

21 1983
Pardo

New Books from MIT

Perspectives on the Philosophy of Wittgenstein
edited by Irving Block
260 pp. \$22.50

Studies in Contemporary German Social Thought

Thomas McCarthy, series editor

Prisms

by Theodor W. Adorno
272 pp. \$15.00

Reason in the Age of Science

by Hans-Georg Gadamer
208 pp. \$17.50

Hegel and the French Revolution:

Essays on The Philosophy of Right
by Joachim Ritter
224 pp. \$22.50

History and Structure:

An Essay on Hegelian-Marxist and Structuralist
Theories of History
by Alfred Schmidt
128 pp. \$17.50

Bradford Books

Mental Images and Their Transformations

by Roger N. Shepard and Lynn A. Cooper
392 pp. \$25.00

Husserl, Intentionality, and Cognitive Science

edited by Hubert L. Dreyfus in collaboration with
Harrison Hall
320 pp. \$25.00

Names for Things:

A Study in Human Learning
by John Macnamara
296 pp. \$17.50

28 Carleton Street
Cambridge, MA 02142

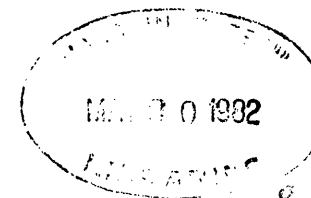
THE MIT PRESS

THE JOURNAL OF PHILOSOPHY

VOLUME LXXIX, NUMBER 5

MAY 1982

page		
231	<i>Conflict and Social Agency</i>	Isaac Levi
	COMMENTS AND CRITICISM	
247	<i>Frequency-dependent Causation</i>	Elliott Sober
	BOOK REVIEWS	
253	G. A. Cohen: <i>Marx's Theory of History: A Defence</i>	Joshua Cohen
274	Bas C. van Fraassen: <i>The Scientific Image</i>	Michael Friedman
283	Alan Garfinkel: <i>Forms of Explanation and</i> Alexander Rosenberg: <i>Sociobiology and the Preemption of</i> <i>Social Science</i>	Martin Hollis
287	NOTES AND NEWS	
290	NEW BOOKS	



Published by The Journal of Philosophy, Inc.

THE JOURNAL OF PHILOSOPHY

FOUNDED BY FREDERICK J. F. WOODBRIDGE AND WENDELL I. BUSH

Editors: Herbert W. Schneider (honorary), Bernard Berofsky, Arthur C. Danto, Sidney Morgenbesser, Charles D. Parsons, James J. Walsh. *Consulting Editors:* James Higginbotham, Isaac Levi. *Managing Editor:* Leigh S. Cauman. *Editorial & Business offices:* 720 Philosophy Hall, Columbia, N.Y.C. 10027.

All communications to the editors, manuscripts, advertisements, subscriptions, and changes of address should be sent to the Managing Editor. Annual subscription price (12 numbers), to individuals, \$15.00; to institutions, \$20.00; to students and to the retired and the unemployed, \$12.00; current issues, \$2.00; special issues, \$3.00. All back volumes and separate issues are available back to 1904. Published monthly as of January 1977; printed by Lancaster Press, Inc., Lancaster, Pennsylvania.

THE JOURNAL OF PHILOSOPHY is owned and published by The Journal of Philosophy, Inc. *President,* Albert G. Redpath; *Secretary,* Corliss Lamont; *Treasurer,* Stephen S. Fenichell.

New from North Carolina

ARISTOTLE

AND HIS PHILOSOPHY

by Abraham Edel

"A fresh and original introduction to Aristotle's thought. Edel has a keen eye for Aristotle's underlying problems and questions. His philosophical sensitivity and good sense are admirable throughout. His scholarship is comprehensive, but handled with grace and clarity."—Martha C. Nussbaum, Harvard University
xii + 479 pp. \$26.00 cloth, \$12.00 paper

Please request examination copies on department letterhead and give course name and approximate enrollment. Exam copies are billed at a 10% discount if we are not notified of an adoption within 45 days.

THE UNIVERSITY OF NORTH CAROLINA PRESS

Post Office Box 2288 Chapel Hill, North Carolina 27514

The appearance of the code at the bottom of the first page of an article in this JOURNAL indicates the copyright owner's consent that copies of the article be made for personal or classroom use. This consent is given on condition, however, that the copier pay the stated per-copy fee through the Copyright Clearance Center, Inc., P.O. Box 765, Schenectady, New York 12301, for all copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to any other kinds of copying.

Copyright 1982 by the Journal of Philosophy, Inc. ISSN 0022-362X
Second class postage paid at New York, N.Y., and at additional mailing offices.

THE JOURNAL OF PHILOSOPHY

VOLUME LXXIX, NO. 5, MAY 1982

CONFLICT AND SOCIAL AGENCY*

FORMAL analogies between criteria for rational individual decision making and group or social decision making have been evident to many authors ever since Plato exploited analogies between the organization of the soul and the state in the *Republic* in expounding his conception of Justice. Nonetheless, there is a widespread reluctance to acknowledge the existence of groups and institutions as agents. This leads to some bizarre juxtapositions.

Thus, neoclassical economists are not noted for their sympathy with notions of group mind. Yet, in expounding the theory of consumer demand, families are often allowed to qualify as consumers. Such consumers are taken, ideally at least, to be maximizers of their preferences or valuations, subject to budgetary constraints. Given the indifference maps representing the consumer's preferences and the budgetary constraints, demand curves are derived. Such analysis is not restricted to persons, but is intended to apply to any consumer, including a family. Families make choices from accessible commodity bundles, given budgetary constraints. They are taken to be rational preference maximizers like individual consumers and to have preferences representable by indifference maps. In this context, no distinction between individual and social decision making is drawn.

Not only are corporations often qualified legally to be persons; but corporations and other business firms are taken in both posi-

*Work related to this essay began while I was a fellow of the National Endowment of the Humanities and associate fellow of Darwin College, Cambridge University. This work has received subsequent partial support from the National Science Foundation. I have benefited from written comments by Amartya Sen and extended discussions with Paul Lyon. John Watkins and Ned McLennan have repeatedly reminded me of the importance of phenomena like that exhibited in the Allais paradox. They were right.

0022-362X/82/7905/0231\$01.60

©1982 The Journal of Philosophy, Inc.

tive and normative theory to make decisions relative to information available to them and to be subject to criticism depending on whether the decisions are intelligent given their aims.

It is well known that the high priest of Hacking's "heyday of ideas," Thomas Hobbes, spoke of the endowments and actions of the "sovereign" in a manner neutral with respect to whether the sovereign was a person, parliament, or citizenry. His individualism did not prevent him from discussing group agency.

The best known effort in recent years to apply canons of rational choice to social entities is that of Kenneth Arrow. According to Arrow, appropriate social groups are to be represented as seeking to maximize the welfares of their citizens or, more accurately, to maximize some increasing function of the welfares of their citizens. Arrow's concern and the concern of the participants in the debate that followed his justly celebrated *Social Choice and Individual Values* focused chiefly on the relations that do or should obtain between the valuations made by the individual citizens, whose interests are to be promoted by society as represented by rankings of the "social states" or options some subset of which are feasible for society, and the social evaluation or preference ranking as represented by another weak ordering of the same social states.

Among the social institutions to which Arrow thought his approach might apply are included markets in which producers and consumers exchange goods leading to social states in which goods are allocated to individuals in certain ways and committees where decisions are taken according to some voting mechanism.

J. M. Buchanan has complained against Arrow that "Voting and the market, as decision making mechanisms, have evolved from, and are based upon an acceptance of, the philosophy of individualism which presumes no social entity."¹ He complains because he thinks that Arrow is committed to the existence of such social entities when Arrow assumes that the rationality of decision-making mechanisms such as voting or the market should be assessed in terms of whether social preference is maximized where social preference induces a weak ordering over the feasible social states. Because Arrow flouts individualism in this manner, his approach is deeply flawed at the very outset.

One response to Buchanan's objection is to reject individualism. That is to say, one might concede that social groups are sometimes agents in the sense that they make choices to promote given ends

¹"Social Choice, Democracy and Free Markets," *Journal of Political Economy*, LXII (1964): 117.

and that their evaluations of options and the choices they make may be assessed for rationality.

Buchanan, however, thinks that Arrow cannot, given his other commitments, do so consistently, as the following passage reveals:

Rationality or irrationality as an attribute of the social group implies the imputation to that group of an organic existence apart from that of its individual components. If the social group is so considered, questions may be raised relative to the wisdom or unwisdom of this organic being. But does not the very attempt to examine such rationality in terms of individual values introduce logical inconsistency at the outset? Can the rationality of the social organism be evaluated in accordance with any value ordering other than its own?

The whole problem seems best considered as one of the "either-or" variety. We may adopt the philosophical bases of individualism in which the individual is the only entity possessing ends or values. In this case no question of social or collective rationality may be raised. A social value scale as such simply does not exist. Alternatively, we may adopt some variant of the organic philosophical assumptions in which the collectivity is an independent entity possessing its own value ordering. It is legitimate to test the rationality or irrationality of this entity only against this value ordering (116).

Thus, according to Buchanan, there is nothing inconsistent or incoherent in attributing "organic existence" or agency to a social group such as a corporation. Such an agent may be understood to be making decisions in a manner that seeks to promote its values. Buchanan's own metaphysical predilections are in favor of individualism. He does not acknowledge institutional agents—especially in the case of groups participating in market exchange or committee voting. But his criticism of Arrow is not directed primarily to the issue of the "organic existence" of social groups.

His charge is that Arrow's project suffers from incoherence. He claims that the "very attempt" to examine the rationality of group decision making "in terms of individual values" introduces "logical inconsistency" at the very start.

According to Buchanan, Arrow is not incoherent in attributing social preference rankings of social states to social groups. That is in keeping with the view of social groups as having "organic existence" apart from that of their members. The "logical inconsistency" emerges when Arrow seeks to represent social preference as a function of the preferences of citizens for the same social states. Since Arrow must do this if he is to relate his analysis to markets or committees who take decisions by voting, Arrow can apply his theory to these cases only at the cost of "logical inconsistency."

Buchanan's critique of Arrow raises two distinct issues:

- (1) Should we attribute rationality to social groups?
- (2) When we do attribute rationality to social groups, may we consistently allow social preference to be a function of individual preference?

We have already observed that even students of market economies attribute beliefs, desires, goals, values, and choices to families and to firms and, of course, government agents (which may be bureaus rather than bureaucrats) as well as to persons. No doubt the mechanisms whereby the decisions taken by such social agents are to be explained typically involve reference to the behaviors of and, indeed, sometimes the decisions taken by individual agents (and by other social agents). Perhaps group choices are redescribable as complex processes involving no other choices than those of persons. But this need not detract from the reality of such group choices any more than the redescribability of individual choices as complex neurophysiological processes detracts from the reality of individual choices. Nor should redescribability in itself preclude the propriety of subjecting social choice to canons of rationality any more than it should preclude the propriety of subjecting individual choice to the very same canons.

When we focus on characterizations of social groups in terms of their beliefs, goals, choices, and other such propositional attitudes, we are no more concerned with the underlying mechanisms than we are when we use such characterizations of human agents or, for that matter, of automata. Perhaps differences in the "hardware" should make a difference in the view we take of the principles of rational preference, belief, valuation, and choice; but, unless a decisive case is advanced that this should be so, it seems sensible to seek an account of rational choice, belief, preference, and valuation which is indifferent to whether the agent is human or not and, if not, whether it is automaton, animal, angelic, or social.

The ontological sensibilities of some may be offended by speaking of groups as agents. But if they are prepared to attribute beliefs, values, and choices to groups as well as to individual humans and to think that such values, beliefs, and choices ought to be judged by the same principles of rationality as are applied to human agents, they are recognizing such social entities as agents in the only sense that matters here.

