Chance and Causality: A Comment on Manis and Meltzer*

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I welcome the attention to the importance of chance in sociological theory in the recent paper by Jerome Manis and Bernard Meltzer (1994), and their attempt to sketch alternatives to the causal determinism assumed by many sociologists, but I believe that they have not correctly specified the challenges and possibilities in sociological explanation.

Manis and Meltzer argue that there exists a class of events which "possess the following overlapping features: 1) absence of cause, 2) absence of predictability, and 3) absence of regularity in the sequence of the action and its antecedent conditions," and that the existence of such events "contravenes determinism, a fundamental postulate of science" (p. 45). They maintain that although *some* events are governed by causal laws, others are not (p. 47), and argue that this latter set includes chaos in the mathematical sense, quantum mechanics, evolution, trends in the arts, global politics and political movements, people's actions, and many key points in their lives, such as where they work and whom they mate with. The authors conclude that mainstream sociology and its search for causal laws cannot help us study events in this broad set.

This claim is especially significant because the broad set includes human action. Indeed, although Manis and Meltzer may concede that some events in the universe are causally determined, to exclude human action from that set implies a radical reorientation of sociological explanation. They use the word *chance*, however, to denote things that analytically are radically different; therefore much of the "chance in human affairs" that they discuss has no direct relation to the question of ontological determinism. They accept a false antinomy between external determination and unexplainable chance, and although they are right to question the appropriateness of the former for sociology, they are wrong in their understanding of the latter. Closer attention to the concepts of chance and cause, and to their examples, may allow a solution to this problem. The error of much of sociology's taken-for-granted explanatory apparatus is due to the *particular* methodological assumptions with which sociology grew up, not to ontological determinism versus indeterminism per se.

Let us begin by examining this question of "ultimate determinism," or what we may call the "Laplacian fantasy," namely the belief that with sufficient information about the state of (all) things at time T1, we could, in principle, predict the state of things exactly at time T2 (see Burtt 1927:87). The ontological assumption is that all change occurs in accord with stable causal laws; the epistemological assumption is merely that it is possible in principle for us to learn those laws.

The opposite side is "ultimate indeterminism," which (as Manis and Meltzer say) has two variants. The first makes no statement as to the ontological side, but instead says that *epistemologically* indeterminism exists *in principle*, for we can never understand those laws. A perfect example is most "chaos" or qualitative mathematical theory of uncertainty; certain

strictly determined causal processes are necessarily impossible to discover after the process (Ekeland 1988). "Chaotic" behavior may result from the solution to as few as three differential equations (for example, the "butterfly" model in meteorology). No matter how good our theories, instruments, and machines become, the Laplacian fantasy is unreachable. This point is mathematically provable for certain systems, and therefore no longer a "merely philosophical" position. The second variant claims that *ontologically*, indeterminism is present. The Copenhagen school of quantum mechanics is often used as the chief example of such a claim,[1] though (as Manis and Meltzer point out) there are in addition many other examples of ontological indeterminism in philosophy.

One cannot mix examples of *ontological* and *epistemological* indeterminism, as do Manis and Meltzer, when one is interested in the question of *causality*. To argue that one characteristic of chance is "absence of cause" is precisely to make a strong ontological statement, but such a definition cannot be illustrated with examples that are clearly linked to epistemological indeterminism, such as chaos (because chaos as a mathematical category comes into being only as a result of certain causal processes).

This antinomy between the Laplacian fantasy and indeterminism relies on the postulate of a universal (or asymptotically-approaching-perfection) knower. It is not surprising that this problem first arose in theology, when certain understandings of God's attributes seemed to imply the absence of chance and volition. The neo-Kantianism that is the basis for most epistemologies of the social sciences derives in fact from a theological answer to this question (perhaps first given by Maimonides [1974:294]; the influence on Kant was indirect through Leibniz), one which emphasized that human knowledge was *not* divine knowledge. When a universal knower is not central to one's metaphysics, and when knowledge is understood pragmatically as an organism's attempt to come to terms with its environment, the basis for the antinomy crumbles completely. Yet many of us (and, I believe, Manis and Meltzer in this article) accept that a fundamental tension exists between causal knowledge, on the one hand, and both volition and chance on the other. That is, as Kant said, merely a fault of our own understanding.

A second, only tangentially related subject is the "serendipity" that so often occurs in human affairs. Here the idea that events have "no cause" is obviously misplaced—the point clearly is that the effect was *unintended* and *unforeseeable*. Manis and Meltzer think that one still can call such occurrences uncaused, even though they are the result of human action. They cite Taylor as follows: "Instead . . . of speaking of agents as *causing* their own acts, it would perhaps be better to use another word entirely, and say, e.g. that they *originate* them, *initiate* them, or simply *perform* them" (1983:49).

