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Author(s): D. C. Phillips

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The Good, the Bad, and the Ugly: The Many Faces of Constructivism

D. C. PHILLIPS

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Across the broad fields of educational theory and research, constructivism has become something akin to a secular religion. In her book *Evolution as a Religion* (1985), Mary Midgley wrote that the theory of evolution “is not just an inert piece of theoretical science. It is, and cannot help being, also a powerful folk-tale about human origins. Any such narrative must have symbolic force” (1985, p. 1). She might well have written the same about constructivism, which is, whatever else it may be, a “powerful folk-tale” about the origins of human knowledge. As in all living religions, constructivism has many sects—each of which harbors some distrust of its rivals. This descent into sectarianism, and the accompanying growth in distrust of nonbelievers, is probably the fate of all large-scale movements inspired by interesting ideas; and it is the ideological or ugly side of the present scene, which is reflected in my article’s title.

The educational literature on constructivism is enormous, and growing rapidly; a significant indicator is that the 1993 AERA Annual Meeting Program contained more than a score of sessions explicitly on this topic. Even as interesting a symposium as that which recently appeared in the *Educational Researcher* (vol. 23, 7, 1994) was able to give only an inadequate hint of the many varieties of constructivism that presently exist. It is part of my purpose in this essay to complicate matters even more by pointing to relevant discussions in other literatures that are rarely, if ever, mentioned by those embroiled in the educational debates. In particular, I will try to show that in the fields of epistemology and philosophy of science, in the relatively young discipline of science studies (an interdisciplinary philosophical, sociological, and historical field), and in the rapidly burgeoning feminist literature, there is much of relevance and interest to be found. The term *constructivism* does not occur with great frequency in these other bodies of literature—for example, the recent encyclopedic volume edited by Dancy and Sosa (1992), *A Companion to Epistemology*, gives it only three passing references—but nevertheless closely related ideas are the subject of vigorous debate.

To compensate for introducing these new complexities, however, I also will offer a way of viewing the various forms of constructivism that, I claim, will produce some order and clarity—I will argue that the main constructivist writers can be located along each of three different dimensions or axes, and this highlights the relationships and differences between them. Given the volume of literature, to

make good even on this promise is such a daunting task that almost all of my discussion will have to remain descriptive and clarificatory in orientation—to venture into criticisms (of which, I must admit, I have a number that I regard as quite serious) would require more space than even a tolerant editor of *ER* can make available. Besides which, informed critique must be based on a clear understanding of the position (or range of positions) being examined, and it is this necessary and preliminary task that will occupy me in the present article. My critical and evaluative discussion will be held over to a longer work that is in preparation.¹ None of this, however, should be interpreted as meaning that I find all constructivist views unattractive—I hold that there is a very broad and loose sense in which all of us these days are constructivists, but, as usual, “God is in the details.”

To turn, then, to the descriptive task in hand: The rampant sectarianism, coupled with the array of other literatures that contain pertinent material, makes it difficult to give even a cursory introductory account of constructivism, for members of the various sects will object that their own views are nothing like this! But to get the discussion underway, this oversimple gloss should convey the general idea (a more precise account of the issues at stake shall emerge as the discussion progresses): These days we do not believe that individuals come into the world with their “cognitive data banks” already pre-stocked with empirical knowledge, or with pre-embedded epistemological criteria or methodological rules. Nor do we believe that most of our knowledge is acquired, ready-formed, by some sort of direct perception or absorption. Undoubtedly humans are born with *some* cognitive or epistemological equipment or potentialities (the nature and degree of which the experts in developmental psychology still dispute—witness, for example, the well-known argument between Piaget and Chomsky about innateness and genetic programming), but by and large human knowledge, and the criteria and methods we use in our inquiries, are all *constructed*. Furthermore, the bodies of knowledge available to the growing learner are themselves human constructs—physics, biology, sociology, and even philosophy are not disciplines the content of which was handed down, ready formed, from on high; scholars have labored mightily over the generations to construct the content of these fields, and no doubt “internal politics” has played some role. Thus, in sum, human knowledge—whether it be the bodies of public knowledge known as the various disciplines, or the cognitive structures of individual knowers or learners—is *constructed*. And here, then, is the source of an initial confusion: Some constructivist sects focus their

attention on the cognitive contents of the minds of individual learners, others focus on the growth of the “public” subject-matter domains, while a few brave groups tackle both—thus doubling the amount of quicksand that has to be negotiated. The problem is that readers of the constructivist literature are usually left to figure out for themselves which of these programs is being pursued. (For an argument that these different domains must not be conflated, see Phillips, 1987, ch. 12.)