Arrow's own response to the critiques of Buchanan and of I. M. D. Little is curious in this respect. He contends that he was concerned

with rules for arriving at social decisions which "may be agreed upon for reasons of convenience and necessity without its outcomes being treated as evaluations by anyone in particular."²

Arrow appears quite anxious to disavow commitment to group minds or social groups as organic beings. Yet, according to his account of social choice, groups do choose one from among a set of feasible social states in an environment and, if rational, do so in a manner that is optimal relative to a social preference which weakly orders the social states. In this connection, he cites with approval a comment by Karl Popper: "Not a few doctrines which are metaphysical, and thus certainly philosophical, can be interpreted as hypostatizations of methodological rules."³ Thus, for Arrow, in social choice we have choice without a choosing subject and preference without a preferring subject, just as, for Popper, in science we have knowledge without a knowing subject.

I sympathize with the response of C. R. Plott to Arrow's maneuver when he declares that it is "operationally" difficult to distinguish efforts motivated from Arrow's point of view from efforts motivated from points of view that treat society as an organic entity.⁴ Plott's operationalist rhetoric is questionable; but it is irrelevant to the core of his observation. Any system, whether it is animal, vegetable, or mineral, whether it is an automaton, a human, or a group of automata or humans, can qualify as an agent for the purpose of discussing rational choice (which is the context in which Plott discusses Arrow's views) provided that choices, beliefs, preferences, values, and goals are ascribable to the system and provided that it is appropriate to urge conformity to norms of rational preference, belief, and choice.

To say this does not imply that all social groups act as agents or that those which do do so all the time. However, we cannot claim more for animals, automata, or even human beings. I have characterized agenthood in terms of the propriety of criticism from the vantage point of norms of rational choice. I do not have any independently specifiable criteria for determining such propriety; but we do not need any to appreciate the hard core of Plott's insight, which is that when qualms about group minds are construed as an objection to attributing agency to social groups, then talk about social preference and social choice should be avoided—at least in

² *Social Choice and Individual Values* (New York: Wiley, 2nd ed., 1963), p. 106.

³ *The Logic of Scientific Discovery* (New York: Basic Books, 1959), p. 55.

⁴ "Path Independence, Rationality and Social Choice," *Economica*, XLII (1973): 1078.

any sense in which such preference and choice is subject to critical scrutiny by norms of rationality. Arrow and those who follow him cannot have their cake and eat it. Retreating to the third world is no more acceptable in discussions of social choice than it is in discussions of the growth of knowledge.⁵

To this extent, Plott's view coincides with Buchanan's—and quite rightly so. But Arrow need not have denied agency to social groups. Indeed, given his position, he should have done precisely the opposite. Moreover, in doing so, he could still have defended himself against the main thrust of Buchanan's criticism, to which we now turn.

Recall that the second and critical step in Buchanan's critique of Arrow is his denial that social preferences (if there are social organisms having them) can coherently be made to depend on individual values. Buchanan thinks it a "logical inconsistency" to "attempt to examine such [social] rationality in terms of individual values" (116). Clearly he is thinking of social agents who maximize values in a manner independent of the interests of the citizens or subjects. Social agents are to be thought of as promoting their own interests just as individuals are to be thought of as promoting their own personal concerns.

Some social institutions undoubtedly seek to promote their own selfish interests just as individuals do. Social agents, like human agents, can be selfish or, if other-directed, can be directed toward other social agents. But just as, at least on some occasions, human agents can seek to promote the interests and welfare of other human agents, so too, social institutions can seek to promote the interests of human agents who are somehow related to the social agents in question as citizens are. If there is no logical inconsistency in the one case, there should be none in the other.

Thus, it is not incoherent to regard a society that allocates commodity bundles through a market mechanism as an agent. The market mechanism in operation provides a procedure whereby the society makes certain kinds of social choices. We may ask two questions about the way such choices are made: (a) Are the choices made in a manner maximizing some social preference? (b) If the answer is affirmative, are the social preferences dependent on the interests of the participants in the market?

⁵I have advocated thinking of knowing subjects as comprising institutions such as scientific communities as well as persons for some time, but most recently and explicitly in *The Enterprise of Knowledge* (Cambridge, Mass.: MIT Press, 1980), 1.1-1.5.

Arrow's impossibility theorem presupposes that affirmative answers may be given to both questions but then goes on to assert that the dependency of social preference on the preferences of citizens cannot jointly satisfy several important conditions.

Perhaps, as Buchanan suggests, there is nothing disturbing about this result as it applies to the use by society of markets as choice mechanisms for the distribution of commodities to consumers. In any case, whether there is or is not something troublesome about Arrow's result, the trouble arises (if it does) for any social agency seeking to maximize social preferences aimed at promoting individual welfares and not just for such agencies that seek such ends through the use of market mechanisms.

Moreover, to declare that Arrow's result misses the mark because social groups cannot be taken coherently to be maximizers of social preferences depending on individual values is no way to neutralize the impact of Arrow's theorem. Buchanan to the contrary notwithstanding, nothing in logic prevents our taking social groups to be agents of the sort that seek to maximize just such preferences. Blanket refusal to attribute agency of this kind to social groups as practiced by Buchanan is conceptual stonewalling which places roadblocks in the path of inquiry.⁶

Insisting that social institutions should sometimes be recognized to be agents does not entail insensitivity to the differences between persons and social institutions—especially the morally relevant differences. Neither an unborn human fetus nor someone in coma is an agent subject to critical control according to canons of rational choice. Yet, they are clearly objects of moral concern; and some apparently are prepared to insist that they be treated with the same moral respect as is to be accorded other human beings. Conversely, attributing agency to animals, automata, or social institutions does not entail granting such agents the same moral concern and respect we accord human agents.

Agency is undoubtedly a morally relevant trait; but it is one among many. We should not be deterred from scrutinizing the decisions and aims of institutions with the aid of canons of rational-

⁶It should be noted in passing that Arrow's formalism for social choice can be applied to the evaluations of the options of a person seeking (perhaps because of moral conviction) to promote the welfares of others. Hence, even if Buchanan had (counter, in my view, to fact) been right about social agency, Arrow's analysis would still retain important applicability. I do not seek, however, to defend the applicability of Arrow's analysis in general. My concern has been with those contexts where governmental, corporate, or other institutional policies are considered.

ity because of moral scruples any more than we should be prevented from doing so by metaphysical dogma.

Nonetheless, some justifiable skepticism remains concerning Arrow's assumption that social groups are representable, at least on some occasions, as maximizers of social preferences. Society is presented with a choice between social states belonging to some subset S of a domain U of entertainable social states. According to Arrow, society has a system of preferences which induces a weak ordering of the elements of U . Society's evaluation of the elements of S is the restriction of that weak ordering over U to the elements of S .

Society is taken to have as its goal the objective of promoting the values or welfares of its "citizens," where the "welfares" of the citizens are representable by weak orderings of the elements of U (and, hence, of S)—each citizen being assigned an ordering.

The individual valuations are usually different rankings over the same social states. Hence, to maximize according to one of these rankings is incompatible with maximizing according to another. In this way, social agents, like personal agents, often face decision problems where the agent is committed to promoting different values which conflict in the way they rank the feasible options.

Both in the first edition and even more so in the second edition of *Social Choice and Individual Values*, Arrow insists that the evaluation of social states or options society ought to use in determining which options are admissible should be a weak ordering of the options or social states and that the admissible set should be restricted to those which are optimal relative to that weak ordering.

Thus, Arrow presupposes as a condition of rational choice that conflicts of value be resolved prior to choice. Hence, he sees the problem presented to him as focused on resolving the conflict between the evaluations for the several citizens according to some rule which determines, for each "profile" of individual values, a social preference ranking that weakly orders the domain U .

It is well known, of course, how widespread the view is that rational individual decision making ought to maximize preferences. By 'preference' here, I do not necessarily mean a ranking of alternatives with respect to anticipated satisfactions. The individual may have taken into account moral, political, economic, cognitive, and aesthetic values in making a ranking. But precisely because he may do so and because these diverse desiderata can lead to conflicting rankings of the same alternatives when employed in isolation from one another, the requirement that preferences be maximized relative to a single ranking presupposes that such conflicts be resolved prior to choice.

Even moral theorists, who feign to dispense with the notion that rational agents should maximize preferences in the generous sense just indicated in favor of approaches grounded on principles of obligation and permission, share the same outlook. In the first place, if, in a given context of choice, a particular option is held to be obligatory, it is presumably ranked over the other alternatives and in this sense preferred over them. Second, if moral principles conflict, appeal is typically made to second-order principles that arbitrate and prescribe which options among those feasible are morally (or legally) admissible. For the most part, so I suggest, decision theorists and moralists agree that, to be rational or coherent at the moment of choice, an individual agent should have ironed out all conflicts at the moment of choice, or, if not, we should regard his choice as itself constituting an expression of his resolution of the conflict.

Arrow's view of rational social choice is no different, in this respect, from received notions of rational individual decision making.

On the other hand, insofar as there is some reason for skepticism concerning the propriety of mandating that conflicts be resolved prior to choice in the context of individual decision making, it becomes at least entertainable that such skepticism should be endorsed in connection with social decision making as well.⁷ Objection to the requirement that society maximize preferences represented by a weak ordering of social options along these lines should not be confused with objections, like Buchanan's, which are grounded on preconceptions concerning when one can and when one cannot attribute agency to social institutions. This skepticism derives from doubt concerning the conditions on rational choice, whether the agent is individual or social.

The issue is not whether preferences, values, and goals do or do not come into conflict. Nor is it whether it is rational for an agent to suffer from conflict in his values. That value conflict occurs and confronts even rational agents is widely acknowledged. What is questionable is whether rational agents should have resolved all conflicts when fixing on a decision, so that they can claim that the option chosen is for the best, all things considered. The dominant view is that rationality prohibits decision making under unresolved conflict. I mean to reject this view.

According to strict Bayesians, ideally rational agents maximize expected utility. To determine expected utilities for feasible options, however, the agent must be in a position to make judgments

⁷ K. O. May argued essentially along these lines in "Intransitivity, Utility, and the Aggregation of Preference Patterns," *Econometrica*, xxii (1954): 1-13.

of probability enabling him to assign probability numbers to hypotheses concerning "consequences" of his options conditional on his implementing them and utility numbers (unique up to positive affine transformation) to these hypotheses. In this way, the agent's evaluation of his feasible options in terms of expected utility would be free of any conflict.

A common source of skepticism about strict Bayesian doctrine concerns the grounds on which probability numbers are to be assigned. Often it seems that, given the available evidence and background knowledge, there is no warrant for favoring one system of probability judgments over another. Personalist Bayesians advocate picking a system of judgments out of one's hat, often covering up the arbitrariness of the procedure with a display of rhetoric and a reminder that one's judgments must at least be coherent. Others follow in the footsteps of Harold Jeffreys and Rudolf Carnap by seeking objective criteria for constraining probability judgment. Typically they stumble into inconsistency or obscurantism.⁸

The great statisticians, R. A. Fisher, Jerzy Neyman, and Abraham Wald, who pioneered in the 1920s, 30s, and 40s what were to become the dominant approaches to statistical theory in the post-war period, sought to avoid both paths. They thought that, when there was no warrant for making definite probability judgments, one should avoid making them—counter to the advice of personalist Bayesians. And they denied that one could devise an inductive logic so strong as to justify numerically definite probability judgments in every situation. They sought methods that either bypassed the need to use Bayes' theorem or displaced it. And Neyman and Wald, both of whom thought that statistical theory ought to be viewed as a branch of a theory of decision making, sought ways and means of making decisions under conditions where the injunction to maximize expected utility cannot be obeyed because probability information is lacking.

