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Multiple Realities, Scientific Objectivity, and the Sociology of Knowledge
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Introduction

In recent years, David Bloor, Barry Barnes, and others have resurrected the problem of the limits of the sociology of knowledge. As in the past, this problem arises in particular with regard to the sociology of scientific knowledge, and, especially, the sociology of mathematical knowledge. There are two aspects of this problem: (i) the problem of demarcating scientific and non-scientific knowledge, and (ii) the problem of accounting for objective knowledge given the assumption that knowledge is a social product. The problem of “limits” is rooted in the prevailing assumptions of the sociology of knowledge, and a resolution of the problem requires rejecting or altering those assumptions. In particular, I propose a resolution based on rejecting or altering: (i) the “social theory of objectivity,” that is, the idea that intersubjective testing and consensus guarantee objectivity, (ii) the conventional “one reality” assumption; (iii) the imperialistic tendency of the so-called “strong program” championed by Bloor; and (iv) the privileged status of science and rationality in inquiry. The relativistic implication of this set of rejections, (v), is also rejected. My criticisms and the alternatives I recommend in each constitute the basis for an alternative sociology of objective knowledge (objectivity). That this alternative is implicated in a theory of political economy, and more broadly, in a theory of lifestyles, values, and world views, should become evident as my argument unfolds.¹

The Social Theory of Objectivity and its Problems

Scientists and philosophers of science have generally assumed: (i) that there is some sort of “objective reality”; (ii) that this objective reality is not directly accessible to us, that is, we must operate on our world in a certain way in order to reveal objective reality; (iii) that, as individuals, we are subject to abnormal perceptions, selective and unique cognitions, biases, and mistakes; and (iv) that the fact of subjectivity is not a barrier to learning the secrets of nature because subjectivity can be transcended in the public forum, or community, of science. I will refer to this resolution of the problem of objectivity as the social theory of objectivity. The two central ideas on which this theory rests are intersubjectivity and consensus.

*Intersubjectivity*²

The social theory of objectivity is reflected in definitions of objectivity which refer to the cooperative nature of science and the collective bases of scientific statements. According to this theory, an individual cannot simply decide to be objective because objectivity is an intersubjective product. Karl Popper dramatizes this theory by examining the activities of a scientific “Robinson Crusoe,” an individual who is trained in science

and then isolated from his colleagues. Since there is no one to check this scientific Crusoe's work, correct his prejudices, exploit the inherent possibilities of his results, or listen to his explanations of his work, he will be unable to develop scientific systems which coincide with those accepted by his "mainland" colleagues. Popper concludes that objectivity is a social product. Individual impartiality, insofar as it exists, is the result and not the source of the institutionally organized objectivity we refer to as science. DeWitt interprets Popper's discussion of Worlds (1), (2), and (3) (the physical world, the mental world, and the world of intelligibles, or ideas in the objective sense) as implying that "one head is, in principle, quite enough" for "perceiving' World (3) accurately." This interpretation follows from DeWitt's notions that (i) "knowledge is objective in the strong sense that it transcends even inter-subjectivity," and (ii) World (3) "is a world of abstract entities, "and therefore "somewhat different from what we usually think of as cultural." However, DeWitt fails to show how a cultural process can generate an acultural, extra-cultural, or trans-cultural domain such as he conceives World (3) to be. I address this problem in the following pages without referring to the Popperian "3-Worlds thesis."³

The social theory of objectivity appears to be at theory sociologists would welcome since it expresses an awareness of the social foundations of knowledge and standards of truth. And, in fact, they do. Joseph Ben-David, for example, argues that public tests, logic, experiments, and empirical observations gradually eliminate personal biases and mistakes. The problem with the social theory of objectivity is that it covers up the problematic psychology of science with an unproblematic sociology. Intersubjectivity is a social process, and all social processes are problematic from a sociological viewpoint. The biologist, Loren Eiseley, has expressed the implications of recognizing that science is a social process better than many of his colleagues in sociology. Science, he notes, is an institutions and, like all institutions, can be expected to age and to increasingly reveal rigidities and conformities. He avoids the pitfalls of this biological analogy by pointing out that social processes such a professionalization and bureaucratization can transform standards in science form expressions and guarantors of excellence into constraints on original thought an means for restricting creativity within traditional boundaries. Why, then, doesn't Ben-David consider the identification and elimination of social biases and mistakes to be a least as important as the identification and elimination of personal biases and mistakes?⁴