The Range Of Constructivist Authors

Even on the basis of so preliminary and sketchy an account, it should be clear that potentially there is an enormous number of authors, spanning a broad philosophical or theoretical spectrum, who can be considered as being in some sense constructivist. The following nonexhaustive list is indicative of the range, complexity, and “symbolic force” of constructivist ideas:

1. Ernst von Glasersfeld, who has had very great influence in the contemporary international science and mathematics education communities, quotes with some approval the words of Ludwig Fleck (1929), a precursor of Thomas Kuhn—“The content of our knowledge must be considered the free creation of our culture. It resembles a traditional myth” (von Glasersfeld, 1991a, p. 118). Elsewhere he writes that from

the naive commonsense perspective, the elements that form this complex environment belong to a *real* world of unquestionable objects, as *real* as the student, and these objects have an existence of their own, independent not only of the student but also of the teacher. Radical Constructivism is a theory of *knowing* which, for reasons that had nothing to do with teaching mathematics or education, does not accept this commonsense perspective. . . . Superficial or emotionally distracted readers of the constructivist literature have frequently interpreted this stance as a denial of “reality.” (von Glasersfeld, 1991b, p. xv).

2. The complex epistemology of Immanuel Kant was quintessentially constructivist. The human cognitive apparatus (in particular our “category-governed modes of synthesis” in the case of natural science, as one commentator put it) was responsible for shaping our experience, and giving it causal, temporal, and spatial features. As Kant wrote at the beginning of his *Critique of Pure Reason*,

But though all our knowledge *begins* with experience, it does not follow that it all arises *out of* experience. For it may well be that even our empirical knowledge is made up of what we receive through impressions *and of what our own faculty of knowledge*. . . supplies from itself. If our faculty of knowledge makes any such addition, it may be that we are not in a position to distinguish it from the raw material. (Kant, 1959, p. 25)

3. In the introductory section of their edited volume *Feminist Epistemologies* (1993), Linda Alcoff and Elizabeth Potter focus upon the sociopolitical processes by which our public bodies of knowledge are constructed. They write that the

philosophical myth, like the myth of natural science, is that politics may motivate a philosopher to undertake philosophical work and that work may be put to better or

worse political uses, but that a philosopher’s work is good to the extent that its substantive, technical content is free of political influence. . . . The work presented here supports the hypothesis that politics intersect traditional epistemology. . . . [These essays] raise a question about the adequacy of any account of knowledge that ignores the politics involved in knowledge. These essays show. . . that to be *adequate*, an epistemology must attend to the complex ways in which social values influence knowledge (p. 13)

4. The work of Thomas S. Kuhn on scientific revolutions and paradigms has been a major influence on several of the constructivist sects; for he stressed the active role of scientific communities in knowledge-construction. He wrote near the end of *The Structure of Scientific Revolutions*:

The very existence of science depends upon vesting the power to choose between paradigms in the members of a special kind of community. Just how special that community must be if science is to survive and grow may be indicated by the very tenuousness of humanity’s hold on the scientific enterprise. . . . The bulk of scientific knowledge is a product of Europe in the last four centuries. No other place and time has supported the very special communities from which scientific productivity comes (Kuhn, 1962, pp. 166–167).

5. Jean Piaget is also generally regarded as a foundational figure by many constructivists. The following is clear enough:

Fifty years of experience have taught us that knowledge does not result from a mere recording of observations without a structuring activity on the part of the subject. Nor do any a priori or innate cognitive structures exist in man; the functioning of intelligence alone is hereditary and creates structures only through an organization of successive actions performed on objects. Consequently, an epistemology conforming to the data of psychogenesis could be neither empiricist nor preformationist, but could consist only of a constructivism. (Piaget, 1980, p. 23)

6. John Dewey, influenced here by William James, wrote that all the difficulties connected with the problem of knowledge spring

from a single root. They spring from the assumption that the true and valid object of knowledge is that which has being prior to and independent of the operations of knowing. They spring from the doctrine that knowledge is a grasp or beholding of reality without anything being done to modify its antecedent state—the doctrine which is the source of the separation of knowledge from practical activity. If we see that knowing is not the act of an outside spectator but of a participator inside the natural and social scene, then the true object of knowledge resides in the consequences of directed action. (Dewey, 1960, p. 196)

An expanded list could be generated very easily, with the addition of Jurgen Habermas, Giambattista Vico, sociologists of knowledge such as David Bloor or Barry Barnes or Steve Fuller, and a string of mainstream cognitive scientists who have interests in learning (Donald Norman would be a good example). If we were to move into mainstream educational writing, the list would become intolerably long.

