failed to survive empirical tests; and claims that contain self-contradictions, ambiguities, or invalid arguments. In short, we exclude the untestable, the false and the fuzzy. There are actually very few substantive interests in our field that are outside the realm of scientific inquiry. So the approach is not narrow in that sense.

The narrowness critique is also leveled at issues of argumentation. We hear that adopting rigorous theoretical language precludes important issues such as human reflexivity, capriciousness, and other ethereal qualities. This is patently false. Rigor only demands that the theorist states defining properties for concepts such as reflexivity and capriciousness and that he or she provides statements relating these terms to others in the theory. Also, if reflexivity and capriciousness do not matter for a particular theoretical purpose, then there is no obligation that they be in the theory, even if they happen to be universal human qualities.

Another facet of the narrowness critique is that scientific standards demand too much of sociological arguments, and thereby

stifle them. This claim has a surface reasonableness until one examines it a little more closely. It suggests that lowered standards are justified because our subject matter is difficult. It is not easy to come up with really tight, solid theories, so we should settle for looser, feebler ones. It also suggests that we are justified in dissuading one another and our students from scrutinizing theories too carefully, that doing so shows a sort of fetish with form over content. But we must remember that, when the form is not there, neither is the content. If structural social psychologists want to adopt standards that allow or promote ambiguity of terms and invalidity of arguments, then they must be prepared to admit that they have no theoretical standards. As a group, we do not want this to occur because it will totally politicize the testing, acceptance and rejection of theories.

To deflect a third common criticism: all else being equal, rigorous arguments are not generally more difficult to understand than looser ones. I am baffled by those who assert that, by not defining their terms and by not subjecting their own arguments to logical analysis, they are somehow producing a work that is more easily communicated. If communicating a theory means getting others to share one's understanding of its terms, its claims and its consequences, then one must tell them what those terms mean and how to go about deriving the same conclusions. By not defining terms, one allows the uncritical consumer to experience a feeling of comprehension since the consumer has inferred his or her own meanings. These are unlikely to be the theorist's intended meanings, however, and so communication has not really taken place at all.

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Fourth, scientific theorizing is not mere rhetoric, any more than a book consists of mere letters on pages. Theories build codified systems of meaning. If those systems develop in conjunction with stringent testing, then they will have empirical import that reaches beyond unaided insights and intuitions.

THEORY VS. QUASI-THEORY

If structural social psychology develops in accord with other sociological sub-disciplines, then it will probably be long on quasi-theorizing and short on theory-building. By "quasi-theorizing" I mean efforts to develop perspectives, interpretive schemes, metatheories, agendas, and the like. I want to urge structural social psychologists to learn to distinguish these from a narrower, but more useful, definition of "theorizing" because there are some crucial differences: Unlike theories, quasi-theories are not held to any consistent set of communicative, logical, or empirical standards.

Quasi-theories best serve when they inspire us to theorize, but are pointless when mistaken for theories and debated as to their truthfulness. Most of what is called sociological theorizing is debate over quasi-theories. As such, along with others in sociology and the other sciences, I think it is worth reserving the term "theory" for a more restricted class of objects, namely sets of logically related statements comprised of well-defined terms that survive harsh tests.

QUALITIES AND CONSEQUENCES OF THEORETICAL RIGOR

Interestingly, despite all the talk for and against scientific theorizing in sociology, such theorizing is not so much an ideological starting point as it is the result of implementing a small set of conventions. Taken one at a time, those conventions are much less debatable and controversial than more diffuse questions about whether sociology can or should be scientific. These are summarized in Table 1, a list of eight desirable qualities for theories. I will briefly summarize them here, referring those who desire more detail to Cohen (1989).

TABLE 1: GENERAL PROPERTIES OF THEORETICAL STATEMENTS

- (1) free of contradiction
- (2) free of ambivalence
- (3) communicable
- (4) abstract
- (5) general
- (6) precise
- (7) parsimonious
- (8) conditional

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(1) A theory containing a contradiction loses all explanatory power because any such argument is always logically false, whatever its content.

(2) Ambivalent statements such as "gender may affect attitudes" are ineffectual in theories because they are always logically true, regardless of content.

(3) Communicability requires theories to be accessible to interested others--adherents and skeptics alike--so that they can understand the theory well enough to submit it to stringent tests.

(4) Abstractness is the quality of not being bound to specific objects, times and places. Theories help to explain particulars, but also must transcend them. Abstract theories often contain terms unlike any used in everyday discourse. Though perhaps counterintuitive to some, this can be a great asset when the terms are well-chosen and sharply defined insofar as theories are supposed to provide insights which go beyond everyday points of view and familiar empirical instances.

