

SCIENTIFIC THOUGHT AND SOCIAL COGNITION

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There has been a tendency in the psychological literature to assimilate social cognition to the schemata of science. In this essay I provide a brief and partial corrective by sketching a few of the ways social cognition is more than or other than science.

The image of man as "scientist" ("logician" or "statistician") has an important place in the study of social cognition. In some areas of our lives, both adults and children engage in applied science. When scientific goals are pursued, we evaluate evidence, draw inductive and deductive inferences, make predictions, estimate likelihoods, and construct explanations for what goes with what and what causes what in our social and nonsocial experiences.

The image of man as scientist is not only important; it has certain appealing advantages. Science makes available to us relatively explicit and powerful normative schemata (e.g., J. S. Mill's principles of agreement and difference, the canons of experimental design, Bayes' rules for statistical inference, the canons of propositional calculus, and so forth) that can be applied, and tinkered with, as descriptive models of experimental, statistical, and deductive reasoning in everyday life. Thus, research on man as scientist has flourished, and one can point with satisfaction to progress in our understanding of how ordinary folk evaluate evidence, estimate likelihoods, draw inferences, and so forth. (See, for example, Braine, 1978; D'Andrade, 1974; Estes, 1976; Inhelder & Piaget, 1958; Jones, 1972; Kelley, 1967; Nisbett, Borgida, Crandall & Reed, 1976; & Rosch, 1975, 1978; Ross, 1977; Shweder, 1977; Tversky & Kahneman, 1974; Wason & Johnson-Laird, 1972; also see the chapter by Weiner, Kun, & Weiner this volume.)

Science is not all there is to social cognition, however. The goals, methods, and modes of reasoning of the ordinary social thinker are not typically those of the scientist, and the conceptual schemes of everyday life are not typically designed to serve the needs of man as scientist. To the extent that investigations of social cognition are dominated by the image of man as scientist, much that ought to concern us will be overlooked. To the extent that social cognition is equated with science, much to which we do direct our attention will be misconstrued. The man-as-scientist scheme can be stretched only so far. Some distinctions are called for.

#### Social Categorization: Prescriptive or Descriptive?

By a category I mean a collection of things that are treated as if they were equivalent (or mutually substituted) for the sake of a particular intellectual enterprise or project (e.g., science, law, aesthetics, etc.). Knowledge is, in part, an understanding of these enterprises, an understanding worth having



because it provides us with the criteria we need to distinguish apt categories ("full professors," "tax-exempt income," "uncles," "the letter E") from inept categories ("botanists whose fathers had beards," "Americans living in Colorado who were born with the umbilical cord draped around their necks").

Categories (e.g., "red things") do not have truth-value; they are neither true nor false. A category label or description merely picks out and gathers together certain things for equal treatment in one intellectual enterprise or another, although *one* of these enterprises, namely science, judges the aptness of its categories by their ability to lead to the discovery of truths.

The intellectual enterprise we call science presupposes that the world is "a scene of recurrent kinds of events and changes which exemplify certain regular connexions [Hart, 1961, p. 184]." In keeping with this presupposition, the primary goal of scientific categorization is to collect things together about which one can make inductive generalizations ("things that are hot" are "things that hurt"; "children weaned abruptly from their mother's breast" will become "adults with oral anxieties"). In other words, categorization, from a scientific viewpoint, is a tool for summarizing the regularities of nature (Gilmour, 1937, 1951; Rosch, 1975, 1978).

It follows that a fundamental criterion for judging the aptness of a *scientific* classification is that it be "founded on attributes which have a number of other attributes correlated with them" or alternatively, as Gilmour (1937) proposed, a scientific classification becomes more apt (and less inept) "the more propositions there are regarding its constituent classes [p. 1040]." Thus, as Gilmour notes, "a classification of mankind on the basis of nationality is more natural [apt] than one based on the initial letter of surnames, because more [apt] propositions can be made regarding an Englishman (e.g., that he probably speaks English, knows "God Save the King," has a white skin, etc.) than about a man whose name begins with E [p. 1040]." It seems to me that contemporary theories of category formation, which argue that categories are basically encodings of "real world" correlational structures (e.g., Rosch, 1975; Rosch & Mervis, 1975; Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976), have taken the scientific intellectual enterprise as the prototype of all intellectual enterprises, with the attendant risk that scientific thinking may be a poor model of social cognition in general.