As can be seen from even only the six views that have been quoted, constructivism can be developed in interesting

psychological, epistemological, sociological, and historical directions. But because there are so many versions of constructivism, with important overlaps but also with major differences, it is difficult to see the forest for the trees—it is a matter of pressing concern to find some way of categorizing them so that the overall picture does not get lost.

A Framework for Comparing Constructivisms

Each of the various forms of constructivism are complex; they are not “single issue” positions, but (explicitly or implicitly) they address a number of deep problems. To take merely one example from the six figures cited earlier, Ernst von Glasersfeld is not simply putting forward a view about the teaching of mathematics and science; it is clear that he is also advancing an epistemology, a psychology, and his own interpretation of the history of science and philosophy. But Piaget, Dewey, Kuhn, and the feminist epistemologists are no less complicated. As a result of their complexity, then, the various forms or sects of constructivism can be spread out along several different dimensions or continua or axes (each of which represents one key issue); forms that are close along one axis (i.e., are close on one issue) may be far apart on another.

1. The first axis or dimension requires relatively little discussion, as it was pretty obvious in the examples cited earlier. For convenience it can be given the label “individual psychology versus public discipline.” Some constructivists—Piaget and Vygotsky would be quintessential figures here—have been concerned with how the individual learner goes about the construction of knowledge in his or her own cognitive apparatus; for other constructivists, however, the individual learner is of little interest, and what is the focus of concern is the construction of human knowledge in general. Many recent feminist epistemologists belong to this second group. In the middle of this first continuum, however, are a number of constructivists who have an interest in *both* poles, and who believe that their theories throw light on both the question of how individuals build up bodies of knowledge and how human communities have constructed the public bodies of knowledge known as the various disciplines. Occasionally von Glasersfeld seems to be in this middle camp; certainly Immanuel Kant and Karl Popper are also to be found there.

It needs to be stressed that constructivists who have the same general interest—for example in how individuals learn or construct knowledge—may differ markedly with respect to the mechanisms they see at work. Piaget and Vygotsky, for example, gave quite different accounts of this matter; one stressed the biological/psychological mechanisms to be found in the individual learner, whereas the other focussed on the social factors that influenced learning.

2. The second dimension or axis along which the various versions of constructivism can be spread is, arguably, the most crucial one (although it is also the most complex)—for it is the dimension that, in essence, allows us to define a thinker as being *constructivist*. For there is a point somewhere along this dimension where one ceases to *be* a constructivist. This dimension or continuum can be characterized crudely in terms of the label “humans the creators versus nature the instructor.” The issue is as follows: When knowledge is constructed (whether it is in the mind or cognitive apparatus of the individual learner, or

whether it is a public discipline), is the process one that is influenced chiefly by the minds or creative intelligence of the knower or knowers, together perhaps with the “sociopolitical” factors that are present when knowers interact in a community? Or, at the other extreme, is the knowledge “imposed” from the outside; does nature serve as an “instructor” or as a sort of template that the knowing subject or subjects (or community of knowledge builders) merely copy or absorb in a relatively passive fashion? In short, is new knowledge—whether it be individual knowledge, or public discipline—*made* or *discovered*?

It is arguable that theorists who occupy the “outer” or “external nature” or “discovery” end of the axis—like, for example, the late-17th-century British empiricist philosopher John Locke—are at best only minimally constructivist in orientation, or are not constructivist at all, for in their theories the contribution of human activity to knowledge construction is relatively insignificant. But “true-blue” constructivists are spread out along the continuum, with some of them being nearer than others to the “outer” or “nature as instructor” pole of the continuum.

It will be instructive to pursue the case of the empiricist John Locke a little further. In his work, and that of his associationist descendants, nature external to the knower is the source of the sensations that produce “simple ideas” fairly mechanically or automatically (although it is important to remember that for Locke other types of simple ideas come from reflection or inner experience); and from these simple units the more complex armamentarium of ideas is built up by various inborn combinatorial processes (or faculties). The mind (or “the understanding”) is described in Locke’s writings in very passive terms—the mind is a receptacle (an empty cabinet, a wax tablet, a piece of blotting paper) for storing whatever ideas come from experience. The mind is not able to produce simple ideas of its own, so that, for example, if the knower has not had experience of a particular color, he or she—no matter how clever—cannot invent the simple idea of that color. Thus Locke writes, using the example of a snowball:

The power to produce any idea in our mind, I call “quality” of the subject wherein that power is. Thus a snowball having the power to produce in us the ideas of white, cold and round, the powers to produce those ideas in us as they are in the snowball, I call “qualities.” (Locke, 1947, p. 45)

In short, it is the object in the external realm of nature—the snowball—which is causally responsible (via experience) for producing our knowledge; the snowball’s qualities have “the power to produce in us” the ideas of whiteness and so on.