(5) Theories are general to the extent that their statements are both interpretable and corroborated for a large number and variety of cases. The criterion of abstractness does not anchor the theory in empirical reality; the criterion of generality does. Interpretability thus requires the terms of the theory to be connected to many and varied empirical instances, whereas corroboration requires that the theoretical assertions built from those terms are verified through observation.

(6) Theories are precise to the degree that they generate accurate and detailed statements about phenomena.

(7) The criterion of parsimony demands that, all else being equal, smaller theories are preferred to larger ones. If Theory A can generate the same hypotheses as Theory B while employing fewer terms and fewer assumptions, then Theory A is preferred. Parsimony facilitates communicability and provides greater opportunity to explore logical entailments.

(8) Finally, Cohen (1989) cites three ways that theories are conditional: (i) They contain chains of logically related conditional statements that predicate the state or level of one concept on that of another. Without these types of statements there is nothing to test. (ii) Initial conditions[1] employ definitions of terms to bridge the theoretical and empirical realms, allowing us to derive hypotheses about real-world phenomena. (iii) Scope statements formulate domains within which hypotheses may be tested. Without them, a theorist is either deceiving herself or trying to deceive others as to the true generality of his or her theory.

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By offering these criteria, I am not implying that we must force ourselves to think in ways that avoid their violation or to avoid all forms of scholarly discourse that fail to measure up. Good theorizing may be born of illogical and ill-defined progenitors. The critical point is to know the difference.

A variety of methods satisfy the eight criteria. One need not decide upon a particular method of constructing theories. Rather, as one works with a theory, trying to balance such qualities as parsimony, generality and communicability, one finds oneself becoming interested in properties of the conceptual system and the logical structure of the arguments.

In general, these methods promote a kind of openness that, in turn, promote cumulative growth. When enough people in a field agree that it is the terms and relations of explicit theoretical statements that are to be the focus of debate and research, then it no longer matters who wrote them, what he or she "really" meant, or who believes that it does or does not matter. Egos are removed from the loop, and theoretical analysis and critique rise above latent or manifest meanness. It also relieves individuals of the burden of trying to convince others that they know a great deal, and focuses attention on what really matters: whether the theory explains what it is supposed to. To borrow an abstract and general notion of Shakespeare's, the theory's the thing.

Another reason for adhering to these criteria is avoiding the error of reification, a confusion of the symbolic elements of the theory with some "reality" to which it purportedly applies. Theoretical statements create a virtual reality, a system of idealized entities, relations and processes that possess only the properties assigned to

them by the theorist, along with whatever consequences follow from those assignments. As such, the theory is a sort of artificial lens through which we may view certain phenomena and see things that we might not have otherwise. Problems arise when one assumes that the statements of a theory do more than this, that they are "descriptive" of empirical phenomena or can be used as "sensitizing" frameworks. Empirical description and creative interpretation are essential to the theory-building process. However, any conception of theories that permits them to possess these qualities will be a weak one. At minimum, the product sacrifices communicability, abstractness and generality. On the other hand, the theorist must build the virtual reality with some care, since all that s/he wishes to say with the theory, and none of what s/he wishes not to say, must be communicated to others. The benefit is protection against misinterpretations, misapplications, and inappropriate tests.

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MULTILEVEL THEORIES

For the present purposes, adopting norms of explicit and rigorous theorizing provide another important service: they facilitate multilevel theory-building. Beautiful and useful multilevel theories have developed in virtually all other scientific fields. Furthermore, current knowledge about social systems is comparable to pre-multilevel conceptions in these other fields: (1) A fair amount is known about the properties and behaviors of micro and macro level units; (2) there is some consensus among scholars with macro interests that, for certain problems, understanding micro foundations may be useful; and (3) many scholars with micro interests want to demonstrate the macro implications of their ideas. When cross-level connections are forged, complexities get bracketed and simplified, and new theoretical tasks are placed into clearer focus.

Sociology and social psychology have some superb multilevel theories with varying degrees of development and activity. Here I will mention just two areas, but note that there are several others. First, theories employing social network models are often among the most explicitly and naturally multilevel. They generally consider causal interactions bridging across structures, sub-structures, positions, and sometimes actors in positions. Ronald Burt's (1981) "Toward a Structural Theory of Social Action," James Coleman's (1990) "Foundations of Social Theory," and Thomas Fararo's (1989) "The Meaning of General Theoretical Sociology" are notably rigorous in their integration of models of the interests and judgments of humans in relational structures, organizations, stratification systems or institutions.