Most social categories are not inductive in their intent, nor do they serve the needs of man as scientist. A primary goal of social categorization is to tell the world how it *ought* to behave. Man as rule-maker, legislator, judge, and moralist (in contrast to man as scientist) constructs categories of things the behavior of which, and to which, can be regulated or governed by prescriptions, recommendations, and taboos. What is a "daughter?" Among other things, that's a potentially sexy person with whom one should not have

sex. What is a "relative," "wife," "friend," or "employee?" Each is a category defined in large part by sanctionable conduct and obligations. They are prescriptive, not descriptive, in intent; they provide "models for reality," not "models of reality" (Mischel, 1964; Geertz, 1973). For the most part, mapping correlational structure is not what social categorization is about.

There is probably no single criterion for judging the aptness (versus ineptness) of a social category, although the variety of criteria that are relevant do not typically seem to involve correlated attributes or propositional power.

The social world is eminently prescriptive. As one enters the world of norms, recommendations, and taboos, one is confronted with diverse forms of conventional, customary, legal, and moral practice and evaluation (e.g., Much & Shweder, 1978; Turiel, 1978a, 1978b) for which the man-as-scientist metaphor seems strikingly inappropriate. The aptness of most social categories seems to have more to do with consensus, tradition, law and moral conviction than with the search for truth. In some cases, a social category, like the categorical inscriptions in our alphabet (e.g., "the letter E"), becomes apt simply because people agree to honor it. It's the done thing.

There is a message in all this for developmentalists concerned with social cognition. Most developmental theorists (e.g., Kohlberg, 1969, 1971; Piaget 1967) assume that earlier forms of understanding become obsolete as they are replaced by newer and more adequate forms of understanding. Pre-Copernican astronomy is replaced by post-Copernican astronomy. Pre-operational thinking is replaced by concrete operational thinking. The image is one of progress and advance.

This developmental image seems most suited to scientific thinking. A criterion such as inductive validity (or propositional richness) can be readily converted into a universal yardstick for comparing various forms of understanding and judging their relative worth. Formal operational thinking can do everything that concrete operational thinking can do, plus more.

The developmental image, however, begins to break down as one moves away from purely scientific thinking. Plato was not replaced by Aristotle, and after 2000 years Platonist and Aristotelian philosophers are still fighting; no resolution is in sight. The same can be said for the various "schools" of social theory currently available. Behaviorists and psychoanalysts have read Piaget; neither group is about to pack up its tent. As Gallie (1968) remarks, there is something "essentially contestable" about social concepts, which is another indication, I believe, that "science" is not what social thought is primarily about. A corollary view is that there is no universal standard of comparative adequacy for judging social concepts (e.g., friendship, kinship, etc.), and that older forms of understanding are not necessarily deficient. Thus, I am not surprised that Gottman and Parkhurst (this volume) expressed some doubt that our adult concepts of "friendship" are any better or more advanced than

the "friendship" concepts of young children. Social concepts are characteristically value-laden, and determinations of what should be valued are characteristically dispute-ridden.

Models of change in developmental psychology have been drawn primarily from the world of science, where images of progress and advance dominate. Perhaps models of change for social cognition should be drawn as well from the worlds of fashion, aesthetics, and philology, in which change is incessant yet rarely directional and questions of progress do not typically arise. In the world of fashion, older forms become obsolete only to be renewed. In the world of aesthetics, older forms don't become obsolete. The old (e.g., da Vinci) and the new (e.g., Picasso) co-exist as equally valid forms of representation (see Goodman, 1978). In the world of words and their meanings, older usages do disappear, but the new terms and usages that replace them are just different, not better. The evolution of theories in science may be a Procrustean metaphor for the ontogeny of social understandings.