The tendency to treat the sociological realities of science as unproblematic is wide-spread. Kuhn, for example, argues that normal science is educationally narrow, rigid, an dill-designed to produce creative scientists. But, according to Kuhn, this is no barrier to scientific progress. He argues that the general tendency of normal science to promote individual rigidity cannot prevent some young scientists and scientists new to their field from introducing innovations, provoking crises, and precipitating "scientific revolutions." But Kuhn doesn't consider the potential impact of social structural changes on the possibilities for scientific change. For example, is the supply of Kuhn's "Bolsheviks of science" independent of social conditions within and outside of science? Can the creativity and novelty of youths and hybrids be suppressed by certain kinds of social control? Even if we assume the validity of Kuhn's general model of scientific change, certain "damping" effects on the cycles of scientific revolution and normal

science can be hypothesized. Bureaucratization, for example, may lengthen the periods of normal science, lower the intensity of revolutions, attenuate conceptual crises, stifle individual creativity, and lower the probability of a revolutionary idea being recognized and thereby provoking a crisis. A second damping source has been suggested by Boulding. He argues that the dialectical processes associated with scientific revolutions represent the heat of crystallization in a process of change; such processes are “costs.” This idea can be extended to include the “cumulation of costs” and the progressive deterioration of the capacity of the scientific system to “recover” from the costs incurred during revolutionary changes, and hence to continue to “grow,” “progress,” “develop,” or “evolve.”⁵ Kuhn recognizes the rigidity of normal science; but his failure to consider the rigidity of social facts as a factor in scientific change is sociologically untenable.⁶

Consensus

Objectivity is associated with truth, or true belief. In other words, objectivity is a relationship between human beings and “objects of inquiry” that leads to truth. Meynell argues that truth is trans-social: it is a product of the capacity for self-transcendence, that is, of the capacity “to come to know what actually is so, and not just ‘so for me’ or ‘so for the members of my society’”. “But persons who have what Meynell refers to as the basic mental faculties necessary for ascertaining truth, and who live in societies which stimulate the development and facilitate the use of those faculties, may develop radically distinct and conflicting beliefs. Meynell contends that in such cases there must “tend to be at least a convergence towards agreement [my emphasis] so far as the parties concerned attempt attentively, intelligently, and reasonably to pool their resources.” There must be a movement toward consensus. But this is part of the social theory of objectivity and raises again the problem of appealing to a unproblematic social activity and process (Meynell, 1977, pp. 489-500).

What constitutes consensus? Is it the “universal agreement” referred to sometimes in the rhetoric of science? In fact, objectivity is not a matter of universal consensus but of a certain type of restrictive consensus. Intersubjective consensus, for example, could be used to refer to the type of consensus that occurs among properly certified human beings whose sensory apparatuses are in “proper working order” and who in modern times have become known as scientists. They rely on this type of consensus in deciding whether given statements about reality are “objective.” But there are other types of consensus, all of them restricted in one way or another. Special consensus is associated with the so-called “man-of-knowledge,” his apprentice, and his associates; the case of Castaneda and Don Juan (fictional or not) is exemplary (Castaneda, 1971). Individual consensus might be used to describe the result of achieving cognitive consistency: this type of consensus is the basis of idiosyncratic, personal, or subjective knowledge. Types of consensus develop on personal, group, and sociocultural levels. They are the result of specific kinds of relationships between people and environments (physical, biological, and social), and they lead to the construction of distinguishable realities. It is important to note that all types of consensus involve some sort of intersubjective testing (even individual consensus, which can be conceived as a product of internal dialogue). This should not be obscured by the fact that the term, “intersubjectivity,” has to some extent been preempted by science is not readily appropriated for more general usage. Schutz and others have, of course, discussed the intersubjectivity of everyday life. Schutz’s analysis

of intersubjectivity can be viewed as model for the transformation of intersubjectivity in science from the taken-for-granted into the problematic.⁷ Incidentally it is conceivable that an advocate of the distinctive nature of intersubjective testing in science might argue that science is the only mode of knowing in which egalitarian and communal norms are operative. This argument would have to be rejected given the social stratification of the scientific community.

Intersubjectivity and consensus do not solve the problem of the demarcation of scientific and non-scientific knowledge and do not guarantee objectivity. The failure arises not because intersubjectivity and consensus have nothing to do with objectivity, but because they are treated as unproblematic. The awareness that intersubjectivity and consensus are problematic leadsto the following problem: assuming that it is, in the first place, possible to define objectivity as a social fact, what type of intersubjectivity and what mode of consensus are most likely to stimulate the creation of objective statements about reality? This problem defines the focus of the sociology of objectivity. In order to attend to this problem it is necessary first to examine the ideas of reality and objectivity.

Reality or Realities?

In recent years, we have become accustomed to such terms as “alternate-,” “alternative-,” “separate-,” and “multiple-realities” in many areas of intellectual life. These terms are kin to such terms as “paradigms,” “glosses,” and “language games.” They pose a change to the idea that there is “one reality” –an idea central to some view-points as the necessary condition for scientific inquiry. Storer, for example, assumes that there is “but a single physical reality ‘out there’, Meynell contends that assumes that there is “but a single physical reality ‘out there”, Meynell contends that true belief “is about the one real world.”⁸ In such cases, the pluralist view of reality may appear to undermine the program for the scientific pursuit of truth (or objectivity). Consider, for example, LeShan’s view. He distinguishes an ordinary reality of separate objects, simultaneous happenings, and simple cause and effect relations from a relativistic reality of flowing events. He treats “firewalking” as an activity that takes place in an alternate reality. Some people can walk on white-hot coals without burning their feet. Those of us who can’t walk on hot coals operate in a different reality. LeShan argues that there are a number of “equally valid definitions of reality, and in one of these ... firewalking is possible” (1976, pp. 20-4).