The position just described hardly warrants the label “constructivist” at all. What makes Locke’s case more complex to assess is his insistence that once the “understanding” is “furnished” with a number of (externally produced) simple ideas, the mind can operate on these to construct something new:

In this faculty of repeating and joining together its ideas, the mind has greater power in varying and multiplying the objects of its thoughts. . . It can, by its own power, put together those ideas it has, and make new complex ones. (Locke, 1947, p. 65.)

Our simple ideas may be mere reflections of nature, but complex ideas are produced (constructed) by the human mind.

Unfortunately there is another complexity: Though statements like this seem to place Locke over the border and into the constructivist camp, the picture is muddled again by the fact that in some places (although not in all) Locke suggests that these combinatorial powers or faculties (that produce the complex ideas) are not only “wired in” before birth but also function virtually automatically. (This is certainly the way the faculties are depicted in the “mental chemistry” of Locke’s 19th-century followers; and it should be noticed that there is a parallel issue here for our contemporaries who are enamored of computational theories of the mind—such theories sometimes are forced to assume the existence of an inner “homunculus,” to leave some room for human creativity. See Searle, 1992, ch. 9). The only thing that it seems safe to say, then, is that Locke is close to the “outside/instruction by nature/discovery” end of the dimension under discussion here, and he also is close to the outer perimeter of constructivism—which side of the border he actually is on is a difficult judgement call.

We do not have to look far for examples of theorists at the other, “humans the creators” pole, of this second constructivist continuum or dimension. Most varieties of late 20th-century constructivism have as a major tenet the claim that knowledge is produced by humans, in processes that are unconstrained—or minimally constrained—by inputs or instruction from nature. But at this end of the continuum there is a great deal of confusion, for (as we saw earlier) some constructivists are focusing upon how developing individuals learn, whereas others are looking at how the “public” disciplines originate. There is further bifurcation even than this, for some hold that knowledge production comes about solely from intellectual or cognitive processes internal to each individual knower, whereas for others the processes are regarded as sociopolitical (and therefore in a sense public) and not simply or solely “inner,” mental or intellectual in nature. These various views are combined in several different ways, as will become evident later. On the principle that one picture is worth a thousand words, the accompanying diagram displays the complexities of this second constructivist dimension. Several examples will illustrate some of the possibilities at the “humans the creators” end of this second dimension.

a. Members of the “strong program” in sociology of knowledge (such as Barnes, 1974, Collins, 1985, and perhaps even Fuller, 1988)—who are working on the origin of the public bodies of knowledge known as the disciplines, especially the sciences—can be read as being far from the “nature as template” view, but also as being far from the “individual creation of knowledge” view; when in their least compromising mood, they hold the view that sociopolitical processes can account *fully* for the form taken by the bodies of knowledge codified as the various disciplines.

b. Perhaps the clearest example of a theorist who also is far from the “nature as instructor” end of the continuum, but who is not a social constructivist but instead stresses that knowledge construction is an individual matter, is Ernst von Glasersfeld. He provides the following striking rejection of the “nature as template” view, and affirms that it is the cognitive effort of the individual that results in the construction of knowledge:

The notion that knowledge is the result of a learner’s activity rather than that of the passive reception of information or instruction, goes back to Socrates and is today embraced by all who call themselves “constructivists.” However, the authors whose work is collected here, constitute the radical wing of the constructivist front. . . . This attitude is characterized by the deliberate redefinition of the concept of knowledge as an *adaptive function*. In simple words, this means that the results of our cognitive efforts have the purpose of helping us cope in the world of experience, rather than the traditional goal of furnishing an “objective” representation of a world as it might “exist” apart from us and our experience. (von Glasersfeld, 1991b, pp. xiv–xv)

Von Glasersfeld acknowledges a significant debt to Piaget, which may explain why he focuses on the individual knower, and pays scant attention to the social processes in knowledge construction. (Von Glasersfeld’s admirers may have their hackles raised by this last remark, for his educational concerns of course lead him to address the role of the teacher. But he faces severe problems of consistency here: It is clear that in much of his writing von Glasersfeld problematizes the notion of a “reality” external to the cognitive apparatus of the individual knower/learner. But as a result, it is difficult to see how he can consistently allow that social influences exist. After all, teachers and parents and