#### Social Description: Main Effects or Interaction Effects?

Many social scientists aspire to the kinds of knowledge possessed by physicists and chemists; they aspire to reduce social conduct to a small set of universally valid generalizations or laws. The aspiration is a dubious one, and it has produced its fair share of despair (e.g., see Cronbach, 1975). When social thinkers leave their prescriptive enterprises behind and attempt to understand and summarize the regularities of social life, what they discover is a world of complex, context-dependent interaction effects and multiple necessary conditions, not neat main effects or broadly valid generalizations (e.g., see Campbell, 1972).

Of course, all knowledge of regularities, cause and effect relationships, etc., is conditional. This is true for the physicist as well as for the social scientist. The physicist, however, can feel relatively secure that (a) the conditions (e.g., the existence of the sun, the motion of the planets) that interact with particular empirical generalizations in physics change very slowly, if at all, and thus can be safely ignored; and (b) empirical generalizations can be discovered (e.g., the laws of gravitational attraction) which hold across a wide variety of ordinary conditions (see Hart & Honoré, 1973, p. 42). Where the physicist is secure, the social thinker *qua* scientist must wring his hands.

Social conduct does not readily lend itself to description in terms of a small set of universally valid empirical generalizations. We seem to live in a social world in which interaction effects predominate (see e.g., Cronbach, 1975; Geertz, 1973; Mischel, 1968, 1973; Moos, 1968, 1969; Rausch, Dittman & Taylor, 1959). In the personality domain, for example, it has been discovered

that different situations affect different persons differentially, and the differential effects vary by response mode. The child who seeks attention more than others when adults are absent does not seek attention more than others when adults are present, and the particular reversals that take place for "seeking attention" are not the ones that take place for "seeking help." In the educational domain aptitude *per se* does not predict response to instructional treatment, and the various aptitude-by-instructional-treatment interaction effects are themselves modified by the sex of the student, and so forth. As Cronbach (1975) remarks,

Once we attend to interactions, we enter a hall of mirrors that extends to infinity. However far we carry our analysis—to third order or fifth order or any other—untested interactions of still higher order can be envisioned [p. 119].

Moreover, many of these potential higher order interactions (time, place, person, sex, culture, historical epoch, etc.) seem to matter.

Social conduct is the result of multiple necessary conditions of restricted scope. Thus, the generalizations of the social thinker *qua* scientist must be narrowly context-dependent. Moreover, many of the multiple necessary conditions for social conduct are matters of "meaning" (e.g., the actor's interpretation of the situation), which are notoriously subject to fluctuation and rapid change. Thus, "generalizations decay" (Cronbach, 1975). The social world is a world of "meanings," and like the meaning of a word, it won't sit still.

What all this suggests is that it is concrete thinking rather than abstract thinking that has an elevated place in social life; to adequately understand social conduct, one must engage in the unparsimonious proliferation of context-dependent insights. Small differences (in situation, person, sex, time, etc.) make a difference and cannot be overlooked. That is the conclusion demanded by all the evidence on interaction effects, and it is the conclusion drawn by Cronbach (1975): "Though enduring systematic theories about man in society are not likely to be achieved... one reasonable aspiration is to assess local events accurately [p. 126]," which is of course what clinicians, historians, ethnographers, and ordinary folk living in society have been up to for some time.

The social knowledge of ordinary folk living in society is terribly mundane; like clinical, historical, and ethnographic understanding, it usually involves knowing a lot about the past workings of a person, a setting, or an institution. The organization of this social knowledge is inelegant and complex, and requires, at best, quite low-level inferencing processes. Some of this knowledge is episodic; ordinary folk know what follows what in time. Some of this knowledge is repetitive and context-specific; ordinary folk know how so-an-so behaved last time under such-and-such circumstances. Early work in

anthropology and linguistics on "event-structures" (e.g., Pike, 1954) and recent work in social psychology on "scripts" (Schank & Abelson, 1977) is, in part, a recognition that the schemata of social knowledge have little in common with the nomological schemata of the physicist or chemist.

There are two ways professional social scientists have managed to underestimate the context-dependent nature of ordinary social knowledge. One way has been to engage in aggregated actuarial prediction without regard to what happens in any one context or another (see the chapter by Block & Block in this volume). For example, as Cronbach (1975) pointed out:

A total score on a religious attitude questionnaire turns out to be a fine predictor of response in real life, when the criterion is an average over 100 kinds of relevant activity, saying grace, voicing conscientious objection, etc. . . . The trait measure, however, has negligible power to forecast what the high scorer is likely to do in any one situation [p. 120].