There are different views of what alternate realities refer to. Don Juan’s argument that he was “deglossing” Castaneda (as opposed to Castaneda’s view that he was being “reglossed”) and introducing him to a ‘pure wondering perception’ has been interpreted by J. C. Pearce as an argument for separate but equal realities. For Carl Oglesby, the message is “that realities, although they may be various, are not discontinuous, are not separate from one another.”⁹

William James and Alfred Schutz offer another perspective on alternate realities. In his *Principles Psychology*, James suggested that there are several, perhaps an infinite number of, realities; he called them “sub-universes.” He distinguished the worlds of (i) sense (physical things, the paramount reality), (ii) science, (iii) ideal relations, (iv) “idols of the tribe,” (v) mythology and religion (the supernatural), and (vi) individual opinion, sheer madness, and vagary. Schutz seized on James’s suggestion as an important insight but freed it from its psychological context by developing the idea of finite provinces of meaning each of which may be given “the accent of reality.”¹⁰

The property of finiteness implies that provinces of meaning—each characterized by a specific cognitive style and consistent set of experiences—are not mutually referable via transformation formulae. One “gets” from one province to another through what Kierkegaard called a “leap.” Such a leap is subjectively experienced as a “shock,” and is accomplished by modifying the tension of consciousness, that is, by changing one’s attention *à la vie*. Following Bergson, Schutz argues that there are an infinite number of planes in conscious life, ranging from the plane of action to the plane of dream. The tension of consciousness is highest on the plane of action: “our interest in meeting reality and its requirements” is at its highest. This is the realm of “wide-awakeness—attention is active and directed. The tension of consciousness is lowest on the plane of dream—there, attention is passive. Here Schutz’s meaning is congruent with contemporary theories of attention and consciousness such as C.L. Evans’s theory of absorptive and deflective attention, and Erika Bourguignon’s theory of states of consciousness and degrees of nervous system arousal.¹¹

Each finite province of meaning has a specific tension, *epoché* (suspension of doubt), spontaneity, self-experience, sociality, and time perspective. The world of everyday life is the archetypal reality; all other finite provinces of meaning are modifications of it. Schutz suggested that we try to systematically group finite provinces of meaning in terms of their constitutive principle, their degree of consciousness-tension. It is reasonable to conclude, if we accept Schutz’s point of view, that each finite province of meaning could be associated with a type of intersubjective testing and a mode of consensus.

The idea of alternate realities informs the dialogue on the relationships between science and other modes of knowing. One way of dealing with the problem of science and religion as alternate realities, for example, is to distinguish between the hypotheses of science and the dogma of a church, a more or less political distinction if we consider the early history of modern science. Duhem separated the two realities along more intellectual lines (though the distinction between political and intellectual here may be spurious). The Roman Catholic physicist argued that physical theory can neither support nor oppose any metaphysical assertion or religious dogma. More recently, scientists and theologians have argued for convergence or complementarity between science and religion. Furthermore, LeShan and Capra have proposed that ancient mysticism parallels, converges with, and is analogous to modern physics. Arguments relating ancient wisdom and contemporary knowledge are not unusual in the history of ideas, and there are notable parallels between the views and rhetoric of LeShan and Capra and those of earlier thinkers, such as Ficino, Pico, Bruno, and others in the Renaissance period.¹²

The conflicts and contradictions between the “one reality” and “many realities” view can, I think, be resolved. This resolution may be achieved by, first, accepting physicist David Bohm’s view of reality as “an inexhaustible diversity and multiplicity of things (e.g., entities, properties, qualities, systems, levels), all of them reciprocally related and all of them necessarily taking part in the process of becoming, in which exist an unlimited number of relatively autonomous and contradictory kinds of motion.” Second, the resolution of the conflicts between the “one reality” and “many realities” views requires following the implication of the “bootstrap hypothesis” in elementary particle physics, the hypothesis that the universe is a self-consistent whole, or in Helier Robinson’s works, a “singular possibility” and a “single polyadic relation” (i.e., a single

structure which can be conceptually divided into substructures, and is so divided in, for example, the rational mode of thought).¹³

This proposed resolution is consistent with both the existence of an “objective reality” and the existence of “multiple realities.” It is consistent with the existence of an “objective reality” at least in the negative sense that it does not contradict or preclude “lawful relationships” or the possibility of their discovery. This in part follows from our experience that actions and their consequences are not arbitrary. With regard to multiple realities, our ability to take different perspectives on reality in given states of consciousness and to have different experiences of reality in altered states of consciousness may be a manifestation of inexhaustibility and polyadicism and the source of notions about other realities besides so-called everyday reality. That is, a given phenomenon [a chair, for example] can be examined from different points of view in terms of (i) spatial relations, and (ii) disciplinary or perspectival orientations. The different viewpoints and interests of an artist, a carpenter, a person looking for a place to sit, and a physicist will lead each of them to “see” something beyond what each of them in an ordinary (normophrenic) state of consciousness will describe as a “chair.” This is not the same as experiencing the chair differently than others do (as a glowing, flowing set of lines, for example) because you have altered ordinary perception-consciousness by ingesting a drug, or by any other means.