These authors insisted that it is better to remain in a state of unresolved conflict—i.e., in suspense—concerning how to make probability judgments than to resolve such conflict arbitrarily or to introduce principles of inductive logic of questionable merit. But when probability judgment is indeterminate in this manner, calculations of expected utility must also be indeterminate even if the utility information available is precise. Thus, one option might rank over another according to one probability distribution, and the ranking might go the other way according to another. If there

⁸For a beautifully clear exposition of the troubles with objective Bayesianism, see T. Seidenfeld, "Why I Am Not an Objective Bayesian," *Theory and Decision*, xi (1979): 413-440.

is no warrant for favoring one distribution rather than the other, the agent should be in suspense not only as to the merits of the two distributions but also as to the merits of the rival ways of evaluating his feasible options with respect to expected utility. That is to say, he should remain in a state of unresolved conflict even when facing a decision. Neyman and Wald, among others, suggested criteria for evaluating feasible options to be used when consideration of expected utility fails to render a verdict—such as looking at security levels. I have sought to elaborate such an outlook myself elsewhere.⁹

Conflict in how an agent evaluates his options with respect to expected utility need not be engendered by indeterminacy in probability judgment. Conflict in how the agent evaluates the "possible consequences" of his options (how he evaluates his "utilities") can also generate conflict in the appraisal of options with respect to expected utility.

An interesting illustration of this is furnished by an example introduced into general discussion by Maurice Allais.¹⁰ Mr. Unsurething is presented with two different situations where he must choose between two options. In both situations a ball is to be selected from an urn containing 100 balls of which one is red, 89 white, and 10 are blue. In situation I, option A guarantees \$1,000,000 regardless of the outcome of the draw. Choosing option B yields nothing if a red is drawn, \$1,000,000 if a white is drawn, and \$5,000,000 if a blue is drawn. In situation II, option C pays \$1,000,000 if a red or blue is drawn and nothing otherwise, whereas option D pays nothing if a red or white is drawn and \$5,000,000 if a blue is drawn.

In both situations I and II, the probabilities of possible outcomes are quite determinate. And so are the monetary payoffs. The following table sums up the pertinent information:

	I Red	89 White	10 Blue
I			
A	\$1,000,000	\$1,000,000	\$1,000,000
B	\$0	\$1,000,000	\$5,000,000
II			
C	\$1,000,000	\$0	\$1,000,000
D	\$0	\$0	\$5,000,000

⁹In greatest detail in *The Enterprise of Knowledge* (Cambridge, Mass.: MIT Press, 1980) and previously in "On Indeterminate Probabilities," this JOURNAL, LXXI, 13 (July 18, 1974): 391-418.

¹⁰"Le Comportement de l'homme rationnel devant le risque: Critique des postulats et axiomes de l'école américaine," *Econometrica*, XXI (1953): 503-546.

Notice that the only difference between the payoff matrices for situations I and II concerns the case where a white ball is drawn. In situation I, Unsurething receives a million whatever he does, and in situation II he receives nothing. According to the so-called "sure thing principle" enunciated by L. J. Savage¹¹ and implied by strict Bayesian doctrine, Unsurething should weakly prefer option *A* to option *B* in situation I if and only if he weakly prefers *C* to *D* in situation II.

Allais reports that the most frequent response concerning what Unsurething should do in the two situations among those who are prudent and are so regarded by others is that *A* be chosen in situation I and *D* in situation II (527).

The attractiveness of this verdict is widely acknowledged, and even Savage conceded its pull (103).

Although Allais's paper appeared before Savage's book, Allais does refer to another presentation of Savage's axioms and is quite clear that he thinks that the predominant response to the two predicaments just described is in violation of what was subsequently called the "sure thing principle."¹²

The predominant response would, indeed, exhibit violation of the sure-thing principle were it the case that Unsurething's choice of *A* in situation I revealed his strict preference for *A* over *B* and his choice of *D* over *C* in situation II revealed his strict preference for *D* over *C*.

Allais himself declares that his own abstract definition of rationality entails that the set of feasible options should be weakly ordered, apparently so that the option chosen may be identified as optimal (518 and 522). That is to say, Allais insists that to be rational an agent should be free of conflict as to how his options are to be ranked. And this assumption implies that the predominant response is in violation of the sure-thing principle.

Observe, however, that, if we reject Allais's assumption that rational agents resolve conflict in their choice, the predominant response no longer manifests violation of the sure-thing principle; for it is at least entertainable that Unsurething is in conflict as to

how to rank *A* and *B* with respect to expected utility and likewise with respect to *C* and *D*. Such conflict cannot arise as a result of indeterminacy in probability judgment. The probabilities are numerically definite. But even if Unsurething prefers \$5,000,000 to \$1,000,000 to \$0 and even if the marginal utility of money decreases at rates sufficient to guarantee that the difference in value between \$0 and \$1,000,000 is greater than the difference between \$1,000,000 and \$5,000,000, Unsurething might be in conflict as to whether the ratio of the two differences is greater or less than 10/1. And if he were in such conflict, then Unsurething would be in conflict also as to whether to rank *A* over *B* or *B* over *A* with respect to expected utility and would be in a similar conflict with regard to *C* and *D*.

Under these circumstances, Unsurething might choose *A* over *B* because the "security level" or "worst possible case" is better for *A* than for *B*. And he might choose *D* over *C* even though the security levels are the same because the second worst possible case is better for *D* than for *C*. In that event, Unsurething has chosen *A* over *B* without preferring *A* to *B* and has chosen *D* over *C* without preferring *D* to *C*. Of course, *A* beats *B* when considerations of security are taken into account, and *D* beats *C* according to the same factors. But Unsurething has invoked these criteria only because the conflict in his utilities prevents him from rendering a verdict concerning his options taking consideration of expected utility alone into account. Thus, he does not prefer *A* to *B* and *D* to *C* "all things considered"—at least not in a sense that yields a violation of the sure-thing principle.

In my opinion, the tradeoff between giving up the sure-thing principle and the requirement that rational choice be under unresolved conflict favors giving up the latter—counter to Allais's own conclusion.¹³ Of course, strict Bayesians will refuse to abandon either condition, insisting that the predominant response to the Allais phenomenon illustrates how vulnerable to fallacy even the sanest of us are and how important it is for all of us to receive good training in Bayesian rationality.

The approach advocated here suggests that instruction in the Bayesian catechism is less than urgent and even, for some purposes,

The proposed analysis of Allais's problem should be compared with the different approaches developed by D. Kahneman and A. Tversky, "Prospect Theory," *Econometrica*, XLVII (1979): 263-292, and by P. Gärdenfors and N.-E. Sahlin, "Decision Making with Unreliable Probabilities," unpublished manuscript.

¹¹ *The Foundations of Statistics* (New York: Wiley, 1954): pp. 20-22.

¹² Allais, *op. cit.* contains a characterization of Savage's "axiom of independence" and on pp. 527/8 explicitly states that the example under consideration shows the "pseudo-evident" character of Savage's axiom.

¹³ In *Decision Analysis* (Reading, Mass.: Addison-Wesley, 1968), pp. 82-85, H. Raiffa offers an interesting critique of Allais's example. He gives some striking arguments implying the untenability of the predominant response. These arguments presuppose that rational agents choose an option they most prefer according to a weak ordering representing their conflict-free valuation of the feasible options. Raiffa's arguments appear to me to be telling against someone like Allais who shares his assumption that rational choice ought to be free of unresolved conflict. Space does not permit detailed discussion of Raiffa's arguments here.

harmful. In particular, the predominant response to the Allais problem may prove to be the sensible response after all.

Given that Unsurething prefers more money to less and given that his utility function for money exhibits diminishing marginal utility of money, should he be required to decide whether the ratio of the differences in utility between receiving a million and receiving nothing and between receiving five million and receiving one million is greater than, equal to, or less than 10/1? Perhaps there are occasions where he may have other value commitments which can be invoked to justify some judgment on this matter. But it seems absurd to suppose that, to be rational, Unsurething must have sufficient other commitments which, together with analogues of principles of inductive logic for utility judgment, suffice to render a verdict. And it seems equally absurd to insist that, in the absence of such commitments, Unsurething should decide without justification in order to save his reason. He should be allowed to suspend judgment.

The conflict in value considered here concerns the rate at which the value of money increases with an increase in monetary payoff. But it is widely acknowledged that decision makers often face predicaments where there are conflicts in value deriving from commitments to different professional and social roles, different moral principles or aesthetic values. Such conflicts can induce on the same set of feasible options different weak orderings. It seems no more acceptable here to suppose that an agent will always be in a position to justify one resolution of the conflict over another before taking a decision than it is in Allais's problem. Sartre's example of the son torn between filial devotion to his mother and commitment to the Free French cause illustrates the point. Unlike Sartre however, I contend that it is quite as untenable to regard his decision as a resolution of the conflict as it is in Allais's problem. The son need not regard his decision to join the Resistance as for the best all things considered. He could and, perhaps, should see the conflict in his values as unresolved even though he had to take a decision. The fact that one conflict (in Allais's problem) is pecuniary and the other moral does not seem especially relevant.

I argued originally that conditions of rational belief, valuation, and decision ought to be applicable to all agents whether they are animal, automaton, human, or social. The discussion immediately preceding supports the contention that agents need not betray their rationality by taking decisions under unresolved conflict. The examples were taken from decision making by personal agents but,

according to the first argument, ought to apply to social agents as well.

Ironically, Arrow's impossibility theorem itself offers a compelling case for concluding that social agents may retain their rationality while taking decisions under unresolved conflict just as personal agents do.

Arrow's requirement of nondictatorship on "social welfare functions" that specify how conflicts between the values of the individual citizens are to be resolved in social preference precludes recommending that society follow the practice of resolving conflict by adopting the ranking of some designated citizen. And his prescription against appealing to interpersonal comparisons of values precludes adopting any other ranking compatible with Pareto conditions, "independence" requirements, and the condition that the social welfare function be defined for all possible preference profiles.

The net effect of these Arrowian conditions is to rule out any potential resolution of the conflict between the welfares of different citizens from representing social preference.¹⁴ That is to say, these conditions preclude society from resolving such conflict. Arrow gets a contradiction by insisting that society resolve conflict anyhow. But if it is conceded that decision making under unresolved conflict may be rational for social agents as it is for personal agents, Arrow's insistence on endorsing the requirement that, for any system of individual preferences or welfare rankings of the social states, a ranking representing social preference should be determined may be abandoned.

To be sure, the Arrowian result remains troublesome even when the requirement that social preferences be free of conflict is abandoned. It is one thing to say that society, like a person, may sometimes be justified in taking decisions without having resolved all conflicts. But it is quite another thing to impose conditions on social valuation which prevent resolution of any conflict.

I, for one, remain unconvinced that interpersonal comparisons are always to be avoided. And, in certain classes of decision problems, society may be justified in adopting a dictatorial rule—or, at least, in restricting resolutions to preference rankings belonging to

¹⁴These remarks are a rough characterization of the insight expressed by R. D. Luce and H. Raiffa in *Games and Decisions* (New York: Wiley, 1958), pp. 343-345, in their discussion of how an argument due to Blackwell and Girshick [*Theory of Games and Statistical Decisions* (New York: Wiley, 1954), p. 118] pertaining to individual choice under uncertainty could be adjusted to yield the Arrow impossibility theorem. Paul Lyon and Teddy Seidenfeld drew this to my attention independently of each other.

members of some oligarchy. Nonetheless, society often may lack a warrant for making interpersonal comparisons and for favoring the values of some privileged group of citizens. In such cases, society should be prohibited from adopting any ranking of the social states as a basis for maximizing behavior.