(For more of this aspect, see Mischel, 1968.)

A second way to underestimate the context-dependent nature of social knowledge has been to focus deliberately on universal concepts, concepts such as intention, justice, cause, etc. Attention to such universal concepts is characteristic of cognitive-developmental researchers (see the chapter by Shultz in this volume). It is an attractive strategy for anyone searching for general laws of social conduct. The strategy is based on the assumptions that (a) behavior is the product of "internal" dispositions and "external" pressures; and (b) if there are universal properties of people (e.g., the intuitive concept of "fairness") and universal properties of the environment, then there will be universal properties of behavior (see Sears, 1961). The difficulty with this strategy is that to identify universal concepts, one must empty them of all specific content (intention to do what? fairness with respect to what?). This is a difficulty because it is precisely the specific content of a concept that interacts with its universal content to produce a behavior. Focusing on universal concepts is like searching for the "real" artichoke by divesting it of its leaves (Wittgenstein, 1958, paragraph 164). Having divested universal concepts of any specific content, the researcher can say very little about social conduct.

Consider, for example, the concept of justice (fairness or equity). This is a concept that has received much attention in the moral development literature. Stated abstractly ("treat like cases alike and different cases differently;" Hart, 1961, p. 155), "justice" may well be a universal principle, along with such concepts as cause, intention, time, space, number, etc. Notice, however, as Hart remarks, that the concept of justice is incomplete. It "cannot afford any determinate guide to conduct. . . . This is so because any set of human beings will resemble each other in some respects and differ from each other in others

and, until it is established what resemblances and differences are relevant, 'treat like cases alike' must remain an empty form [p. 155]." To most Americans, for example, there is nothing unjust about denying a 7-year-old the right to vote, enter into contracts, etc. The exclusion of 7-year-olds from the electoral process does not violate our concept of justice. It merely indicates that we subscribe to certain beliefs that in certain relevant respects children are not like adults (e.g., children but not adults lack the information needed to make an informed decision). Historically and cross-culturally, there have been many places in the world where, given received wisdom and without relinquishing a concept of justice, the difference between a man and a woman, one ethnic group and another, has seemed as obvious as the difference between an adult and a child seems to us.

In short, the concept of justice must be formulated at a very general level to count as a universal. However, once it is formulated in such general terms, it can not help us predict how persons or peoples will behave with one another, at least not until we learn all about a person or people's quite special notions of how things are alike and different. To know this, we must examine social cognition (and its development) in context (and in history). We must do what has rarely been done, even by ethnographers: We must learn how to investigate the content-rich, mundane, tacit messages incessantly transmitted in everyday life. Social discourse (see Austin, 1961; Goffman, 1976; Scott & Lyman, 1968; Searle, 1974) may not be the royal road to social cognition, but it is a fine road too little traveled.

#### Causal Attribution in the Social Arena: Laboratory or Courtroom?

I have argued that *social* cognition is not primarily scientific in intent, and that to the extent that it *is* scientific in intent, the organization of social knowledge is mundane, context-dependent, and concrete, and has little in common with the abstract, law-like formulations of the physicist or chemist. One implication of this view is that ordinarily people satisfy their need for prediction and control by simply knowing a lot about how relevant people have behaved in the past in relevant situations. A second implication is that in ordinary life "the demands of the situation in which we ask for the cause of what has happened, and that in which we are concerned to predict are very different [Hart & Honoré, 1973, p. 43]." Typically in everyday life, as Hart and Honoré note

The "effect" has happened [e.g., a child's leg is broken]: it is a particularly puzzling or unusual occurrence, or divergence from the standard state or performance of something. . . . When we look for the cause of this we are looking for something, usually earlier in time, which is abnormal or an interference in

the sense that it is not present when things are as usual [e.g., a sudden blow with a stick] [p. 43].