The reality we experience is always (constituted in) a relationship between ourselves, others, and things. The experience of reality always contains some “objective content” that transcends (but is not alienated from) the various unique qualities of self, setting, and time. The relationships between self, others, and things are adaptations; thus “realities” are adaptations. More generally, each reality is a world view. Later I will generalize this to “theories.”

If there is, in the Bohmian sense, an “objective reality,” does this mean that the problem of demarcating different modes of knowing is indeed one which we must solve? In a sense the answer is yes; but this does not imply that we know or can discover a demarcation rule in any conventional sense. The reason is that the Bohmian conception of reality leads to an unconventional conception of objectivity.

Objectivity as a Social Fact in a Bohmian Universe

There is an objective reality in the following sense: (i) our experiences can be summarized in “lawful relationships” (not necessarily “causal” ones), and (ii) there are “things” that existed before you and I were born, and that will continue to exist when we are dead, but that can never be experienced as “things-in-themselves.” Objective reality is a relationship between inquirers and objects-of-inquiry; it is ever-changing, infinite in breadth and depth, and, as a whole, incomprehensible. It is an open-ended system. Information in a Bohmian universe is always increasing (syntropy overrides entropy).

If we want to find out as much as we can about open-ended, ever-changing reality, we must behave and think in an open-ended, ever-changing way. If objectivity is a social fact, it must be an open-ended, ever-changing social fact. Individuals who want to be objective (engage in the process of objectivity) must strive to become open-ended, self-actualizing epistemic agents. We are, from this point of view, inquiring, self-reflective organisms (epistemic agents). Survival, and beyond that, the growth, expansion, and evolution of the quality of life and consciousness depend on our abilities

to tap the effectively infinite capacity we have [individually and collectively] for critical, creative inquiry. The degree to which the societies we live in and the processes of socialization we experience are open ended will determine the degree to which we will be able to achieve open-ended living and thinking.¹⁴ Open-endedness entails the continual generation of new information in the universe; in conjunction with inexhaustibility and polyadicism this insure the continual generation of new ways of comprehending our experiences. Whether this in any sense could be interpreted in terms of “closer and closer approximations to the true nature of things” is indeterminate and probably irrelevant. Values, lifestyles, and the conditions for objectivity are intimately interrelated and interdependent. In fact, the process of objectivity from this perspective appears as the process of human beings adapting to, transforming, and evolving in the world: the search for the conditions of objectivity is the search for the conditions of survival, adaptation, and evolution.

It should be obvious that there is no way to decide a priori whether reality is singular or plural; nor can we anticipate constructing a basis for such a decision in the future. However, on the basis of our negative experiences to date with finite and finalistic systems of thought and explanation; in the light of the various tendencies to rigidity which we encounter in the physical, biological, and social realms; and given the wide range of cases in which contemporary thinkers in intellectual and practical settings have turned to or come upon open-ended solutions and theories in response to a wide variety of problems, it seems reasonable to act as if reality were Bohmian (Campbell, 1957, p.21).

The Rejection of Relativism, the Privileged Status of Science, and the Strong Program

The acceptance of the notions of many realities and the acceptance of the notion of an objective reality lead to the rejection of relativism. In its extreme form, relativism implies that the privileged status of a mode of knowing can only be established by virtue of, for example, its association with a center of political-economic power, its power of persuasion (independent of “universally” applicable standards of logic or rationality), and/or its power of prediction. But there is, or so I am assuming, an objective reality that is infinitely unfolding, polyadic, an relational. The problematic nature of intersubjectivity and consensus thus comes to mean in this context that some types of intesubjectivity and consensus may be more fruitful than others for any given time and place in the unfolding of human inquiry. The open-ended view I have sketched is an imperative for incorporating the full range of modes of inquiry in the pursuit of objectivity. This should be done without giving a priori preference to one mode or another and without assuming that the sociology of scientific knowledge, or truth, or objectivity, must be a theory of rationality. In either case, the restriction of an a priori preference would interfere with the possibility of developing a full-fledged critique of science as a whole.

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This strategy would apply in the case of any prevailing mode of knowing; for the moment, it is the basis for rejecting the strong program proposed by Bloor.