Although this idea has an appealing and contemporary ring, I don't think it can make any sense at all; hence Manis and Meltzer's difficulty in supporting this radical—and central—ontological statement (they cite a strange collection of references to chance in literature, biography, and music)[2] and the vagueness of the alternative. What is the difference between originating, initiating, and "causing"? Unless one holds to the Laplacian fantasy that all change, including human action, is ultimately the effect of mechanical

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[1] It is true that some practitioners moved toward such an interpretation (e.g., Born, Heisenberg), but others stuck closer to the first variant (the famous Bohr-Einstein debate on the uncertainty principle always took place on the ground of possible *experiments*) or *redefined* the terms (as did Schrödinger) so that what seemed to be probability was actually the thing itself. (For a partisan discussion see Heisenberg 1958, ch 8; Schrödinger 1956. On the Einstein-Bohr dispute, see Bohr 1935; Einstein, Podolsky, and Rosen 1935; the collected papers in Schlipp 1949). Furthermore, the *equations* of quantum mechanics have no necessary connection with either variant of indeterminism. Rather, as both Forman (1984) and Keller (1985) suggest, different *cultural* factors played a large role in the association of quantum theory with ontological indeterminism.

[2] Incidentally, the reference to John Cage seems especially misplaced. Cage used chance processes in composition in order to free the music from the composer's will. If, as Manis and Meltzer say, human action is intrinsically aleatory rather than determinative, then Cage was mistaken and engaged in a basically fruitless enterprise.

causes, one would have to admit that human agency is as causal as anything else. It is, perversely, the deterministic overtones of the word "cause" that leads antideterminists to deny that agency implies cause. Yet the very word was originally tied to *specifically human* action, meaning reason or motive. Until the positivist revolution in the sciences, even physical cause was strongly analogous to human agency (though the idea of a necessary cause as apart from motive certainly existed): thus Comte's ([1855]1974) simplistic formula that the ancients could *explain* all things perfectly by imputing human motivations to them, without being able to predict, but positivism could *predict* exactly without the explanation.

The rise of the mechanistic philosophy, best exemplified by Hobbes (here I rely on Burtt's [1927] discussion), has led to a nearly hegemonic equation of "cause" with reduction to masses in motion (and therefore as *externally impinging* on the units of analysis). Thus it is not surprising that it is difficult to understand human agency as causal. Yet although human actions may be harder to *predict* than simple cases of masses in motion, they are far more *causal* because they combine *both* senses of cause, namely motivation and effectuality. It is this level of causality, and this sense of cause, that sociology can speak to—without either denying or basing itself on other levels of explanation and types of causality. What, then, is the place of chance in human affairs?

Manis and Meltzer's examples should make the solution apparent. The "cause" of a serendipitous event may be quite obvious, and we must admit that this serendipitous event is among the "causes" of a more interesting event—the want of a nail did cause a horse to be lame, and this was one of the causes of a kingdom's being lost. On the level of meaning that holds our interest, however, the cause of the serendipitous event ("the nail was bent," "I missed the last call for the Titanic") is *meaningless*. The great error of determinism through reduction is to believe that there is only *one* level of analysis in which the analytic concept "cause" makes sense. Manis and Meltzer are right to emphasize that "some events *can be understood* most clearly only in terms of genuine chance" (1994:46; emphasis added), but that is to take for granted a certain level of analysis and a certain explanatory project. Sometimes the nice general causes that make attractive theories exist side by side with (or on top of) the hubbub of confusing events; at other times these general causes make no appearance at all. In the latter case, we will understand the outcome most clearly if we regard it, *for our purposes,* as the outcome of chance.

The acceptance of the mechanistic conception of cause in sociology has entailed the severing of causality from meaning—a severe setback for a field that tends to define its subject in terms of meaning-oriented action. Yet the causation of interest to sociological analysis is doubly meaning-bound: once in that social actors (both individuals and institutions) are, at least in some contexts, meaning-oriented (the meaning-orientedness of our materials), and again in that we should *propose* as causal factors only events or determinations which are meaningful *to us* (the meaning-orientedness of ourselves—what Weber called "value-related").

Given the nonsensical severing of causality from action, some persons thought that free will was impossible because bodies were matter just like billiard balls, and that, according to the Laplacian fantasy, the state of masses in motion (position and velocity) should be enough to uniquely determine all later states. Consequently the rise of the Copenhagen school interpretation led even very astute scientists to think that quantum indeterminacy might be the space needed for free will (for example, Schrödinger 1956).

People, however, are quite unlike billiard balls: if someone bangs into me, I do not bounce off in such a way as to preserve energy and momentum. What I do may depend on whether the other person says "Excuse me" or "Outta my way." Only a vicious prejudice could make one attribute my actions either to the molecular level of causality (as opposed to my decision) or to chance that I happen to "originate." As a term in a theory that both explains

and predicts social behavior, the causal power of agents is both necessary and unproblematic. The confusion has come, first of all, from thinking that "cause" on one level of explanation is the same as "cause" on another, a notion that comes, in turn, indirectly from the "dirty materialist" worldview. Second, this confusion is due to the assumption that there are no *emergent causal properties* at higher levels of analysis. (Those who attempted to make what should be a painfully obvious case were castigated as "vitalists" in biology and as "mystics" in sociology.)[3]

But if causality is no problem in sociological theory, where *is* the problem? For Manis and Meltzer are correct, I think, in believing that there has been a particular deterministic strain in sociological thought, though I think that now there is a movement toward ontological probabilism (not necessarily for good reasons). The problem is due to the way in which "social facts" were first conceived of and measured when sociology was born, namely by the French schools. Regarding the issue of conception, the distinctly social was conceived of as *uniform* and *constraining,* leading to the belief, for example, that society determines that a certain number of suicides *must* take place each year. It was immaterial who would carry them out (Porter 1986:64, 69).