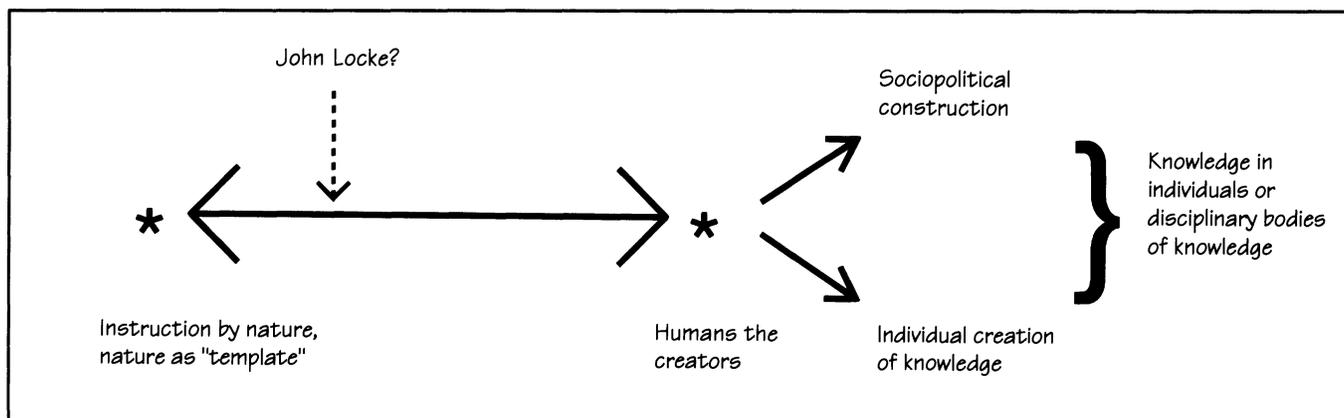


FIGURE 1. Complexities of the second constructivist dimension.

siblings and so forth—no less than the atoms and molecules and forces of the external physical universe—are part of the realm external to the knower that von Glasersfeld is so skeptical about.)

Karl Popper is a philosopher who is situated at about the middle of the “humans the creators versus nature the instructor” continuum, for his theory of the development of knowledge can be summarized as “man proposes, nature disposes”—a view that nicely involves both poles of the continuum. Popper’s view offers both an account of the growth of public bodies of knowledge (especially the sciences), but it can also be interpreted in such a way as to throw light on the psychology and epistemology of individual learning (Berkson & Wettersten, 1984). Popper was fond of expounding his view in terms of a crude flow diagram:

problem→tentative theory→error elimination→new problem

The tentative theory is a creation of the human intellect; the error elimination (via testing) is done by nature.

3. The third dimension for comparing types of constructivism was touched on earlier: The construction of knowledge is an *active* process, but the activity can be described in terms of individual cognition or else in terms of social and political processes (or, of course, in terms of both). Furthermore, this activity can either be physical or mental, or again both. If a theorist were to argue that knowledge construction is carried out automatically, by the following of some predetermined inflexible routine or by some mechanical process, then his or her work would not count as constructivist; we saw in the case of John Locke that insofar as he postulated that simple ideas were built into complex knowledge by “prewired” cognitive processes (to use contemporary idiom rather than Locke’s terminology), he could not be regarded as being situated within the general constructivist camp—for although there is a place for mental activity in his model, it is not always clear that it is conscious or deliberate activity of the knower.

A nice contrast with Locke is Jean Piaget (closely followed here by von Glasersfeld); Piaget is as individualistic as Locke with respect to how knowledge is constructed (his voluminous writings only make scant reference to the role of the social environment, and Piaget typically depicts the developing child as a lone, inventive young scientist, struggling to make independent sense of the surrounding world). But Piaget does place enormous stress on the fact that the young knower is both mentally and physically active; indeed, knowledge growth is described by Piaget in terms of the dynamic processes of assimilation, accommodation, and equilibration, and the construction and internalization of action schemas (see Phillips, 1987, ch. 13, for further discussion).

Another important example of active constructivism is provided by the work of John Dewey and William James. Both these pragmatists (together with latter-day admirers such as Richard Rorty; see Kulp, 1992) vigorously attack what they call the “spectator theory of knowledge.” In the late 19th century James had written a critique of Herbert Spencer’s theory of mind, in which he said that mind was not a spectator, but rather “the knower is an actor” (James, 1920, p. 67)—a view that James elsewhere argued was underwritten by evolutionary theory (see for example his

Talks to Teachers on Psychology). Dewey picked up on all this, and consistently expounded his own constructivist view of knowledge in contrast to the errors of the “spectator theory.” (See, for example, Dewey’s *The Quest for Certainty*, 1960.)