Bloor argues that the best strategy to follow if we want to give an account of scientific knowledge is “to adopt the scientific method itself.”¹⁶

This might be a reasonable position if there were some reason to believe that the “scientific method” is, first of all, a method and, furthermore, that it is a finished, universally valid method of inquiry whose levels of complexity are well-known and whose application is entirely straight-forward.¹⁷ From the assumption of a Bohmian reality, it follows that the study of science using its own methods exclusively can never reveal the limitations of science to new horizons of inquiry. Even if reality is in some sense static, it is so extensive and complex that it is difficult to imagine how we would go about convincing ourselves that we have discovered a universally valid and unchanging mode of inquiry.

The problem of the limits of the sociology of knowledge may arise in part on account of an implicit imperialism, that is, on account of the assumption or implication that a given statement or idea (in science, but also in mysticism or in any other given knowledge system) is solely, or ultimately, a social product. This assumption should be rejected on the grounds that sociology attends to limited aspects of human experience, and that the full range of factors in human experience must be drawn on to account for human creations. This does not resolve the problem of what “proportion of testing the explanatory powers of different disciplinary orientations and combinations thereof; and the problem may, in fact, change radically or disappear altogether if the disciplinary strategy is transformed or transcended (by some form of holistic inquiry, for example). Contrary to Meynell, who seems to advocate a rather orderly pursuit of truth, I conceive truth or objectivity as a process firmly rooted in intellectual conflict. The conflict need not be violent or combative in the conventional sense; it can be of the kind which is constructive and based on mutual respect (Eckhardt, 1976, P. 59). But struggle and conflict are in any case conditions of social and intellectual change, and permanent features of Bohmian reality.

The Sociology of Objectivity

The sociology of knowledge can contribute to identifying the conditions under which knowledge systems undergo closure and stagnate. It can also help to identify the conditions under which knowledge systems resist closure. But resistance to closure implies open-endedness. Thus, the sociology of knowledge can help to identify the conditions under which human inquiry is most likely to resist stagnation, or, in the words, to be developmental, progressive, or evolutionary. This, given the Bohmian view of reality, must be considered a perpetual problem which allows only limited and regional solutions. The introduction of the general term, “inquiry,” is necessary in order to avoid the two-pronged problem that science is (i) a culture-bound term, activity, and process, and (ii) subject to the stagnating and stifling effects of social processes such as bureaucratization.

The perspective I have sketched changes the nature of the problem of bias, whether personal or social. Bias is unavoidable. Inquiry in the best sense, i.e., open-ended, developmental, progressive, or evolving, is characterized by the presence of a certain type of bias, not the absence of bias. This can perhaps be better appreciated if we

recognize that knowledge systems can be construed as world views: Clifford Hooker has shown that philosophies of science such as empiricism and realism can be construed; and similarly, sociologies of knowledge and science under labels such as a “Mertonian” and “neo-Marxist” can as well be construed as world views. Revealing world views in science, or in philosophies and sociologies of science, involves a meta-inquiry into, for example, theories of reality, consciousness, and social action.¹⁸ If a knowledge system can be construed as a world view, it cannot be free of bias since by definition it contains ideological and political dimensions, and is hence a value-laden system. Value-free and value-neutral inquiry is, from this point of view, impossible.

Modes of knowing, including those of science, are world views and, therefore, as world view, are value-laden. They are biased, but they vary in their capacity to (i) generate, over time, statements consistent with our changing experience of reality, and (ii) stimulate our involvement in reality as a dynamic process. These capacities are related to organizational and value aspects of modes of knowing.

The sociology of objectivity is the study of the social and cultural conditions of inquiry and how these conditions affect our individual and collective abilities to construct objective statements and develop objective knowledge. There is a need to conceptualize objectivity in a way that (i) avoids absolutism and relativism, and (ii) links commitment to truths (substantive, methodological, and theoretical) with perpetual openness to signals that may alter that commitment (which includes the possibility of becoming aware of new sensory apparatuses). The notion of ideal or transcendental truths may be somewhat less stable but not as unstable as theoretical truths. However, since all three types of truths are interrelated and interdependent, it should be clear, even if somewhat paradoxical, why even the most obvious so-called truths or objective statements must be considered problematic. More generally, it might be useful to distinguish between informational and comprehensional objectivity. An objective statement might then be defined as one which is consistent with the full range of information possessed by the human species at a given time and “known” to a single ideal intelligence. Information exists to the degree that it is possible for human beings to achieve certain effects by carrying out certain actions in accordance with certain principles and to be able to do so repeatedly. Information tends to accumulate into relatively stable and increasingly universal “bundles” which can be pressed into operation in appropriate circumstances (e.g., the objectivity of selecting and eating edible mushrooms). At this level, objectivity approaches limits defined by the boundaries of information niches. But the ability to be objective about mushrooms is not simply a matter of the “facts” about mushrooms, the ability is dependent on intersubjectivity and consensus probabilities.