This notion of an "average oversocialized" person might be a useful model, but sociologists began to assume that it was an *ontological* status. This trend was closely associated with the application of biometric statistics to human populations, and with the pivotal role played by the theory of error. The classical theory of error, from which originates the Gaussian distribution that is the lens through which standard sociological methodology sees the world, is based on *repeated measurements of a single object*—observations that differ from one another, though our object is really only in one place.

Certain social statisticians, however (most importantly, Quetelet), made a curious leap of faith (as stated by Oberschall 1987:109), and one that did not do justice to the human material they were studying. They claimed that there was no real difference between the repeated measurements of a single object and *single measurements of different individuals.* Quetelet's "average man" was not simply a "best guess" as to the values that vary within a population, but the *true* object at which nature *aimed* as a marksman aimed for a target. The observed distribution (Quetelet liked to argue) was no wider than one would expect from measurement error (Stigler 1986:172, 214, 271ff, 282; see Oberschall 1987:117). After Yule's synthesis, statisticians were able to apply the method of least squares, developed for the study of repeated observations, to the study of populations, and to make the description of distributions a "surrogate for a causal relation" (for the history of least squares, see Swijink 1987; on Yule, see Stigler 1986:325ff).

Although this technical issue might seem far removed from the seemingly metaphysical issues at hand, it is not. In fact, the biostatisticians' methodological and political interests led to a method of thinking about social reality which, for a long time, was the leading model in American sociology—what Abbott (1988) called "General Linear Reality." In this model, the discrepancy between theoretical predictions and observations is due to error; if the model is to work, the necessary distribution of this error *must* come from *many unmeasured independent causes.* Thus it becomes an article of faith that the world is potentially capable of perfect explanation. Thus developed a sociological version of the Laplacian fantasy, one that saw no need to make a reductionist claim to the level of masses in motion in order to arrive at determinism.

Such sociological determinism generally was *not* a feature of mainstream sociological

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[3] Manis and Meltzer equate emergence with chance (see p. 51), which I do not understand. If this were true, their case would be very easy to make because most thinkers would agree that social reality is "emergent" in some sense.

theory, which was largely agent-centered. Yet it informed day-to-day sociology, and even held out a dream of complete explanation for grand theory. Such determinism, as Manis and Meltzer would agree, is also very far-fetched. Recently, however, I think that day-to-day sociology has been moving away from the deterministic model and toward a vision of human action and social life as *inherently probabilistic*. Yet this trend seems partly a result of the tendency that Keller (1985, ch. 7) noted in the Copenhagen interpretation, namely a type of arrogance that refuses to tolerate ignorance for long, and so declares the subject *intrinsically unknowable*. But this antinomy of inherent probabilism versus determinism is false, based on the appropriation of the idea of cause from mechanics. It is understandable that Manis and Meltzer do not wish to attribute this sort of cause to human action, but it is as great an error to deny that humans are causes. Instead we should do people the justice of admitting that they *do* make their worlds (any of the participants in the social struggles that Manis and Meltzer outline [p. 52] could quickly disabuse them of the idea that the outcomes of such struggles were pure chance and therefore causeless), though not in conditions of their choosing, and recognize the causal potential of action, its possibility of abrogation, and our own limited understanding of its mechanisms. Along with a more balanced substantive view of social action, we should try to understand the ways in which sociological analysis, at its distinct level of explanation, may use the terms "caused" and "random." Then we can distinguish between our *substantive* theory of human action, as well as its ontological claims, and the completely different subject of what *methods* to use to answer different questions. By definition, the *exploration* of chance (as opposed to the recognition of its importance) is bound to be rather limited if it truly exhibits the absence of cause or regularity, as Manis and Meltzer say it must. Although the dissatisfaction with simplistic instruments designed around the average oversocialized man is reasonable, and should lead us to methodologies more appropriate to the nature of sociology's subjects, no advance is made by the act of merely *preferring* chance. Manis and Meltzer are right to emphasize *process* as opposed to mere correlation (in view of the richness and complexity of sociology's subject and subjects, an approach that relies only on covering laws or correlations is bound to be inadequate to the explanatory task) but this has no relation to determinism versus chance.

To conclude, Manis and Meltzer are, I believe, quite right to see what is of interest to social scientists as 1) emergent, 2) often best explained by chance, and 3) conversely, *unexplainable* through reductionist determinism. A closer look at their material, however, suggests that the issues of chance as explanation and as ontological indeterminism are quite different, and that to merely look hard at what appears to be "chance" and "uncaused," as opposed to questioning the assumed choice between up-for-grabs and complete determinism which is one of our simplistic metatheoretical ideas, is to stay within the bounds of the peculiar and limiting heritage of sociological thought.

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