Thus, Buchanan is right at least to this extent. Society should not *always* be thought of as a preference-maximizing agent. But, counter to Buchanan, the trouble with Arrow's insistence that social choice maximize preference according to some social preference ranking is not that social institutions fail to qualify as agents whose choices are subject to critical assessment according to the same canons of rational valuation and choice applicable to persons. Social groups ought often to be treated as agents just as persons ought often to be treated as agents, and we should devise our approaches to rational choice with this in mind.¹⁵ But just as personal agents may terminate deliberation and take decisions without having resolved the moral, political, economic, and aesthetic conflicts relevant to their predicaments, so too social agents committed to promoting the welfares of their clients or citizens might justifiably make decisions without settling on how to balance the competing interests of these clients.

It is often alleged that the chief difference between "pure" or "theoretical" scientific inquiry and practical deliberation is that in practice but not in science the need to make decisions deprives the deliberating agent of the luxury of remaining in suspense even when there is no warrant for settling outstanding issues one way or another. Curiously enough, some pragmatists (e.g., Charles Sanders Peirce) seemed quite prepared to accept such a dualism between theory and practice. An alternative pragmatist response is to assimilate theoretical inquiry somehow to practical deliberation in a manner that denies to pure research, as it does to practical deliberation, the opportunity for suspension of judgment. My own brand of pragmatism agrees that scientific inquiry is a goal-directed activity subject to the canons of criticism regulating all practical deliberation. But the need to take decisions (which, in my view, is as urgent in pure research as it is in practical deliberation) does not mandate or even excuse unjustified resolution of conflict or leaping to conclusions. My aim in this paper has been to indicate how

¹⁵An important recent effort to develop decision theory applicable to both social and personal agents has been undertaken by Paul Lyon, *Preference Aggregation*, unpublished Ph.D. dissertation, Washington University, St. Louis, 1980.

this brand of pragmatism bears on "rationality" assumptions built into the conditions that entail Arrow's impossibility theorem.

ISAAC LEVI

Columbia University

COMMENTS AND CRITICISM

FREQUENCY-DEPENDENT CAUSATION*

Smith has a certain physical constitution; smoking can cause him to get lung cancer. Jones, however, is not susceptible. When Smith smokes and gets the disease, we might wonder what it means to say of him that his smoking caused his cancer. But different sciences also have an interest in generalizing over the individuals in a population and arriving at a population-level causal claim; smoking, we have found, causes lung cancer in the population of U.S. adults. If the population includes susceptible and nonsusceptible individuals alike and if some individuals smoke but others do not, what could be involved in a population-level hypothesis about the causal role of smoking?

Ronald Giere¹ has recently provided a counterfactual analysis of such claims. One part of his account is designed to cover populations of deterministic systems; the other is intended to handle populations of stochastic systems. If Smith is a deterministic system, then it will be a matter of physical necessity that, if he smokes, he'll get cancer. If, on the other hand, Smith is a stochastic system, then his smoking won't physically necessitate his getting cancer. Rather, his probability of getting cancer if he smokes will exceed his probability of getting cancer if he doesn't. The first clause of Giere's analysis is that, if smoking causes cancer in a population, then there must be at least one individual in the population who is either a deterministic or a stochastic system with respect to the occurrence of cancer, given smoking.

The second condition of the analysis instructs us to compare two

* This paper was written under grants from the John Simon Guggenheim Foundation and the University of Wisconsin Madison Graduate School, which I acknowledge with thanks. I am grateful also to the Museum of Comparative Zoology, Harvard University, for its hospitality during 1980-81.

¹In *Understanding Scientific Reasoning* (New York: Holt, Rinehart & Winston, 1979) and in "Causal Systems and Statistical Hypotheses" in L. Jonathan Cohen, ed., *Applications of Inductive Logic* (New York: Oxford, 1980).

counterfactual situations. To see whether smoking causes cancer, we must see how much cancer there would be if everyone smoked and how much there would be if no one smoked. If the population is composed of deterministic systems, the second requirement takes the following form: Smoking is a positive (negative) causal factor in the production of lung cancer only if the frequency of cancer that would arise if everyone smoked is greater (less) than the frequency that would arise if no one did. But, if the population is composed of stochastic systems, there will be no such thing as *the* amount of cancer that would have to arise under these two counterfactual circumstances. Rather, to each we can assign a probability distribution of cancer frequencies. The counterfactual analysis is then stated in terms of the difference in *mean values* of the two distributions.

Notice that Giere's explication does not make use of the idea of causation. The first condition is stated just in terms of the ideas of physical law and probability; the second employs only counterfactual considerations. It would be unsurprising, but also unilluminating, to explicate "smoking causes cancer" as saying that smoking causes (or would cause) some individuals to contract cancer. But Giere's proposal is more ambitious. If it were correct, we would have here a reduction of a kind of causal concept. Not that the reducing notions are the clearest things in the world, but at least the upshot would be a contraction in the number of concepts shrouded in mist.

In what follows, I propose to evaluate Giere's analysis by applying it to a causal process considered in evolutionary theory—namely, natural selection. To say that there is selection for a given trait is to say that possessing that trait causes differential reproductive success. If there is selection for a trait and if no other evolutionary forces impinge and there is no "sampling error" due to random drift, individuals with the trait will on average have more offspring than individuals without it. But sampling error can't be discounted for finite populations; so the combined effect of selection and drift will be a probability distribution of numbers of offspring. In this event, selection for a trait will imply that the mean value of the distribution associated with the individuals possessing the trait exceeds the mean value for individuals without the trait. Evolutionary theory assigns a probability distribution of possible reproductive outputs to each organism and, thereby, views organisms as stochastic systems. This implies no commitment to indeterminacy at the microlevel, of course.

Simple kinds of selection receive intuitively plausible characteri-

zations on Giere's theory. An advantageous mutation may boost reproductive output and spread through the population. Once it has gone to fixation (i.e., 100%), the mean number of offspring produced by the population exceeds the mean number produced before the variant was introduced. Before fixation occurs—while there still is selection for the trait—it will be true that the trait causes higher reproductive output. And Giere's analysis predicts just this result, since the mean number of offspring that there would be if the trait were universal exceeds the mean reproductive output that there would be if the trait weren't present at all. Selection looks to be a nice example of population-level causality, in Giere's sense.

Giere's theory focuses on the extreme cases of 100% and 0% as the benchmarks of causation. It thereby assumes that the causal significance of a factor is not affected by its *actual* frequency in the population; all that matters is what *would* happen in two counterfactual circumstances. The idea behind this focus on the extremes of 100% and 0% presumably is to isolate the potential impact of the causal factor by abstracting away from the vagaries of its actual incidence. Perhaps this is a plausible idea for the example of smoking and lung cancer, but it fails to do justice to what biologists call *frequency-dependent selection*. In this kind of evolutionary process, the frequency of a factor affects not only the incidence of the effect, but also the "biological rules" determining how the factor impinges on individuals. I'll now give some examples, with an eye to showing how they constitute counterinstances of Giere's proposal. Although the arguments will be directed against the stochastic version of the theory, they apply with equal force to the deterministic formulation.

The first example is from the study of mimicry. The monarch butterfly *Danaus plexippus* tastes terrible to blue jays. Another butterfly species, *Limenitis archippus*, has evolved the characteristic appearance of the monarch, but without its bad flavor. The selective advantage of this form of mimicry depends on the frequency of the mimics relative to the models. If the unpalatable Monarchs predominate, mimicry will be advantageous, since the blue jays will be fooled. But if the tasty mimics predominate, the blue jays will learn how nice they are to eat. So the fitness of mimicry increases with its rarity.²

²See Lincoln Brower, "Ecological Chemistry," *Scientific American* (February 1969): 22-29, and Lincoln Brower, F. Harvey Pough, and H. R. Meck, "Theoretical Investigations of Automimicry. I" *Proceedings of the National Academy of Sciences*, LXVI, 4 (1970): 1059-1066.

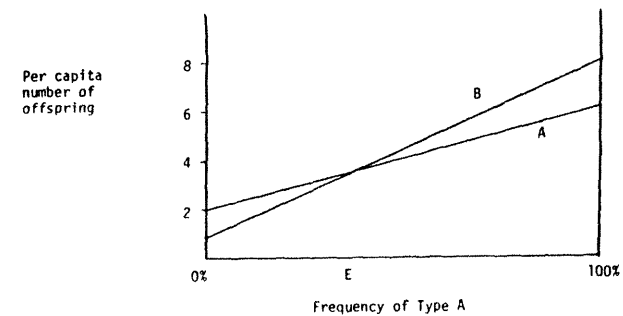
Now let's construct a specific example of this situation. Suppose that monarch butterflies are very common in a locale and that, within another species, there are both mimics and nonmimics. Let the mimics be comparatively rare. Now suppose that mimics produce 10 offspring per capita, whereas a nonmimic in the species produces only 5. Selection favors the mimics, and it seems right to say that mimicry causes differential reproductive success. But the advantage provided by this sort of mimicry, we have noted, is frequency-dependent; so let's assume that, if the mimics were to become prevalent, their per capita offspring output would shrink to 5. According to Giere's theory, to see whether mimicry causes individuals to have 10 offspring when mimicry is rare, we must compare what would happen if 100% of the individuals were mimics with what would happen if 0% of the individuals were. At these two extremes, the per capita output of each individual is 5. Giere's theory concludes that mimicry is not a causal factor in producing larger numbers of offspring when mimicry is rare. By looking at the two counterfactual extremes of 100% and 0%, the theory has missed the causal relationship that obtains at intermediate frequencies.

The second example I want to consider concerns an argument that R. A. Fisher³ proposed to account for why the sex ratio in many species is 1 to 1. I won't go into the details of Fisher's account, but will just appeal to one of his results, stated informally. If the sex ratio in a population is 1:1, then there will be no reproductive advantage for a parental pair to produce a different ratio among its offspring. 1:1 is the equilibrium ratio. But if the population ratio is skewed, then there will be a reproductive advantage for overproducing the minority sex. Suppose that this situation arises in a particular population because more than half the offspring are male. We might say that, at the time, producing all female progeny causes reproductive success. But, again, Giere's analysis leads us astray. What would happen if every parental pair produced all female progeny? Extinction of the population would result. And what would happen if no parental pairs overproduced females? In this case, there would be some reproduction and things would be better. So Giere's theory implies that producing all females is a *negative* causal factor. But this is precisely backwards. At that particular time in the population, overproducing females is a positive causal factor in reproduction.

³ *The Genetical Theory of Natural Selection* (New York: Dover, 1958). See also William Hamilton, "Extraordinary Sex Ratios," *Science*, CLVI (1968): 477-488, and James Crow and Motoo Kimura, *Introduction to Population Genetics Theory* (Minneapolis: Burgess, 1970) for details.

As a third example, let's consider another fact about the sex-ratio argument, aside from its impact on per capita reproductive success. Let's consider the impact of the sex ratio on *population size*. William Hamilton (*op. cit.*) has pointed out that the optimum sex ratio from the point of view of population size is one in which the smallest number of males are produced consistent with fertilizing all the females. Now obviously 100% females and 0% males are the worst possible ratios from the point of view of population size. The optimum is an intermediate value with the two extremes representing minima. Intuitively, it seems clear that the sex ratio is a causal factor in determining population size. Yet the population size that would result from 100% females is identical with the population size that would result from 0% females (i.e., 0).