The spectator theory, as Dewey interpreted it, can be explicated by means of an analogy with football. According to the spectator theory, the way a knower obtains knowledge is analogous to the way a person can learn about football. He or she can learn by watching, by being a spectator; while learning, the spectator remains passive, and does not affect the course of the game. In contrast, in the theory held by James and Dewey the knower is an organic part of the same situation as the material to be known. To return to the football analogy, the person learning about football would be playing in the game; he or she would be affecting the game and, in the process, obtaining knowledge about it—the knower would be learning by participating or acting. (It is interesting to note, as an aside, that the spectator theory of knowledge has been largely ignored in the epistemological literature of the last few decades; Kulp, 1992, has produced the only lengthy discussion of it, and although recognizing that it has some strengths, he reaches a generally negative conclusion. See also Phillips, 1971.) Lest all this make Dewey seem unduly individualistic, it is important to note that he also stressed the social nature of knowledge construction, both in individual learners and also with respect to the development of the public bodies of knowledge codified in the various disciplines; but the social activity he depicted was always harmonious and cooperative—unlike many social constructivists in the late 20th century he did not pay much attention to the internal politics of knowledge producing communities, or the effects of power differentials on the types of knowledge produced.

To turn to the other end or pole of this particular dimension, Lynn Hankinson Nelson stresses that knowledge construction is an active process—even a struggle—carried out by groups or communities, not by individuals. In an interesting passage, she writes:

In suggesting that it is communities that construct and acquire knowledge, I do not mean (or “merely” mean) that what comes to be recognized or “certified” as knowledge is the result of collaboration between, consensus achieved by, political struggles engaged in, negotiations undertaken among, or other activities engaged in by individuals who, *as individuals*, know in some logically or empirically “prior” sense. . . . The change I am proposing involves what we should construe as the *agents* of these activities. My arguments suggest that the collaborators, the consensus achievers, and, in more general terms, the agents who generate knowledge are communities and subcommunities, not individuals. (Nelson, 1993, p. 124)

Examining the range of contemporary constructivist writers who see the development of knowledge as essentially social in nature, it turns out that most hold that knowledge construction is “rational” in that it proceeds deliberately according to methodological rules and criteria that are consciously held within a sociocultural group. But—importantly—they stress that these rules and criteria were constructed by social processes, and thus were influenced by power relations, partisan interests, and so forth. Many

feminist epistemologists hold variants of this position. Other forms of constructivism—most notably the so-called “strong program” in sociology of knowledge associated with Barnes, Collins, and others (Barnes, 1974; Collins, 1985)—go somewhat further, and would put the explanatory burden even more firmly on sociological factors rather than rational or quasirational considerations. As Martin Hollis puts it, the strong program “distinguishes sharply between intellectual systems and social systems, and tries to explain the former as an effect of the latter” (Hollis, 1992, p. 77) To use an analogy, it is as if the strong program would have us explain what happened in, say, one of the world championship chess games between the Russian Kasparov and the British player Short in 1993, entirely in sociopolitical terms with no reference being made to the rules and theories and strategy of chess! (It is of more than passing interest that Thomas S. Kuhn has recently stated that “I am among those who have found the claims of the strong program absurd: an example of deconstruction gone mad.” See Kuhn, 1992, p. 9.)

A contrasting and more conservative position would be the one held by the philosopher of science Imre Lakatos: Knowledge is actively built up over time within a research program that progresses as it responds to intellectual considerations (including data obtained from nature); and sociopolitical factors only enter the story when there is need to explain why the scientists involved in that particular research program lapsed into error or deviated from what would have been rationally optimal for them to believe, given the data available to them at the time (Lakatos, 1978).

This gradation within the ranks of social constructivists is nicely captured by the sociologist and historian of science who is one of the central figures in contemporary “science studies,” Bruno Latour:

“Radical,” “progressivist,” “conservative,” “reactionary,” “golden mean” . . . A radical is someone who claims that scientific knowledge is entirely constructed “out of” social relations; a progressivist is someone who would say that it is “partially” constructed out of social relations but that nature somehow “leaks in” at the end. At the other side of this tug-of-war, a reactionary is someone who would claim science becomes really scientific only when it finally sheds any trace of social construction; while a conservative would say that although science escapes from society there are still factors from society that “leak in” and influence its development. In the middle, would be the marsh of wishy-washy scholars who add a little bit of nature to a little bit of society and shun the two extremes. (Latour, 1992, p. 276)

The groundbreaking figure in the social-constructivist tradition, of course, is Thomas S. Kuhn; but the philosopher Helen Longino is representative of much interesting work being done by contemporary feminist philosophers (insofar as any one person can represent such a diversified field). Her position falls somewhere between those of the “strong program” and Imre Lakatos. In her book *Science as Social Knowledge* (1990), and in a number of essays, she attacks the assumption made within traditional individualistic epistemology that a knower can be conceived validly as being an isolated individual, stripped of interests, motives, biases, and other socially determined traits. Longino goes on to stress that a knower must be able to subject assumptions and knowledge-claims to critical scrutiny, which can-

not be done in genuine isolation from a community (and without using communal standards). Thus, she argues, knowledge must be viewed as being actively “constructed not by individuals but by an interactive dialogic community” (Longino, 1993, p. 112). In social science jargon, she is suggesting a change of the “unit of analysis” in epistemology. Earlier we met Nelson’s rather similar views.

