Skeptical Mathematics?

Reuben Hersh
The University of New Mexico
<rhersh@math.unm.edu>

1 Ernst von Glasersfeld seems to say to social constructivists, "You attribute reality to society, but your society is just another construct, all you know is just the bits of light and shadow and color that your visual system provides to you." Now, "society" is just a big word for "other people." I can give to this text of von Glasersfeld's either a short answer or a long one.

2 Here's the short answer. Von Glasersfeld is skeptical about whether I exist, but he is sure that he is skeptical about that. Moreover, he is sure that I should be skeptical about whether *he* exists, and that I ought to be quite sure about *that*.

3 If that is too quick and easy, then here is a longer answer.

The problem for philosophy of mathematics is mathematical certainty. Everybody seems to be quite sure that, for example, the sum of the squares on the sides of a Euclidean right triangle equals the square on the side of the hypotenuse. But our ordinary everyday knowledge and our empirical scientific knowledge all seems to involve at least some slight tiny modicum of dubitability. How can we be so absolutely sure of mathematical truth? Formalists say, "These so-called math truths are just empty symbolism." Platonists say, "They are perceptions of transcendental eternal inhuman realities." Some, like me, say, "They are about concepts, which are socially held and historical. Therefore, questions about the nature of mathematical truth come down to questions about human thinking, at the social level, and have to be studied as empirical problems about thought and culture and even about the brain itself."

4 Now, it would be presumptuous of me to put words into the mouth of von Glasersfeld, so instead of imagining what he might say, let me reason as a hypothetical "social constructivist" philosopher of mathematics who is actually convinced by the radical constructivism (really, Humean skepticism) of von Glasersfeld.

5 "Aha! I have been trying to ground the reality of the Euclidean triangle in the reality of the text book, the classroom, and the consensus of the mathematical world. But now I see! I have no right to assume there *is* a mathematical world, or even a classroom, or even a text book. I only know these lights and darks and colors, that I hypothetically imagine may perhaps come from some conjectured reality that I myself have *constructed* into a text or a classroom or whatever! Instead of explaining the nature of mathematical knowledge, I now understand that mathematical knowledge itself is merely another construct! This may be of little or no use to me as a teacher, a student, or a researcher. But it will certainly be of great help if I am ready to give up any interest in teaching, studying, or researching."

Put Another Way…

Dewey I. Dykstra, Jr.
Boise State University
<ddykstra@boisestate.edu>

Preamble

1 As Ernst von Glasersfeld has reminded us many times in many publications and presentations, what is written here "…does not purport to describe a real world, but merely proposes a model of *how one could imagine knowledge to be built up*" (§42, *emphasis* in the original). To bring up the point that what is written by a radical constructivist, such as von Glasersfeld, myself or others, is not an assertion of truth runs the risk that George Lakoff suggests in the title of his book *Don't think of an elephant* (Lakoff 2004). To read the sentence is to do the very thing one is invited not to do. But, it seems, for realists, indeed anyone subjected to a life experience growing up in a realist society, one can hardly help associating what someone has written with attributions of truth on the part of the author. Since such associations are incessantly, but subtly and implicitly, cultivated in the minds of all in cultures such as the one we live in, the only way to become independent of such reflexive associations is to wrestle with them explicitly.

2 What follows is offered as an alternative explanation of the nature and status of the concept of society. This alternative is entirely compatible with radical constructivism as described elsewhere by von Glasersfeld (1995, 1999) and some others. This is not a claim of the truth-value of this alternative interpretation, but instead is no more and no less than a claim that there is an alternative explanation that fits and is useful. It is not even a claim of primacy or superiority in some comparative sense. It is merely the claim that this alternative explanation of the nature and status of the concept of society exists, is viable, and is compatible with radical constructivism: a radical constructivist's explanation of "society."

The nature of knowledge of society

3 My claim is that, at a certain level, asking "Where do our notions of society 'come from'?", "Where do our notions of love 'come from'?" and "Where do our notions of force 'come from'?" are all equivalent questions, in particular with regard to von Glasersfeld's claim to offer a theory of rational knowing (§46). In answering such questions, we encounter the nature and status of "society," "love," and "force." My claim is that the nature and status of these three, as things we think about, are essentially the same.

4 Science is one field that attempts to practice the construction of rational knowledge. In his book on concepts at the foundations of physics, Max Jammer (1957, p. 2) provides an intelligible account of what he calls the "objectives" of science: "its two major assignments are the description of certain phenomena in the world of experience and the establishment of general principles for their prediction and what might be called their 'explanation'."

5 In this description Jammer seems to be saying that one can explain science as carrying out its program using two types of knowledge: experiential and explanatory. Scientists are trying to formulate rational, naturalistic explanations for specified sets of experiences, which meet certain conditions. This depiction in terms of experiential and explanatory knowledge is entirely compatible with radical constructivism as von Glasersfeld describes it, e.g., in Glasersfeld (1995, 1999).