These examples show that Giere's condition is not necessary: intuitively, we judged that something was a positive causal factor even though the required condition was not met. It is a bit more difficult to show that the condition is not sufficient, but frequency-dependent selection again provides an example. Suppose that types *A* and *B* are in competition, and each is favored when it is rare. We might represent the number of offspring per capita that a type produces as a function of the frequency of type *A* as follows:

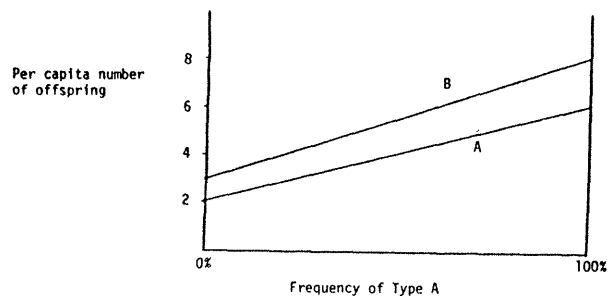


When *A* is rare, the individuals with that rare trait on average produce more offspring than the individuals with type *B*, so *A* increases in frequency. But when *A* is extremely prevalent, and *B* is rare, it is *B* that has the higher reproductive output. As the above graph suggests, there is an equilibrium frequency (*E*) at which the per capita output of the two types is the same, and so at that point there will be no selection.⁴

⁴ This situation has the mathematical form of a simple viability model of heterozygote superiority. See Elliott Sober and Richard Lewontin, "Artifact, Cause, and Genic Selection," *Philosophy of Science*, forthcoming.

Notice that Giere's counterfactual condition is satisfied: if every individual were to have type *A*, 6 would be the average number of offspring. If no individual had type *A* (and so everyone has *B*), then the individuals would average 1 offspring apiece. So it would follow, according to Giere's second requirement, that type *A* is a positive causal factor in reproduction. And this conclusion would hold true regardless of the actual frequency of type *A* in the population. A much more natural interpretation, however, is that *A* is a positive causal factor in some frequency ranges, but not in others. Nor is Giere's analysis saved by bringing the other condition to bear. We may easily imagine that at any frequency value there is an individual whose expectation of reproductive success is greater if it has *A* than if it lacks *A*.

In the above example, it is paradoxical, to say the least, to conclude that *A* is a positive causal factor *tout court*. This is true in some contexts, false in others. But the fitness relations represented on the following graph present an even more extreme example:



Giere's theory concludes that in this case *A* is a positive causal factor in reproduction: reproductive output would be higher if everyone had *A* than it would be if no one did (and thereby had *B*). Yet, at every frequency *B* is fitter than *A*, and so the natural interpretation is that at every frequency *A* is a *negative* causal factor in reproduction: it represents a reproductive *disadvantage*. *B* is a "spoiler"; when introduced as a mutant into a population of *A* individuals, it is fitter, but as it increases in frequency it drags down its own fitness value as well as the fitness value of *A*. But at every instant, *B* maintains its advantage over *A*, and eventually goes to fixation.

Before drawing a general lesson from these examples, I want to stress that frequency-dependent selection (and density-dependent selection, for which the same issues arise) is not a bizarre and idio-

syncratic contrivance, which Mother Nature occasionally indulges in for the sake of tormenting philosophers. Rather, it is arguable that most selection is of this kind. A trait is often its own worst enemy. By achieving prevalence through natural selection, a trait will often materially alter the very conditions that made it advantageous.⁵

Perturbation analysis is a standard technique in the study of causal relations. To discover what is causing what in some actual system, one considers what would happen if the system were different. Sometimes this can be done by reflection, but often the investigator will change the system so as to bring these counterfactual circumstances into being. The examples we have discussed illustrate how the causal structure of a system can be sensitive to the actual frequencies of causal factors. When this is true, a perturbation analysis of the kind demanded by Giere's analysis may fail to illuminate. For, in considering counterfactual circumstances in which the causal factor's frequency is different, one may be *changing the subject!* The use of perturbation analysis *presupposes* some antecedent distinction between causal factors and causally irrelevant properties of the system considered. Giere's analysis does not use the concept of causation, but specifies in advance what counterfactual situations must invariably reveal the workings of the causally relevant factors. Perhaps the fundamental difficulty with the proposal is its lack of circularity. Can population-level causation be explicated without appeal to causal concepts?

ELLIOTT SOBER

University of Wisconsin Madison

BOOK REVIEWS

Karl Marx's Theory of History: A Defence. G. A. COHEN. Princeton, N.J.: University Press, 1978, xxi, 369. \$18.50.*

In this respect our methodology is a theodicy, a justification of God, which Leibniz attempted metaphysically, in his way, by undetermined abstract categories. Thus the

⁵Lewontin. *The Genetic Basis of Evolutionary Change* (New York: Columbia, 1974).

* All page references to Cohen's book are contained parenthetically in the body of the essay. I would like to thank Robert Brenner, Ellen Eisen, Paul Horwich, and Charles Sabel for helpful discussions of the issues.

evil in the world was to be comprehended and the thinking mind reconciled with it. Nowhere, actually, exists a larger challenge to such reconciliation than in world history. This reconciliation can only be attained through the recognition of the positive elements in which that negative element disappears as something subordinate and vanquished. This is possible through the consciousness, on the one hand, of the true ultimate purpose of the world, and, on the other hand, of the fact that this purpose has been actualized in the world and that evil cannot ultimately prevail beside it.

Hegel, *Philosophy of History*

Professor Cohen's book presents and defends a theory of history, and argues that the theory is Karl Marx's; it is primarily to the theory and only secondarily to the Marxology that this review will be addressed. Most simply stated, the position proposed is that the viability of social forms is contingent upon their contribution to human progress. Cohen's aim is to defend this doctrine in its strongest form: optimal contribution to progress is necessary and sufficient for social viability. A specific social form continues just so long as it optimally promotes progress, and when it no longer is adequate to the appointed task it is replaced by a form that is. Finally a point is reached at which social forms as such are no longer a requisite of human progress, indeed at which social forms *can no longer serve* as the framework for human expression. In keeping with their historically subordinate role, social forms then wither. "The (social) form prevails because it develops the content: it is the function of society to transform nature. Does it follow that, once nature is developed, society withers away? . . . The answer is complicated" (130). But stated without complication: "It is no great exaggeration to say that Marx's freely associated individuals constitute an alternative to, not a form of, society" (133).

Cohen makes a substantial and often quite brilliant effort to combine a clear account of this fundamental vision (what Cohen calls Marx's "image of history") with the presentation of a reasonably exact *theory* embodying this image. In this respect his work contrasts with elegant if obscure restatements of Marx's basic conception of history—which give little attention to the requirements on expressing this conception in a scientific theory—and historical studies and *Kategorienlehre* whose bearing on the more general ambitions of Marxism is typically uncertain. Most of the book consists of theory rather than image. But, since much of my argument against the theory derives from skepticism about the background

image and ambition, I should like first to express the sources of this skepticism. As Cohen's theory expresses this image of history, my more specific criticisms will express a quite different image and a distinct conception of the proper ambitions for historical study.

Cohen's Marxism is a scientific variant on a long tradition of philosophical speculation concerning the relationship between fact and value. Characteristic of this tradition is the belief that there is a systematic relationship, open to rational understanding, between the way that the world actually is and what is good: very roughly, that the being of the world depends (perhaps in the long run) upon its being good. What distinguishes the version presented by Cohen from other expressions of this conception is:

1. The attempt to combine (following Hegel) the idea that there is a systematic connection between "being and goodness" with the conception that the *complete* achievement of this correspondence is *possible* only as a result of historical development—and is *in fact* the tendency of historical transformations in property relations, political institutions, and forms of thought and feeling (thus *historical materialism*).¹ The latter claim distinguishes Cohen's position from a conception of history which is concerned with the *possibility* of progress as a matter of ethical interest, but which does not—to put the point tendentiously—treat its ethical interest as a rational basis for faith in the existence of a *law* of progress.

2. Its association of progress with *material* progress (thus *historical materialism*). Material progress is the enhanced human mastery of nature and is, thus, at once a development and expression of human powers as well as a precondition for the development and expression of those human creative powers whose natural field of employment is not material production.² The familiar accusation that this association of progress with material progress is degrading to human nature shows, Cohen argues, "a failure to appreciate the extensive coincidence in fact and in Marx's perception between development of the productive forces and the growth of human faculties. Once we notice that the development of the forces is cen-

¹ For Hegel's general conception of the relationship between the idea of good and its realization, see his *Science of Logic*, A. V. Miller, trans. (London: Allen & Unwin, 1969), pp. 818–823, and *The Logic of Hegel*, W. Wallace, trans. (New York: Oxford, 1892), §§ 233–235. On the place of history, see *The Philosophy of Mind*, W. Wallace, trans. (New York: Oxford, 1971), §§ 548/9, and *Philosophy of History*, J. Sibree, trans. (New York: Dover, 1956).

² For Marx's own views about such powers, see *Capital*, vol. III (Moscow: Progress Publishers, 1971), p. 820; *Grundrisse*, M. Nicolaus, trans. (New York: Random House, 1973), pp. 611/2.

trally an enrichment of human labor power the emphasis on technology loses its dehumanizing appearance" (147; also 41/2).

3. Finally, the rejection of any sort of superintending agent as the "mechanism" securing the correspondence between what is and what is good (as, for example, is the case in Leibniz's theodicy or in Kant's moral theology). By a "superintending agent" I mean an agent who acts with the *intention* of promoting what is good and who has the *power* to achieve this end. In Cohen's theory the agents are all human individuals, and it is not supposed that any of these agents act with the *intention* of promoting the progress of the species; rather, individuals act in a way that does promote such progress just in case promoting their own interests requires that they foster the conditions necessary for human progress, and they have the power to promote these interests.

This combination of elements yields a conception of human progress through social transformations, a conception according to which what is good—the full expression of human powers—is progressively realized through transformations in social life dictated by the changing requirements of material development. It must be reiterated that Cohen's Marxism is not a doctrine concerned with the *possibility* of progress—with the possibility of a correspondence between the conditions required for development and actual social conditions—and which avows an ethical-practical interest in creating this correspondence and an associated theoretical interest in investigating the historical moments of its existence (e.g., the conditions under which classes become universal). Rather the theory is composed of a set of laws which refine an image of history whose core is, simply, that this correspondence in fact tends to obtain.³

The central problem with a theory of this sort was recognized by Hegel, who labeled his solution to the problem "the ruse of reason." The problem he pinpointed is: what ground is there for believing in a match between "locally rational" human action—action in specific social-structural conditions undertaken with limited knowledge and definite interests—and the requirements of

³In this connection it is useful to contrast the views found in the Introduction to Hegel's *Philosophy of History* with Kant's "Idea for a Universal History from a Cosmopolitan Point of View," L. W. Beck, trans., in *Kant on History* (Indianapolis: Bobbs-Merrill, 1963), pp. 11-26. On the contrast between Marxism as a theory rooted in practical interests and Marxism as a science of history, see Juergen Habermas, *Knowledge and Human Interests*, J. Shapiro, trans. (Boston: Beacon Press, 1971), chs. 2, 3; and Leszek Kolakowski, *Main Currents of Marxism*, P. S. Falla, trans., 3 vols. (New York: Oxford, 1978).

"global reason." Specifically, is it reasonable to believe that individual actions will, in the aggregate, correspond to the requirements of progress if one does not affirm the existence of a superintendent of history guaranteeing that this correspondence obtains? The specific problems with Cohen's view which I will consider arise from his attempt to answer this question in the affirmative, that is, from the effort to defend a nontheological theory of history in which progress is the central tendency.

An alternative response to the rejection of any sort of superintending agent is to give up both the idea that there is a tendency to progress and the associated principle of explaining social reproduction/transformation in terms of an extrasocial tendency. For in the abstract there seems no reason to expect "invisible hands" to predominate over "prisoner's dilemmas" or other structural arrangements that generate undesirable outcomes from individually rational actions. That is, it may well be that interests and powers are so organized that progress is blocked, with nothing "outside" the structure to guarantee its transformation in a way that allows continued progress. It is this alternative that informs my criticisms of Cohen. In a sense the difference is not between two images of history but between a theory that is rooted in an image of history and a view that avows no image; the latter does not see a unity in history as a whole, and its adherents must temper their optimism of will with a pessimism of the intellect.