Epistemological Versus Sociopolitical and Educational Concerns

The three dimensions along which, I have argued, the various forms or sects of constructivism can be located are all, to a greater or lesser degree, *epistemically related* dimensions. Clearly, all forms of constructivism take a stand on epistemological issues, but we will form a distorted picture of all of them if we let matters rest here. I believe it is important to recognize that the constructivist sects also differ with respect to the intensity with which they harbor various educational and sociopolitical concerns. For it is apparent that although some constructivists have epistemological enemies whom they are anxious to defeat, most have pressing social and political concerns that motivate their work. It should not come as a surprise, of course, that in the late 20th century many of those who hold a position that is extremely sensitive to the fact that knowledge is produced should also have heightened sensitivity to the sociopolitical conditions under which this production takes place. What I am suggesting here is that it would be a mistake to think that when the philosophical concerns of the constructivists have been identified (and examined), our work is over—the concerns run deeper than this.

Consider several obvious examples: von Glasersfeld, Dewey, and the feminist epistemologists. All of these make epistemological points of varying degrees of sophistication (as has been sketched in the earlier discussion); but all of them also have important educational or social concerns, each of which has a degree of credibility that is independent of the fate of the respective epistemologies. It even could be argued that for many constructivists the latter concerns are more central. (And, of course, a reader can be sympathetic to the educational or social concerns without being a fellow-traveller with regard to the epistemology, or vice-versa.)

Thus, von Glasersfeld’s epistemology, which I have claimed elsewhere is developed in a flawed way (Phillips, 1992a; see also Matthews, 1992; 1994, ch. 7), is an important springboard from which he and the radical constructivists have launched an important educational movement (see Noddings, 1990, for a somewhat similar assessment). His individualism and subjectivism in epistemology leads him (or perhaps was accepted because it allows him) to argue that each individual science and mathematics student is responsible for building his or her own set of understandings of these disciplines; teachers cannot assume that all students have the same set of understandings, or that their own ways of understanding are shared by their students. Moreover, it is clear from von Glasersfeld’s perspective that everyone studying a field like science has his or her own set of conceptions and preconceptions that influence the course of subsequent learning; teachers should drop the fashionable but misleading talk of student “misconceptions,” for this implies that there is a standard set of “correct” conceptions that all learners should have. One result of all this is to highlight the need for individual attention

to students, and the need to give guidance about how bodies of understanding are built up. *It could be argued here that a weak or at least a controversial epistemology has become the basis for a strong pedagogic policy.* Here is how one prominent researcher in the domains of science and mathematics education summarizes the beneficial influence of radical constructivism:

When one applies constructivism to the issue of teaching, one must reject the assumption that one can simply pass on information to a set of learners and expect that understanding will result. Communication is a far more complex process than this. When teaching concepts, as a form of communication, the teacher must form an adequate model of the student's ways of viewing an idea and s/he then must assist the student in restructuring those views to be more adequate from the student's and from the teacher's perspective. Constructivism not only emphasizes the essential role of the constructive process, it also allows one to emphasize that we are at least partially able to be aware of those constructions and then to modify them through our conscious reflection on that constructive process. (Confrey, 1990, p. 109)

In the case of John Dewey, constructivist epistemology also leads directly to social and pedagogic policies. (In his *Democracy and Education* Dewey specifically claimed that philosophy is the theory of education.) As he saw it, the pedagogical and social ramifications of his epistemological opposition to the spectator theory of knowledge were quite broad. Starting from the constructivist position that the knower is an "actor" rather than a "spectator," Dewey staunchly advocated the use of activity methods in the schoolroom—for students are potential knowers, yet traditional schooling forces students into the mold of passive receptacles waiting to have information instilled, instead of allowing them to move about, discuss, experiment, work on communal projects, pursue research outdoors in the fields and indoors in the library and laboratory, and so forth. Consider this wonderful description of the traditional schoolroom, where his negative attitude to the passivity of the spectator theory is crystal clear:

Just as the biologist can take a bone or two and reconstruct the whole animal, so, if we put before the mind's eye the ordinary schoolroom, with its rows of ugly desks placed in geometrical order, crowded together so that there shall be as little moving room as possible. . . and add a table, some chairs, the bare walls, and possibly a few pictures, we can reconstruct the only educational activity that can possibly go on in such a place. It is all made "for listening." (Dewey, 1899/1969, p. 31)

The general idea should now be clear enough; the interested reader can try his or her own hand at constructing an analysis of the broader concerns that are tied in with Piaget's and Habermas's views on the construction of knowledge (to mention only two of the other most obvious examples). But a third example is worth pursuing here, for it leads in quite a different sociopolitical direction.