A second area showing multilevel theoretical activity was inspired by the so-called "problem of collective action": self-interested actors come to invest resources for collective goods rather than refusing to contribute and simply enjoying the benefits. This work has a strong multilevel flavor and fits squarely with the structural social psychology agenda. It is directed at explaining emergent group phenomena based on mutually contingent choices of actors in those

groups. The most rigorous of this research uses computer simulations to express with precision its theoretical assumptions and to capture dynamics too complex for intuitive approaches. Theories of Oliver and Marwell (Oliver, Marwell and Teixeira 1985; Oliver and Marwell 1988a, 1988b), Heckathorn (1988, 1989, 1990) and Macy (1990, 1991a, 1991b) are exemplary, and to varying degrees integrate network structural models.

Ironically, in the several volumes on micro-macro linkages in sociology that have appeared in the last decade, multilevel theories such as those noted above are scarcely cited. Most of the talk concerns strategies for theorizing rather than actual theorizing. For example, there is much debate about what conceptual linkages are best, without concomitant efforts to develop theories that utilize those concepts and linkages.

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MULTILEVEL CRITERIA

Having explored the concept of multilevel theories, let us now consider a set of general criteria for them. The actual criteria exist in set theoretic language (manuscript available from the author), but also lend themselves rather well to the less formal summarization below. In this scheme, multilevel theories extend unilevel theories, which, in turn, are aggregates of theoretical building blocks called "theory units." As shown in Table 2, a theory unit is a set with five elements, each of which is also a set:

TABLE 2: THEORY UNIT

TU == {C, S, P}, where
C = theoretical concepts
S = scope statements
P = two conditional theoretical statements, e.g., "If x1, then y1"
and "If x2 then y2", logically linked so that y1 = x2.

Note: "==" indicates an "equivalence" relation

Theoretical statements and scope statements consist of theoretical concepts and logical connectives. Some concepts are expressed as primitive (undefined) terms, and the rest are defined terms where definitions consist of primitive terms and/or previously defined terms. Logical connectives are defined outside of the theory, e.g., through a particular mathematical branch. Theoretical statements are known by such labels as axioms, propositions, premises, or assumptions. In short, the TU is a knowledge generator, bringing together defined terms and logically connected statements in an explicit domain.

In turn, theories are comprised of interconnected TUs, those interconnections being defined by the criteria shown in Table 3. Simply stated, the TUs must overlap in their scope, language and logic.

TABLE 3: CRITERIA FOR THEORIES

Given more than one TU, a theory exists if and only if

- (1) all have at least some shared S
- (2) each has C shared with at least one other
- (3) each logically connects with at least one other

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Thus, theory units only combine to form a theory when they all have at least one scope statement in common. Otherwise, some theoretical statements would not be applicable under the same conditions for which other statements would apply. The second condition requires that every TU intersect with at least one other TU, thereby providing a conceptual "interface" through which TUs may inform one another. To then require logical connections among TUs means simply that each TU must have either an antecedent clause ("x" in "If x...") that also serves as a consequent ("y" in "...then y") in another TU, or the reverse. This permits TUs to be linked into longer chains of theoretical reasoning.

Multilevel theories (Table 4) require two further sets of criteria:

TABLE 4: CRITERIA FOR MULTILEVEL THEORIES

- (1) Containment Conditions
 - (a) there are statements at two or more levels of analysis
 - (b) units at higher levels contain units at lower levels
 - (c) a higher-level unit contains multiple lower-level units
- (2) Bridging Conditions
 - (a) there is a conditional statement in which the level of the antecedent differs from that of the consequent, or
 - (b) the subject of the higher-level statement is defined in terms of the lower-level subject.

Containment conditions ensure that there are at least two distinct units of analysis in the theory with multiple instances of one unit contained within single instances of the other. The latter condition both reflects the way multilevel theorizing is implemented in other sciences and rules out trivial cases of single-instance lower-level units, e.g., an army of one.

The bridging conditions allow two kinds of cross-level linkages. First, there may be a conditional statement that links two levels of analysis, e.g., "If actors make only short-run self-interested judgments, then the social system they comprise will disintegrate at an accelerating rate." Second, the link may be accomplished through a definition, e.g., "A class system exists if and only if socioeconomic strata form a transitive hierarchy."

Although it is not my purpose in this brief document to contrast the foregoing criteria with alternative formulations, it should be useful to draw a few comparisons with Coleman's (1987, 1990) popular

argument for micro-macro linkage in sociology.