Objectivity has a second dimension which I refer to as comprehension. It is in this sense that the concept of objectivity as a process is most clearly established. For we can learn to do things, and once we learn to do them, repeat them over and over, generation after generation, with the same degree of success: in this sense, we can say that we “know” something. But our comprehension of what we do can and does change; our theories change. They change because of new information in the form of new signals, new configurations of old information, or new sensory apparatuses which tune us in to new realms of information. Our theories become new world views, so that so-called “eternal” truths change in terms of how we “see” or comprehend them.

The degree of objectivity (objective content) in any given statement is determined by ascertaining the scope and depth of the information available to, or “in,” a given individual, group, or community. Thus, the most objective statements that can be made at present about any human experience, can be made by the people, groups, and communities who, or which, have had the widest psychic and physical exposure to human experience as a whole, i.e., in the present and in the past through exposure to historical accounts. The most objective statement possible about the nature of, for example, a star (the statement with the highest possible objective content) is constrained by the range of experiences it is possible to have as a human being on this planet. The most objective mode of inquiry at any given time is the mode of inquiry practiced by those who have access to the widest possible range of human experiences, and who are oriented to exploring the limits of those experiences in order to expand their range. Note that while objective statements are referred to an ideal system (the omniscient knower), they are not themselves conceived as “existing” in an ideal or transcendental form or realm.

Objectivity is more than just a matter of “statements”: it is a complex, unfolding process of relationships, feeling, thoughts, intuitions, “imponderables and ineffables.” A sociological theory of objectivity must take into account, for example, the prominence of “unreasonable” modes and motives in the history of science. Discoveries in science can be: (i) the result of “hardwork and luck” even when the driving force appears to mathematical or theoretical “reasonableness” (as in the case of, it now turns out, the discovery of Pluto); (ii) stimulated by unusual or bizarre experiences (as in the case of Poisson, whose interest in pendulums appears to drive from his childhood experiences of swinging to and fro on a nail upon which he was sometimes hung for safety by a nurse who had to leave him alone for short periods); (iii) indirectly by personal traumas (the young Newton, for example, seems to have been stimulated to pursue his studies with greater dedication in order to overtake a boy who stood ahead of him in class-after that boy had kicked him in the stomach): and (iv) achieved by the suspension or alteration of conventional canons of logic and rigor (as in Wallis’s treatment of infinitesimals).¹⁹ Once we get past positivistic and idealistic reconstructions of science, it becomes easy enough to read the history of science as a record of irrationalities, bizarre incidents, and improbable events. However, that history can also be read as an argument of reestablishing and sustaining conditions of open-endedness and pluralism.

The sociology of objectivity as I conceive it operates on the assumptions that (i) no objective statement or truth can ever be final or absolute; (ii) no system for arriving at truth can be universally valid and unchanging in its foundations; and (iii) a broader context for establishing truth always exists than that of any system of knowledge which is given or which is dominant. By definition, the first assumption is not an objective statement or truth; this, then, avoids a classical paradox! By virtue of these assumptions, the sociology of objectivity should contribute to generating new contexts and meanings for truth or objectivity. This perspective, incidentally, tends to dissolve the distinction DeGre` made some forty years ago between gnosiso-sociology and sociological theory of knowledge (Curtis and Petras, 1970, pp. 661-7).

Conclusion

I have suggested that the problem of the limits of the sociology of knowledge and the nature of the sociology of scientific knowledge (objective knowledge, truth, or true belief) can be resolved by rejecting or altering conventional conceptions of intersubjectivity, consensus, reality, science, rationality, relativism, and the strong program. The alternative sociology of objectivity that I have sketched should be construed as a view of reality, a world view, and a conjecture of a theory. It is an adaptive strategy relative (in a lesser sense) to a more or less circumscribed intellectual community, and relative (in a larger sense) to large-scale, long-term, evolutionary and devolutionary processes. Certain taken-for-granted aspects of inquiry are transformed into problematic aspects. From a sociological perspective, idealistic and transcendental conceptions of knowledge and truth have no ontological status; thus, the basis for viewing objectivity as a product of disinterestedness or detachment is undermined, and an argument of objectivity-as-engagement is substituted. Perhaps this notion might be clarified, following Fang and Takayama, by distinguishing superstructure from superstructure and structure. The concept of a super-superstructure would help to clarify why it is possible, on the one hand, to conceive ideal, transcendental "realities," and why, on the other hand, such "realities" must be viewed as rooted in the world of social relationships.²⁰

In conclusion, let me sketch a few additional details of my conjecture. Reality is conceived to be a dynamic, relational, dialectical system (rather than something static, "out there"). The process of comprehension (encompassing explanation, knowledge, understanding, and appreciation) is a matter of (following Toulmin) variable minds inventing/discovering variable principles and applying them to variable nature (as opposed to a system of fixed minds, fixed principles, and fixed nature) (Toulmin, 1972). The means for comprehending reality include, but are not restricted to, the realm of the rations, which, in any case, like other realms, changes as information and comprehension grow. (This implies changes in what we consider "everyday" reality and in what is considered to be in the "phenomenologically" accessible realm.) Comprehension is a dialectically changing configuration of rational, intuitive, and other modes of knowing in the various states of consciousness; the priority of any given mode or any given state is not a priori established. The value imperative is open-endedness. The organizational imperative is an open-ended communality which assigns priority to the person (self-actualization).