COHEN'S THEORY

The scientific core of Cohen's work develops the programmatic idea outlined above (social viability is determined by conduciveness to productive progress) into a system of historical laws. Three general claims provide the background for three *laws* of historical development and change. First the background:

B1: Material progress is defined as the development of *productive forces*, that is, changes in human labor power [especially "productively applicable knowledge" (45)], instruments of production, raw materials, and spaces resulting in a decrease in the amount of labor time required to produce the means of subsistence needed by the producers: improved understanding of nature applied in a way that enhances the productivity of labor, thus reducing the human labor needed to keep the species provided with means of subsistence.

B2: A social form is characterized, in the first instance, by its property relations, by the way that the control of productive forces is distributed. The feature of these forms of distribution of productive forces (production relations) central to the theory is that they

are differentially capable of advancing the growth of productive forces. To illustrate: contrast an agricultural economy consisting of peasant producers who own means of production and their own labor power so that they are able to produce the means required for their subsistence, with a capitalist agricultural system composed of landowners and tenant farmers, along with agricultural laborers who own only their own labor power. The latter property form will have higher productive potential—assuming that large-scale farming requiring large inputs of labor is more productive than small-scale farming relying only on family labor—because of the existence of a labor market. The destruction of the property regime of peasant proprietors and the creation of capitalist property relations, therefore, enables further growth by creating the conditions for the development of the more productive large-scale agriculture.⁴

B3: Finally, different sorts of legal rules, political institutions, and forms of belief are required for the maintenance of the different sorts of property relations associated with different levels of productive development.

Against this background three *dynamical* laws are proposed:

D1: The productive forces tend to grow. That is, there is a tendency to reduction in the amount of labor time required for producing means of subsistence.

D2: Production relations develop and subsist because they are the relations required for the optimal development of the existing productive forces.

D3: Legal-political-ideological forms arise and persist because they are required for "the initiation and maintenance" (232) of those production relations required for the maximal expansion of productive power.⁵

⁴ See Marx, *Capital*, vol. I, Ben Fowkes, trans. (Middlesex: Penguin, 1976), chs. 26-32; and particularly *Capital*, vol. III, *op. cit.*, pp. 804-813, on the limits to productive development under the peasant property regime. I should add that Cohen's position on the way that production relations can limit development is narrower than some other variants of this position. Thus, Finley, Mosse, and Perry Anderson all argue that ancient slavery limited the development of productive forces by producing an anti-production mentality among the dominant social groups who, as a consequence, did not take a substantial interest in productive investment. On Cohen's version, the limits are a *direct* result of the production relations, not a result mediated by the effects of the relations on ideology or politics. For the alternative view see M. J. Finley "Technical Innovation and Economic Progress in the Ancient World," *Economic History Review*, 2d ser., xviii, 1 (August 1965): 29-45; Claude Mosse, *The Ancient World at Work*, Janet Lloyd, trans. (New York: Norton, 1969), ch. 3, esp. pp. 44/5; Perry Anderson, *Passages from Antiquity to Feudalism* (London: New Left Books, 1974), p. 27.

⁵ In this formulation I have eliminated an ambiguity in Cohen's treatment of this issue. Some of the formulations in the book suggest that "because they are required for the maintenance of *existing* production relations" is the more appropriate

These background claims and laws are in part the familiar stuff of Marxist social theory. In order to understand what is distinctive about Cohen's "technological interpretation of historical materialism" (29) it will help to consider a familiar a priori objection to Marxist social theory generally and to this technological interpretation in particular. The objection I have in mind is intended to speak against the conceptual coherence of any theory developed along the lines suggested above: thus the description 'a priori objection'. It is best understood as proceeding in two connected steps:

1. The categories of Marxist theory (forces/relations of production; production relations/legal-political forms) are not defined independently from one another and, therefore, cannot serve as the terms of genuine explanations. Marxists typically include, it is said, production relations among the productive forces and yet, nevertheless, persist in the claim to have fully explained production relations in terms of productive forces; they claim to explain legal relations in terms of economic structure, but in fact persist in characterizing economic structure in legal terms (e.g., as property relations).

Cohen's response to this first step in the objection is to differentiate the terms of these explanations with great care. The discussion of productive forces is particularly good, perhaps the best section of the book. The account of production relations, extremely valuable and sufficient to meet the a priori objection, has a weakness about which I should say just a word. In his more detailed treatment of the issue, Cohen identifies the core of the production relation as the relationship of the *direct producers* to the labor power and means of production (productive forces) employed in the production process (63-69). Thus the producers own some, all, or none of the labor power and means of production. Relations of the direct producers to the nonproducing, dominant class can be derived from these direct relations to the conditions of the production, since what the producers do not own is owned by this class

formulation of the law. As it stands the principle allows that political relations develop "in advance" of property relations, and that, rather than preserving the *existing* relations of production, they contribute to the transformation of these relations such that the new relations correspond to the needs of the productive forces. This would make the view compatible with the idea that political absolutism is a form of capitalist state not because it is produced by capitalist property relations, but because it was required for the development of capitalist relations. This view is most clearly advanced by Poulantzas in *Political Power and Social Classes*, T. O'Hagen, trans. (London: New Left Books, 1975), pp. 161-167; for an alternative see Anderson, *Lineage of the Absolutist State* (London: New Left Books, 1974), pp. 16-42. The ambiguity in Cohen's treatment can be seen by contrasting remarks on 231, 232, 249, 279.

(see 70, 83). There are two shortcomings to this treatment, at least the first of which could be readily remedied [the remedy is briefly noted by Cohen (68), but he does not indicate its significance]:

a. In the first place the classification omits relations among the direct producers. But an individual serf may own *some* of his/her labor power either by having individual control over part of his/her working time, while the lord has full control over the rest of the working time, or through sharing in *collective control* of that *part* of the labor time of a group of serfs not controlled by the lord. It has been argued, by Robert Brenner most recently, that this difference between more individualized and more collectivized forms of peasant production is of central importance in understanding different paths of economic development in early modern Europe, since these different forms of feudal agrarian relations are associated with different capacities of peasant resistance to lordly power.⁶ Cohen's remarks on partial ownership (partly owning all, wholly owning part, partly owning part) permit a satisfactory incorporation in this distinction, though at the cost of greater complexity in the analysis of types of production relation, and therefore greater complexity in the theory of social types.

b. The second case is less clear. Here the difference is not at the level of the relations among the direct producers, but rather in the relations of the dominant class to the producers.⁷ Just as the subordinate class can be more individually or more collectively organized, so, too, the dominant class can have more individualized or more collectivized control over the productive forces that are not owned by the direct producers. For example, on this view the development of political absolutism in France might be seen as the collectivization of the ownership of the forces of production previously owned by members of the feudal class individually, a collectivization expressed particularly in the expanded reliance on taxation as a method of surplus extraction. Thus, although it is true that "the production relations of slavery and serfdom include the authority of the superior over the producer's labor-power" (83), it is not true that they include any specification of the specific form of that authority (individualized/collectivized). Here I can see two alternative responses. The first is to take these differences into account in the definition of production relations, a solution that

⁶"Agrarian Class Structure and Economic Development in Pre-Industrial Europe," *Past and Present*, xviii, 70 (February 1976): 30-75.

⁷For the discussion that follows I am very much indebted to Robert Brenner, particularly for the distinction between individualized and collectivized forms of surplus extraction.

seems to be compatible with the general theory of production relations advanced by Cohen (see 35), but has the disadvantage of rendering the theory of social forms still more complicated. Alternatively, one could treat these differences not as being matters of production relations, but rather as specifying the nature of the *distribution* of the surplus, or the form of *political organization* of the dominant class.⁸ The result would be to banish these differences from the foundations of the theory and to commit oneself to the untenable position that these distinctions make no difference to the developmental tendencies of the social forms in which they are embedded.

This said, we can return to the a priori criticism:

2. Anticipating Cohen's response to step 1, the objection proceeds: when Marxists do actually draw the required distinctions, their insistence on the priority of the productive forces is subject to an objection that is both elementary and devastating. For the growth in productive power is now both more basic than *and* yet causally dependent upon social conditions. Productive forces are held to *explain* production relations, and yet it is acknowledged that whether or not the productive forces actually develop depends in turn on production relations (see B2). We are, therefore, in danger of being "thrown back on the common-sense view that important events are due to a multiplicity of forces whose relative strength cannot be calculated, including of course the level of technology in society, its class structure and political system" (Kolakowski, *op. cit.*, vol. II, p. 208).

The central innovations in Cohen's work are developed in response to this dilemma.⁹ In order to maintain *both* the explanatory *primacy* of the forces of production and the causal *dependence* of productive growth on production relations, Cohen argues:

a. That D1 (which he calls the "development thesis") can be de-

⁸The latter position is taken by Perry Anderson in *Lineage of the Absolutist State*, "Conclusions." Cohen's criticisms of Anderson's strategy (247/8) appear to have persuaded Anderson: see *Arguments within English Marxism* (London: New Left Books, 1980), pp. 72/3.

⁹A bit of caution is called for here in attributing originality. I am not at all certain who first developed the idea of an explicitly functionalist Marxism. A very clear discussion of the central ideas can be found in Piotr Sztompka, *System and Function* (New York: Academic Press, 1974), esp. ch. 15. For doubts about functionalist Marxism see A. G. Frank, "Functionalism and Dialectics," in *Latin America: Underdevelopment or Revolution* (New York: Monthly Review Press, 1970); A. Giddens, "Functionalism: Apres la lutte," *Social Research*, XLIII 2 (Summer 1976): 325-366. What is certainly distinctive about Cohen's treatment of functionalism is the clarity with which the *motivations* for a functionalist Marxism are stated, the degree of detail with which the theory is elaborated, and the seriousness of his responses to the central objections.

fended on nonsocial grounds, i.e., without making reference to social forms (especially property relations). I will discuss the argument offered on its behalf—what I call the Smithian argument—in detail in the next section.

b. That production relations are to be *functionally* explained. That is, it is because a specific distribution of control of the forces of production is required for productive growth that this distribution obtains. Cohen states the point with characteristic clarity: "The effect of the relations on the forces is emphasized in our reading of the primacy thesis (the thesis that the productive forces are primary). It is that effect which explains the nature of the relations, why they are as they are. The forces would not develop as they do were the relations different, but that is *why* the relations are not different—because relations of the given kind suit the development of the forces" (161). The motivation for introducing functional explanations is to capture the idea that social forms must adapt to an extrasocial tendency. So, if there is no asocially based (autonomous) tendency to productive growth—no underlying tendency to progress—then the functionalist argument is irrelevant. Thus, rather than concentrate on the functionalism (though without in any way intending to embrace it), I will direct my attention to the defense of D1; we will see that the problems in its defense are *just* the problems of the approach as a whole which I considered in the introduction.

THE SMITHIAN ARGUMENT

The argument that Cohen needs for the development of the forces of production must satisfy two conditions, the first of which restates a conclusion of the previous section.

1. First, the argument cannot presuppose that social relations tend to exist which are required for the development of the forces of production. The basis of this requirement should be clear from the previous section.