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Coleman's mission was to offer guidelines for explaining the relationship between a macro antecedent and a macro consequent by bridging to a micro level of analysis. This allows, for example, the explanation of the effects of Protestantism on capitalism by (1) bridging from Protestantism "down" to particular values held by individuals, (2) from those values "across" to certain individual economic behaviors, and then (3) "up" to capitalism. In Coleman's discussions, the "macro" always refers to a social system and the "micro" is always thought of as individual persons.

Coleman thus offered criteria (of a sort) for one kind of multilevel theory, a type that is and should be of great interest to many sociologists. In contrast to what I have offered, however, he did not set out to incorporate more fundamental criteria from the realm of theory construction, i.e., the semantic and logical requisites for well-formed theories, or the role to be played by scope conditions. Furthermore, he neither addressed nor ruled out alternative multilevel theoretical patterns which are explicitly permitted in my conceptualization. For example, a theory that only explains a micro process in terms of a macro condition could satisfy my criteria but not Coleman's. Importantly, in fact, much of what constitutes multilevel theorizing in other scientific disciplines would not conform to Coleman's specification. Finally, Coleman restricted his units of analysis to individual humans and to social systems. Again, while these units hold much interest for sociologists and others, they are not the only units that may be incorporated into multilevel social scientific theories. For example, Network Exchange Theory (Markovsky, Willer and Patton 1988; Lovaglia, Skvoretz, Willer and Markovsky 1995) simultaneously incorporates assumptions about individual judgments and actions, dyadic exchange conditions and processes, and social network configurations.

STRUCTURAL SOCIAL PSYCHOLOGY: AN EMERGING PSEUDO-SCIENCE?

It will be tempting to not bother with criteria such as these. They require time and attention, and the payoffs in theory are largely unappreciated. By ignoring them, however, we can be assured that structural social psychology will come to manifest many of the hallmarks of pseudoscience (e.g., Radner and Radner 1982). For instance, with "research by exegesis," the words of esteemed others--usually deceased--are taken as sage and beyond question. All that remains is to interpret specific cases in light of this received wisdom. Another hallmark is "looking for mysteries." For us, this means chasing after and trying to explain particular interesting phenomena in an ad hoc manner. Other markers of pseudoscience include a grab-bag use of evidence, offering irrefutable hypotheses, explanation by scenario, and refusal to revise in light of criticism. All of these warning signs are flashing in various corners of our discipline, sometimes near the center, too, and sometimes in bright colors and stunning combinations. We ought to avoid them, but we need to first educate ourselves about them.

CONCLUSION: THE EVOLUTION OF NEBULOUSNESS

To conclude, I would like to describe a process that I will call the evolution of nebulousness. Evolutionary epistemologists have likened theory growth to evolution by natural selection. Ideas, whatever their sources, are thrown into keen competition with one another. Survival depends on relative fitness, or resistance to empirical falsification. Natural selection is uncompromising. When one species is less fit than another, its environmental impact diminishes along with its members. Similarly, when a scientific collective is uncompromising in applying stringent theoretical criteria, unfit ideas diminish in their impact.

Whereas natural selection is a physical process, idea selection has a visible hand. The human factor comes into play, and the evolutionary epistemology can break down if left unattended. When the eight basic criteria are not collectively enforced, what evolves instead of knowledge is nebulousness, the progeny of which are unfit ideas kept alive by extraordinary means. The proponents of such ideas hide them behind perspectives, frameworks and metatheories, never really putting them to the test. They appear to live on--if one could call that living. But there is a stiff price paid in improvements forgone.

Astrologers are proud of the fact that their essential ideas have remained unchanged for around two millennia. As we know, however, their language of prediction excludes practically nothing, so the ideas do not improve. The field is stable not because it works so well, but because it is utterly stagnant.

Structural social psychology, with a domain and range that is perhaps broader than those of either sociology or social psychology, could be the astronomy of the social sciences. This can be accomplished without sacrificing any of our substantive interests-- families, emotions, personality, networks, perceptions, self, status, justice, power, etc. We must continually check the semantic and logical structures of our own theories and those of others, and we must train our students to do so as well. Further, we must lay bare the flaws that we discover and focus our attention on them, rather than trying to sweep them under the rug with irrelevant rhetoric. Yet, without a collective interest in upholding stringent criteria for the semantic and logical structures of our multilevel theories, structural social psychology will only be another in a series of social astrologies that have retreated into nebulousness or passed on with their founders.

ENDNOTES

[1] As pointed out by a reviewer, this is not the only meaning for the

expression "initial condition." It is perhaps better known in the empirical sciences as the set of starting values for the parameters of a dynamic process.

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