It is appropriate at this point to recall Popper's scientific "Crusoe" exercise and to note that, in a similar philosophical exercise, Norman Campbell reached the opposite conclusion. He argued that a scientific Crusoe could rely on "the criterion of the satisfactoriness and coherence of the laws which can be derived from the subject matter" (1957, p. 21). This suggests the possibility of a psychology of objectivity that parallels the sociology of objectivity which I have sketched.

Finally, let me place my conjecture in its intellectual context. For, the sociology of objectivity which I have sketched builds on and contributes to (more or less) open-ended, relational-holistic theories, realities, world views, or conjectures emerging in a wide variety of intellectual areas. Proponents of this perspective and their fields of inquiry include David Bohm (quantum mechanics), Clifford Hooker (philosophy of science), G. Radnitzky (metascience), Helier Robinson (metaphysics), J. Ogilvy (social philosophy), G. Bateson (cybernetic anthropology), A. Maslow (humanistic

psychology), G. Chew (bootstrap or hadron physics), J. Wheeler and J. Graves (geometrodynamics), E. Dunn Jr. (social and economic theory), and Claude Vallet (relational arithmetic). I have discussed elsewhere why I think these developments represent the search for, and the development of, a new holistic theme (in G. Holton's sense) rather than simply another holism cycle in the history of ideas.²¹

My argument is an exemplification of objectivity-as-engagement. It cannot be separated from my personal interests and struggles, nor from my involvement in the conflicts, contradictions, and struggles for power in social life. This is entailed in the world-view approach which I advocate, and which, by hypothesis, applies to all arguments. In order to have my conjecture exemplify Bohmian reality more adequately, I attach to it the statement that "there is no justification for investing this conjecture with positive or absolute belief." Following Hooker, this is designed to indicate that my conjecture, like everything else, is in flux and ripe with contradictions.²²

Notes

This paper, under a slightly different title, was presented at the 1979 meeting of the American Sociological Association session on "Sociology of Knowledge," Boston, Massachusetts. I want to thank Max Heinrich, Bill Phelan, and Kurt Wolff for their encouraging reactions to this paper. The paper was nominated for the ASA Theory Prize.

¹ The recent literature includes: P. Wright (1975); R. Finnegan and R. Horton (1973); W. Leiss (1975); D. Bloor (1976); L. DeWitt (1975); B. Barnes (1974); H. Collins and G. Cox (1976); J. Law (1977); H. Collins and G. Cox (1977); H. Meynell (1977); and the complementary paper by E. Millstone (1978). Millstone is critical of Bloor's strong program because there is "no reason why the sociology of knowledge should be constructed in the image of some other cultural practice" (i.e., in Bloor's case, "science"). I am in agreement with Millstone's critique (I make the same or similar remarks about Bloor below) and with his notion that the sociology of knowledge "should be pursued in relation to some broader social objectives, such as liberation and the elimination of oppression..." I am at odds, however, with the implication in his paper that "social causes" cannot account for "martyrs and eccentrics." The earlier literature is conveniently collected in J. D. Curtis and J. W. Petras (1970). My general treatment of the problem of limits in this paper is informed by my recently completed study of the relations between physics and mysticism (see note 11) and my current research on the comparative historical sociology of mathematics.

² This section draws on S. Restivo (1975).

³ Cf. K. Popper (1950, pp. 404-407) and (1972); and also DeWitt (1975, pp. 208-209).

⁴ Cf. J. Ben-David (1973); and L. Eiseley (1964).

⁵ Cf. T. S. Kuhn (1970, p. 166); and K. E. Boulding (1970, pp. 60-61).

⁶ It is surprising that sociologists have failed to recognize the lack of a problematic sociology in Kuhn. For an analysis of "the myth of the Kuhnian revolution," see S. Restivo and M. Zenzen (1978). This analysis is corroborated both by the internalist and, to some extent, positivistic character of Kuhn's recent work in the history of science, and by Merton's "revelations" on his relationship with Kuhn in R. K. Merton (1977, pp. 76-107).

⁷ Cf. A. Schutz (Vol. 1; 10ff., 150ff., 180ff., and 312ff.).