2. Second, the conclusion need only be a tendency to develop, and not that always and everywhere there is productive advance. This issue is very delicate because there are two pulls at work (153-157). On the one side one must acknowledge that there are "'chance' convulsions" (154) like natural disasters which result in regression. On the other hand, there is a danger that "'chance' convulsions" or "abnormality" might become catch-alls for all the recalcitrant cases in which the putative tendency has failed to express itself. However, whatever is meant exactly in saying that there is a tendency to develop, it is *certainly* the case that when the apparently best explanation of stagnation or regression is that the

social form blocks development, and does so for a long period of time, then we have genuine counterevidence to the purported tendency.¹⁰

Consider the defense of the tendency to growth provided by Cohen. The proposal follows the argument of Adam Smith that the pursuit of individual interests (rooted in human nature) results in a general, if not always realized, tendency to productive growth: "The uniform, constant, and uninterrupted effort of every man to better his condition, the principle from which public and national, as well as private opulence is originally derived, is frequently powerful enough to maintain the natural progress of things towards improvement, in spite of both the extravagance of government, and of the greatest errors of administration."¹¹ Cohen's Smithian argument is that human beings, in a situation of *scarcity* (wants outstripping available material means of satisfaction), are able to use the natural *intellectual* capacities characteristic of the species to devise ways of expanding the productive output from given inputs, and being *rational*—that is, tending to do what is required for satisfying wants when they know how—they do what is required to develop the productive forces in the ways suggested by the intellect. This argument, like Smith's, is meant to rely only on assumptions about individuals (rationality, intelligence, material want) and to issue in a conclusion about a general tendency of development not directly willed by any of the individual agents. If it were successful, then, rather than a further *clarification* of the original image of progress, we would have an *asocial explanation* of the tendency to productive progress. If my skepticism is warranted, then the argument will not work. In particular, we should expect to find little more than a reassertion *that* there tends to be progress, with no explanation of this fact.

Cohen points out that the argument as stated fails for at least two reasons (153):

1. First, nonmaterial interests may be in conflict with the pursuit of material advantage and of sufficient importance to override material interests.

2. Second, "it is not evident that societies are disposed to bring about what rationality would lead men to choose." Even if it were granted that the material problem is dominant for individuals there would remain "some shadow between what reason suggests

¹⁰ I should also add that "'chance' convulsions" have quite different effects on different social forms, and this alone should make us very wary of appealing to them alone to explain long-term stagnation or regression.

¹¹ *Wealth of Nations*, E. Cannan, ed. (New York: Random House, 1965), p. 326.

and what society does" (153). This is so since the promptings of reason are directed to individuals, whereas the deeds of society depend upon the actions of groups of individuals, *diversely prompted by reason*. Call this the *coordination problem*.

To meet these objections Cohen undertakes to show that the facts about human nature in the Smithian argument (material want, rationality, intelligence) "have more weight" than the objections seem to indicate. Specifically, the problems can be met by taking two prominent historical facts into account:

1. There is little productive regression, at least in the cases that "historical theory" can reasonably be expected to account for (i.e., excluding the "convulsions," etc.).

2. "*Productive forces are frequently replaced by better ones*" (154). I will refer to these two considerations as *The Alleged Facts*. How are *The Alleged Facts* meant to rehabilitate the Smithian argument? Cohen says that they show that the Smithian premises (rationality, material want, and intelligence) are "indeed weighty," that they "have more weight than we came to fear" (154). It is not simply that evidence of *actual* development *directly* supports the thesis that there is a *tendency* to development. Rather, the evidence of actual development is employed to provide *indirect* and added support for *the Smithian premises*, and these strengthened ("weighty") premises are then redeployed in an argument for a tendency to develop. In this way, Cohen will be able to *explain* the tendency, not simply give some evidence for it.

But there is something very perplexing about this strategy. Recall the first difficulty: the Smithian premises state that material interests are a concern of individuals, without specifying their relative significance. Presumably, then, *The Alleged Facts* help out by providing indirect evidence that material interests are in fact of *paramount* significance for individuals, for otherwise there would have been less material progress and more regression and stagnation.

This is a plausible response to the *first* difficulty because it was directed against the assumptions about individuals relied on in the Smithian argument. But the second challenge (the "coordination problem") is of a quite distinct sort, and it is more difficult to understand just how *The Alleged Facts* aid in addressing it. For the coordination problem asks: why is it in general true that the *aggregate* result of the pursuit of material advantage by *individuals* is growth in productive power? In this case it cannot be that *The Alleged Facts* are relevant in virtue of showing something about *individuals*; it is not facts about *individuals* that are now in question, but facts about the *structures* that determine the outcomes of indi-

vidual acts. What the facts, if they were as alleged, would show is that structures have been such that individual pursuit of material advantage has issued in productive growth. But this still does not yield the desired *tendency* to productive growth unless we infer from this fact about structures something about their nature: namely that social structures *tend* not to provide obstacles to productive development. *This*, however, is to be *explained by* the tendency to productive development. As a consequence, the argument appears to be stuck between circularity and enfeeblement. It is *circular* to *explain* the tendency to development by appeal to the fact that structures tend to correspond to the requirements of productive development, and then to explain the tendency to correspondence by appeal to the tendency to development. This circularity can be avoided by treating the Smithian argument as just providing reasons for believing that there is a tendency to productive progress and including among the reasons a fact about social structure subsequently to be explained by the tendency to productive progress. Thus construed, however, the Smithian argument does not in fact *explain* why there is a tendency to productive progress, and a fortiori does not explain this tendency in terms of a few elementary facts about human nature. What it in fact leaves us with is the claim that there is such a tendency—that is, a reassertion of the original image of history, now made more clear—together with some evidence to support the claim.

The shortfall in the argument can be clarified by considering Cohen's own contrast of Marxian and Hegelian theories of history. "For Hegel . . . history shows an expansion of consciousness giving itself form in cultures, which subvert themselves through their success in advancing consciousness . . . [For Marx] the important forms are not cultures but economic structures, and the role of consciousness is assumed by expanding productive power" (26). But, as Cohen interprets it, Hegel's theory of history is also distinguished from Marx's by its supposition that there exists a non-human person, the world spirit, and that the tendency for consciousness to "expand" is rooted in and *explained by* the nature of this superintendent who is the real agent of history (ch. 1). It is the absence of anything corresponding to this suprahuman agency which leaves Cohen's theory with no explanation of the tendency to productive development. What we are presented with is a rationalist theory of history without the philosophical apparatus required to support such a theory; a theory with Hegelian ambitions, but without allegiance to the kind of panlogistic principles required to guarantee the correspondence of the rational and the actual.

In any case the construction seems to me misguided from the start. For The Alleged Facts are *just* alleged facts. In fact there is *substantial* regression and stagnation, alongside productive progress. Furthermore, the actual facts are not really *surprising* if one acknowledges the dependence of productive growth on social-political structure, and does not begin from an image of progress. Finally, the *appearance* of a global tendency to progress perhaps results from a generalization on two facts about capitalist social forms: first, they do result in enormous productive development, and, second, their structure is such that this productive development is a natural tendency. These points will each be developed in the next section. What ought to have been concluded from the initial failure of the Smithian argument is that there are no laws of "production in general" (to use Marx's phrase); that is, there are no system-transcendent tendencies of productive development. Rather, regression, stagnation, and growth are each to be explained by the premises of the Smithian argument in conjunction with facts about the structure of specific social-political forms.¹²

BLOCKED DEVELOPMENT¹³

The historical case against the first dynamical law is much more substantial than the single instance to which Cohen addresses a few cursory remarks, *viz.*, the productive regression following upon the collapse of the Roman Empire.¹⁴ (It should, however, be said that, in view of the enormous historical significance of this case, the problems presented by it alone are not at all inconsiderable.) A few brief illustrations must suffice. Consider the case of China. What makes the economic history of China such a striking problem for this sort of theory is precisely that there was a long period of development of the productive forces—very roughly beginning in the T'ang and through the Sung Dynasty.¹⁵ The period of growth—

¹² Marx discusses "production in general" in two places: *Grundrisse*, pp. 85-88; and *Capital*, vol. 1, pp. 283-292. It is worth pointing out that in *neither* place does Marx argue that there are *any* laws or tendencies of production in general. It would have been useful if Cohen had indicated some reason for the absence of such claims in the places that provided the most natural occasion for their expression.

¹³ See Robert Brenner, "The Origins of Capitalist Development: A Critique of Neo-Smithian Marxism," *New Left Review*, xxvi, 104 (May/June 1977): 25-92, for an important discussion of the theoretical issues and some of the historical cases considered below. My disagreements with Brenner's approach are indicated on pp. 269, 70 and 273.

¹⁴ For some interesting remarks on this issue by Marx, see Karl Marx and Frederick Engels, *Selected Correspondence*, I. Lasker, trans. (Moscow: Progress Publishers, 1965), p. 313.

¹⁵ For discussion of the problems considered here, see Mark Elvin, *Pattern of the Chinese Past* (Stanford, Calif.: University Press, 1973); Dwight Perkins, *Agricultural Development in China 1368-1968* (Chicago: Aldine, 1969); Shiba Yoshinobu, *Com-*

most importantly in agricultural productivity—was also a period of considerable commercial development, especially internal commerce based on a network of local and regional markets, and associated productive specialization. This growth phase is then followed by a long period—roughly corresponding to the Ming and Ch'ing dynasties—with little evidence of further development of productive forces, though with no apparent regression either. Aggregate agricultural output continues to expand on the basis of the extension of cultivation and increased output per acre on increasingly fragmented holdings. But productive power does not grow.

A case of regression, on which there is a considerable body of Marxist literature, is Poland (and Eastern Europe more generally) in the period roughly 1500-1800.¹⁶ Here we see an earlier growth phase supplanted by genuine regression in agricultural productivity resulting from the "second serfdom," *i.e.*, from the imposition of substantial labor services on the Polish peasantry. This imposition of services guaranteed to the Polish lords what was certainly more important to them than an increase in the forces of production, *viz.*, control over the surplus produced in agriculture. Over roughly the same period we find stagnation in French agriculture, particularly in the south. Relatively fixed productive forces in agriculture in the period from the beginning of the sixteenth century to at least the middle of the eighteenth result, in this case, from the substantial control of the land by peasant proprietors who largely produce their own means of subsistence, lack the incentive to specialize (a high-risk and often high-cost strategy), and whose land is constantly subdivided through partible inheritance.¹⁷ As a conse-

merce and Society in Sung China, M. Elvin, trans. (Ann Arbor: Center for Chinese Studies, 1970); Kang Chao, "New Data on Land Ownership Patterns in Ming-Ch'ing China—A Research Note," *Journal of Asian Studies*, xl, 4 (August 1981): 719-734; Peter Golas, "Rural China in the Song," *Journal of Asian Studies*, xxxix, 2 (February 1980): 291-324.

¹⁶ See, for example, Jerzy Topolski, "Economic Decline in Poland from the Sixteenth to the Eighteenth Centuries," Richard Morris, trans., in Peter Earle, ed., *Essays in European Economic History 1500-1800* (New York: Oxford, 1974); Leonid Zytowicz, "The Peasant's Farm and the Landlord's Farm in Poland from the 16th to the Middle of the 18th Century," *Journal of European Economic History*, I, 1 (Spring 1972): 135-54; Witold Kula, *An Economic Theory of the Feudal System*, Lawrence Garner, trans. (London: New Left Books, 1976), esp. ch. 4.