Sometimes our search for causes is guided as well by a desire to assign blame, in which case some abnormal occurrences (e.g., the blow) are more relevant than others (e.g., the child was visiting a new friend). The main point, however, is that in everyday life, identifying a cause for an effect may have little to do with prediction. As Hart and Honoré (1973) point out

We identify a "blow" as the cause of a child's broken leg without caring or knowing what conditions must also be satisfied, if a blow of just that force is always followed by such an injury. When we learn later that the blow would be sufficient only if the bone structure was, as in the child's case, of less than a certain thickness, nothing is added to the initial statement that this blow caused the injury... [p. 42].

The goal was not to predict or post-dict the effect of a blow of such-and-such intensity. It was to conduct an inquest, in the service of goals other than prediction and control. But what goals? I look forward to the day when attribution theorists move out of the laboratory, relinquish the standardized questionnaire, abandon the context-free hypothetical, and undertake investigations of causal reasoning (including reasons for engaging in it) in everyday life.

### Conclusion: Social Understanding as a Distinctive Mode of Thought

What one thinks about has some influence on how one thinks. The interpretive schemata appropriate to the physical world are different from those appropriate to the biological or the social worlds and vice versa. In our own culture, the physical sciences seem to have an elevated position (it is quite the opposite in certain traditional non-Western societies; see Horton, 1967); thus it is perhaps to be expected that the organization of knowledge in physics and chemistry is often adopted wholesale as the ideal for social understanding. Perhaps it was also to be expected that this inappropriate and unrealistic ideal would lead to despair (Cronbach, 1975) and self-denigration (Horton, 1968). Horton, for example, feels disturbingly "on target" when he asks, "Just how far have psychoanalysis, behaviorism, structural-functionalism, and other basic Western theories of higher human behavior really advanced our understanding of ourselves?" He suggests that the social knowledge and understandings of "traditional" peoples "have a surprising amount to say to the psychologist and sociologist [p. 60]." (Also see Peters, 1958, on social knowledge and ordinary language analysis.)

I am not one to romanticize the understandings of everyday life (see

Shweder, 1975, 1977, 1978). However, I do suspect that we not only have much to learn about the prescriptive, concrete, context-dependent, script-like, and inquisitional schemata of mundane social cognition; we also have something to learn from ordinary social thought. Given our scientific respect for rigorous and systematic observation, we may one day even be able to surpass it.

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## TOWARD A SOCIAL PSYCHOLOGY OF CHILDHOOD TRENDS AND ISSUES

Early investigators conceived the essence of socialization to be the assimilation of an asocial infant/child into a complex society. Children themselves were not assigned a central role in this process, nor were children viewed as socializing creatures as well as creatures to be socialized (Rheingold, 1969). "Miniature theories of social action" (Sears, 1959) were the wellsprings of this early research, by means of which an accounting was made for the inculcation of such generalized traits as aggression, dependency, and achievement.

The individual's integration into society is currently conceived in somewhat different terms, i.e., the ensuring that genetic material survives through equilibrative interaction with the social environment. Socialization consists of the interaction between a changing child and a changing world and involves both assimilation and accommodation. An active, rather than a passive, organism is its basis. Such views require that research workers be alert for "built in" features of the social repertoire and for evidence that the child exerts an influence on other individuals in addition to being influenced by them.

Every childhood social action must be examined as an element in social interaction, and social relations must be examined in terms of *reciprocal causalities* (cf., Klein, Jorgensen, & Miller, 1978)—either *linear* (as when A causes some change in B), *synchronous* (as when A and B simultaneously produce some change in each other), or *cyclic* (as when causal cycles recur through time). To study socialization it is necessary to examine children's motivations to maintain contact with other individuals as well as the complementary motivations of the individuals with whom they interact. The great need in contemporary socialization research is for "miniature theories of social interaction" rather than for "miniature theories of social action."

### Systems Issues

Everyone recognizes that the social world of the child consists of many worlds—e.g., family system, peer system, and the school. The child's earliest social experiences involve the family—a complex unit whose composition varies widely according to ecological and cultural circumstance (Feiring & Lewis, 1978). The intricate interrelations existing within this social network are becoming much clearer as a consequence of observational studies in infancy and early childhood (cf. Emdé, this volume), particularly since contemporary investigators are concerned with the manner in which these interrelations play themselves out over time rather than with their structure at