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- ⁸ Cf. N. Storer (1970); and Meynell (1977, p. 490).
- ⁹ Cf. J. C. Pearce (1976, pp. 191-219); and G. Oglesby (1976, p. 167).
- ¹⁰ Cf. W. James (1890); and Schutz (pp. 207, 229-233).
- ¹¹ Cf. Schutz (pp. 212-214); C. O. Evans (1970); and E. Bourguignon (1973). For a discussion of Evan's theory, see S. Restivo (1978a, pp. 155-156); Evans and Bourguignon are both discussed in Part II of this paper, "The Social Origins and Functions of Parallelism" (1980/81, forthcoming).
- ¹² Cf. L. LeShan (1975); and F. Capra (1975). The historical background of this perspective is discussed at length in Restivo (1980/81).
- ¹³ Cf. D. Bohm (1971a, p. 164). On the "bootstrap hypothesis," see the discussion in Restivo (1978a, pp. 149-151); and H. Robinson (1975 m oo, 106-107, 274).
- ¹⁴ I discuss this in more detail in S. Restivo (1977, pp. 233-245), and (1978b, pp. 249, 272). See also Restivo and Zenzen (1978). Sturik seems to have this notion in mind when he characterizes the sophists as "a group of critical men... less hampered by tradition than any previous group of learned persons" (1967, pp. 39-40). See also T. Dantzig (1954, p. 243) for a view of objective reality as "a living growing organism." Dantzig does not develop this idea, which, in any case, retains too much of the idealistic notion of objectivity and mathematical reality to be considered a significant anticipation of the ideas in this paper. His book does, however, contain numerous illustrations which are supportive of the open-ended perspective on inquiry.
- ¹⁵ Cf. Leiss (1975, pp. 196, 200); his critique of "the current hegemony of instrumental rationality" is congruent with my position. See also M. Zenzen (1978). Zenzen's conception of "critical rationality" leaves open the possibility of a broadening and evolving conception of rationality. I prefer going further and dropping the term, "rationality," altogether in this context. Regarding the statement by Collins and Cox (1976, p. 439), "The approach we favour is to push the relativistic heuristic as far as possible: where it can go no further, 'nature intrudes'." "But nature intrudes everywhere, and therefore the strong sense of the relativistic heuristic must be rejected. To base relativism on research that appeals—implicitly or explicitly—to science, to rationality, or to logic must inevitably lead to knotty paradoxes. This should, at least, be acknowledged.
- ¹⁶ Cf. Bloor (1976, p. ix). I consider Bloor's book a very important contribution to the sociology of mathematics; indeed, Bloor argues for an open-ended view of mathematical "truths" (e.g., in his principle that "informal thought can always outwit formal thought"). However, his "strong program" obstructs the application of this open-ended view in his own approach – there is a flagrant contradiction between his treatment of mathematics and his self-proclaimed orthodoxy: "only proceed as the other sciences proceed and all will be well" (pp. 137, 141).
- ¹⁷ Cf. S. Restivo (1979, pp. 25-51).
- ¹⁸ Cf. C. Hooker (1975, pp. 177-231); Restivo and Zenzen (1978) provide a parallel effort in the sociology of science.
- ¹⁹ On (i) see S. Maran (1979, pp. 100-101); on (ii) and (iii) see F. Cajori (1919, pp. 191, 465-466); on (iv) see Bloor (1976, p. 113).
- ²⁰ Cf. J. Fang and K.P. Takayama (1975, p. 23). On the social roots of abstract mathematical entities, see F. Engels (1939, pp. 44-46, and 1940, pp. 313-319); and C. Muses (1977, p. 78).
- ²¹ Cf. Restivo (1978a and 1980/81); D. Bohm (1971b, pp. 359-381, and 1973, pp. 139-168); Hooker (1975, pp. 177-231); G. Radnitzky (1970); Robinson (1975); J. Oglivy (1977); G. Bateson (1972); A. Maslow (1969); G. Chew (1965, pp. 762-765 and 1966); J. A. Wheeler (1962); J. Graves (1971); E. Dunn, Jr. (1971); C. Vallet (1975, pp. 59-76). Also, F. Nietzsche (1974, esp. pp. 92, 147, 172-173, 203, 235, 238

(note 20), 255, 280-283, 288-289, 290-292) should be mentioned here. Nietzsche criticizes (i) “the severity of science,” positivism, and mechanistic science; (ii) treats objectivity (truth, true belief) as problematic; and (iii) cautions against the tyranny of truth, the prejudice of science, the pathology of the need to believe and the demand for firmness and certainty, and the failure to distinguish the ability to “control” things from the achievement of comprehension. His affirmation of “die froliche Wissenschaft” – “la gaya scienza” – the inseparability of science, love, passion, and values, and what today is called, “the hermeneutic circle” (“there simply is no science’ without presuppositions”), and his aphorisms, “free spirits take liberties even with science” (which is, in fact, an embryonic theorem in the theory of scientific change consistent with the “x-rated” history of science: see S. Brush (1974, pp. 1164-1182)), and “Life as a means to knowledge” have a good deal of the flavor of my argument. I also want to draw special attention to N. Georgescu-Roegen (1971), a relational economics; this book reinforces, illustrates, or otherwise supports the view of objectivity I aim toward in this paper.

²² Cf. Hooker (1975); in Nietzsche, this is phrased as an unwillingness to grant anything “permanent immunity” (the phrase is Kaufmann’s (Nietzsche, 1974, p. 237)).

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