¹⁷ On the fixed productive forces, see E. LeRoy Ladurie, *The Peasants of Languedoc*, J. Day, trans. (Urbana: Univ. of Illinois Press, 1974), pp. 296ff; Michel Morineau, "Was There an Agricultural Revolution in Eighteenth Century France?," R. Cameron, ed., in *Essays in French Economic History* (Homewood: R. W. Irwin, 1970), pp. 170-182. On the social basis of this lack of development, see Brenner, *op. cit.*, pp. 68ff; and J. De Vries, *The Economy of Europe in an Age of Crisis* (New York: Cambridge, 1976), pp. 63-69.

quence, there is not the development of new forms of husbandry that appear in England in the corresponding period.¹⁸

The fact of the matter is that, as soon as one begins to look for long stretches of stagnation and regression and stops working from images formed within capitalist economies, examples multiply rapidly. And would anyone expect the case for a tendency to develop to be *improved* if one were to look at African economic history, or South Asian? But the actual facts should not be *at all surprising*. For, as I have emphasized, the considerations appealed to in the Smithian argument are about *local* motivation and action, but their more precise content and their aggregate consequences depend upon the structures within which they are situated. In this connection there are two general problems which might be described as problems of interest and power. These problems provide—though I cannot argue this here—the key to understanding the developmental blockages in the cases mentioned above.

1. In the first place the fact that individuals have an *interest* in improving their material situation, and are intelligent enough to devise ways of doing it, does *not* so far provide them with an interest in *improving the forces of production*. Only under *specific structural* conditions is the interest in material advantage tied to an interest in a strategy of productivity-enhancing investment. The formation of extractive empires, the extension of cultivation, and an increased extraction of surplus from dependent producers are each ways in which individuals and groups can pursue their material interests without promoting productive development, and even (as, for example, in the case of Athens and Rome) in the face of knowledge capable *in principle* of being applied to improve the productive forces. In some political formations venal office and tax farming are significant routes to material improvement, and often appear to present more secure opportunities than productive investment, as the “treasonous” French bourgeoisie well understood. In general, an interest in material well-being is compatible with the adoption of nonproductive strategies as a consequence of two structural factors: first, the fact that there are significant nonproductive opportunities of the sort just described, and, second, that productive strategies are made significantly less attractive or effectively blocked by obstacles to changing property or political rela-

¹⁸ See E. Kerridge, *The Agricultural Revolution* (London: Allen & Unwin, 1967); and E. L. Jones, “English and European Economic Development 1650–1750,” in R. M. Hartwell, ed., *The Industrial Revolution* (Oxford: Blackwell, 1970), pp. 42–76.

tions in such a way that they would be opened up. In this way the problem of interest is related to the problem of power.

2. There are two sorts of problems of power. In the first place we must keep in mind the central Marxist point that productive growth can require fundamental changes in property system, changes which differentially affect different social groups. The costs can fall on a hitherto dominant group or on a subordinate group. In any case the group on whom the costs will fall likely resists, with no promise of success to the bearer of interests in productive growth. Of course a group promoting future growth may in some circumstances be able to buy present allies with promises of future benefits, thus translating future advantage into present power. Sometimes, and in some circumstances. But since it is not the case that growth in production improves everyone's material level—consider the primitive accumulation of capital, or for that matter the development from capitalism to socialism—there is a question that must be addressed in each historical situation: does a group whose particular interests lead them to promote a productivity-enhancing solution have the power to impose that solution, given the expected distribution of costs?

There is a second problem of power which Marxist theory does not adequately address. Classes are not the only ones with something to lose from transformations of property relations. Consider, for example, social forms that can be called *agrarian empires*.¹⁹ Characteristic of agrarian empires is that the *state* depends upon a peasantry for both tax revenue and military needs. A transformation in property relations which undermines the peasantry—say, the larger landholders try to enserf the peasants, thus blocking the access of the state to the surplus product and military services of the peasantry—thus threatens the state, even though it may be promoted by the landholding class. Mark Elvin describes the problem as it arose in the Han Empire: “The collection of revenue and the enlistment of soliders were both imperilled by the growth of latifundia, huge properties owned by officials or merchants, worked by tenants or slaves, and able to resist most of the demands made on them by local government authorities. A primary reason

¹⁹ See in general Max Weber, *The Agrarian Sociology of Ancient Civilizations*, R. I. Frank, trans. (London: New Left Books, 1976), esp. Part I on the bureaucratic-imperial form as an independent obstacle to capitalist development in Antiquity; also M. I. Finley, *The Ancient Economy* (Berkeley: Univ. of California Press, 1973), chs. 1, 6; and J. Cohen and C. Sabel, “The End of Feudalism in England: State Structure and Social Transformation,” presented to American Political Science Association meeting, August, 1980.

for their spread was the pressure of taxation on the independent peasants. . . . Action thus became necessary to preserve the free peasantry as the source of the state's money and manpower" (Elvin, p. 28 and ch. 5). The actual outcomes in these characteristic struggles in agrarian empires between a feudalizing tendency and a centralizing tendency seem difficult to reconcile with the idea that there is a class whose power to impose a solution here and now anticipates its future dominance in a system with a higher productive power. States protect their revenue sources and military needs even when the long-term outcome is not growth. To reiterate, we *need not deny* the premises of the Smithian argument in order to see that productive growth can fail to result from a social-political form (whether the premises should be embraced is quite another matter). It should not be surprising that this is so if one rejects appeal to a superintending agent. If there is not such an agent—that is, if it is not *assumed* that there is such an agent—then the question of whether or not there is a surrogate for a superintending agent present in specific instances is a problem that can be answered only by looking at specific social-political structures and historical conjunctures.

But *surely*, it will be said, there has been productive progress, and the blockages considered, whatever their longevity, were impermanent. The problem is that the force of this objection derives from focusing on capitalism and its tendency to expand into non-capitalist regions. What is *specific* to capitalism is precisely that the economic structure ties *interests* to productive growth and distributes *power* so that these interests are more likely to be satisfied than in noncapitalist forms. Specifically, competition among producers provides a strong interest in productivity-increasing strategies, and the existence of a labor market makes its more difficult for labor to block these strategies even if they are to its disadvantage.²⁰ What needs explanation, then, is the development of capitalism, particularly the formation of a "free" labor force, a market in human labor power. Max Weber put the point well: "the central problem for us is not, in the last instance, even from a purely economic point of view, the development of capitalist activity as such, differing in different cultures only in form: the adventurer type, or capitalism in trade, war, politics, or administration as sources of gain. It is rather the origin of this sober bourgeois capitalism with

²⁰ The first point is perfectly commonplace, but the second tends to be disregarded by nonsociological theories of capitalism. It was, however, considered at some length by Marx, and in his own way by Weber.

its rational organization of labor."²¹ Cohen's theory treats this matter by arguing that, after a certain point in their development, the productive forces mandate the development of capitalism. If, as I have been arguing, there is *general* tendency to development only in capitalist forms, then no illumination of this central problem is to be gained from Cohen's approach.

At the start of this review I said that I was not primarily interested in the accuracy of Cohen's interpretation of Marx's ideas. But some concluding considerations on the consequences of the issue of "blocked development" on Marxist theory are appropriate. To put the issue somewhat differently: what would a Marxist approach to history look like if it rejected the attempt to restate scientifically a teleological image of history as driven by a tendency to material progress?

To begin with, it must be underscored that Cohen's theory does not allow a Marxist approach to blocked development. For him blocked development that does not result from convulsion or natural catastrophe is *counterevidence* to the Marxist theory of history; it does not provide an occasion for investigation of why it was that, for example, the balance of class forces prevented a "higher" system of production relations from being instituted. "According to some Marxists . . . the decay of the (Roman) Empire reflected intensified class struggle, but it is unclear whether this vindicates historical materialism on our interpretation of it, according to which class struggle may, indeed, temporarily inhibit the development of productivity, but not bring about so prolonged a regression as the case of Rome perhaps displays" (157n). In fact there is nothing unclear about the matter. Class struggle plays a secondary role in Cohen's position, being just a mechanism through which the tendencies of history are played out. What makes a theory Marxist, on this interpretation, is not its appeal to the importance of class struggle, but its belief in a determinate outcome to class struggles and social action in general: productive development. What an alternative to Cohen's view which claims to be Marxist must do in order to allow for blocked development is to deny that the theoretical importance of the productive forces is properly captured by the claim that they are the explanatorily basic, independent variables from the standpoint of a theory of social forms. A way to incorporate the productive forces, and classes/class struggle, without denying the possibility of blocked development is as follows:

²¹ *The Protestant Ethic and the Spirit of Capitalism*, T. Parsons, trans. (New York: Free Press, 1958), pp. 23/4.

1. In the first place the theory must hold either that blockages to productive development are directly rooted in the relations of production or that they are directly determined by something explained by the production relations (or explained by something that's explained by something that's explained by the relations of production, or . . .). What the theory must deny is that blocked development can be explained by an economic spirit rooted in a religious tradition of otherworldly asceticism or in a "nondominating" attitude to nature.²² Further, the theory must deny the significance of independent political-structural facts—e.g., that a high degree of political centralization, which too closely superintends productive initiative and makes overly demanding claims on behalf of imperial-bureaucratic military and administrative requirements, is the block to independent capital formation or to the development of a free labor market.

2. Social-political crises result from blockages to production characteristic of the social form in crisis. That is, crises are problems of social reproduction resulting from productive blockage *relative to* the material requirements of the particular social form. This is compatible with the view that some forms do not typically produce growth, and that for such a form a period of regression issues in crisis. In this respect the productive forces are not *insignificant*, but their importance is distinct from that attributed to them by Cohen. We can mark this difference by saying that the Marxist theory of blocked development holds that there are material *pre-conditions* of social reproduction, whereas Cohen's theory is that there are material *determinants* of social reproduction/transformation.

3. The distinction between the two views appears most sharply in their respective treatments of the resolution of crises. The theory of blocked development must deny that crisis outcomes are theoretically understandable *only if* they result in the development of higher property forms allowing for renewed growth. Rather the view is that crisis outcomes are determined by class struggle, and the outcome of class struggle depends upon the balance of class forces, itself not determined by the level of productive development.

This set of ideas has the virtue of treating blockage on a theoretical par with development: that is, the same causal factors are appealed to in the explanation of both. On the other hand, there are

²² See Weber, "Religious Rejections of the World and Their Directions," in *From Max Weber*, H. H. Gerth and C. W. Mills, trans. (New York: Oxford, 1946), esp. pp. 225/6, on forms of asceticism.

two problems with the position. In the first place, it seems arbitrary to treat class agency as having some sort of theoretical privilege, particularly in light of the rejection by this view of the idea that social development is fundamentally a response to some non-social factor (see my remarks on pp. 269/70 concerning political obstacles). If one holds a position *like Cohen's*, then one might (unlike Cohen) believe that crisis resolution depends on class struggle, *because* only class insurgency is capable of producing the new conditions that will yield productive advance. But in the absence of such a rationale, it is hard to see what general considerations would lead to a belief in classes as the sole agents of crisis resolution. Surely no one would argue that the belief *simply* reflects a careful consideration of the historical facts. Once one has broken away from the teleological conception of history and the attendant necessity of belief in some extrasocial factor as controlling historical change, then it is difficult to see what reason there is for believing that any *social* factor has *explanatory* privilege—a point made some time ago by Max Weber. The second problem concerns the relationship between this nonteleological Marxism and the Marxist tradition. The belief in the "contingency" of historical outcomes characteristic of this view does not seem able to provide the basis for the intellectual and political attitude characteristic of the Marxist political tradition, one deriving from the view that there is some inner guarantee of the realization of the good. The typical attitude derives from a conception well captured by a line of Cohen's: "Marx holds that a class gains and possesses power because it marches *in step with* [my emphasis—JC] the productive forces" (160). Nonteleological Marxism is distinguished from Cohen's Marxism by its rejection of the idea that there is *something to march in step with*. Its natural tendency must therefore be to reject the idea that there is a science of politics or a science of revolution, deriving from a correct grasp of the tendencies of history. This is not so much a *problem* with the nonteleological version as it is a source of tension between the theoretical position and the characteristic attitude of Marxist politics. For it, too, lacks a theoretical foundation for its optimism of the will.

JOSHUA COHEN

Massachusetts Institute of Technology