Feminist epistemologists such as Sandra Harding and Helen Longino clearly have social concerns that reinforce their commitment to their respective social-constructivist epistemologies (the two have philosophies that are similar but by no means identical). In stressing that the knower cannot be conceived as being an artificially objectified and

solitary individual isolated from a historical and sociocultural setting (this rival view, as we saw earlier, is close to that held by von Glasersfeld), they wish to highlight the degree to which these previously neglected social and political factors play an epistemological role. Harding stresses that in a society that is stratified "by race, ethnicity, class, gender, sexuality, or some other such politics," the activities of those at the top "both organize and set limits on what persons who perform such activities can understand about themselves and the world around them" (Harding, 1993, p. 54). Such activities, of course, include those in the epistemological arena; and necessarily the knowledge generated by such people is going to be deficient. However, the activities of marginalized people "at the bottom of such social hierarchies" can provide a sounder starting point for epistemological inquiry (p. 54). Harding's contention is that people at the bottom can generate more critical questions to guide inquiry, for their position is less "limiting" (p. 55). In short, for Harding constructivist epistemological considerations (no matter how contentious) lead directly to the important issue of social empowerment.

Helen Longino, after citing the influence of Kuhn, Feysabend, and others, goes on to stress the ways in which science is a communal rather than an individual endeavor; scientific knowledge "is constructed. . . by individuals in interaction with one another in ways that modify their observations, theories and hypotheses, and patterns of reasoning" (Longino, 1993, p. 111). She then discusses four criteria that must be satisfied if "transformative critical discourse" is to be achieved—there must be publicly recognized forums; the community must not only tolerate dissent but its beliefs must actually change over time; there must be publicly recognized standards of evaluation of theories, observations, and so on; and communities must be "characterized by equality of intellectual authority" (pp. 112–113). Perhaps Longino's overriding concern – which is both epistemological and social—is that "no segment of the community, whether powerful or powerless, can claim epistemic privilege" (p. 118).

Concluding Remarks

I opened the present discussion by identifying the quasi-religious or ideological aspects of constructivism as being *ugly*. The *good*, as I hope I have made clear, is the emphasis that various constructivist sects place on the necessity for active participation by the learner, together with the recognition (by most of them) of the social nature of learning; it seems clear that, with respect to their stance on education, most types of constructivism are modern forms of progressivism. Constructivism also deserves praise for bringing epistemological issues to the fore in the discussion of learning and the curriculum; while I do not agree with some (or even many) of their specific philosophical points, the level of sophistication of the debates in education journals is much improved as a result of their presence. The *bad*, which I have not been able to document adequately in the present discussion, is the tendency within many forms of constructivist epistemology (despite occasional protestations to the contrary) towards relativism, or towards treating the justification of our knowledge as being entirely a matter of sociopolitical processes or consensus, or toward the jettisoning of any substantial rational justification or warrant at all (as is arguably the case with the radical con-

structivists). My own view is that any defensible epistemology must recognize—and not just pay lip service to—the fact that nature exerts considerable constraint over our knowledge-constructing activities, and allows us to detect (and eject) our errors about it. This still leaves plenty of room for us to improve the nature and operation of our knowledge-constructing communities, to make them more inclusionary and to empower long-silenced voices.²

Notes

This essay is based upon a Royal Institute of Philosophy (Northern Branch) lecture, delivered at Durham University, UK, in November 1993; an updated version was also presented at a meeting of the California Association for Philosophy of Education in Los Angeles, November 1994, and as a plenary address at N.A.R.S.T. in San Francisco in April 1995. Helpful comments were given by participants at these various meetings, and also by Peter Godfrey-Smith and Harvey Siegel. Finally, I am indebted to several anonymous reviewers for *ER* for suggestions about sharpening the focus of this paper.

¹The present discussion will be incorporated into a book by the same author, to be published in 1996 by Routledge, where the issues will be pursued in much greater detail.

²It is relevant to note that the philosopher Alvin Goldman has a promising research program in this area; see Goldman, 1992.

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