Minds, Morals, and Mathematics in the Wake of the Deaths of Plato and God: Reflections on What Social Constructionism Means, Really

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Introduction

I have been exploring hard cases in the sociology of science for forty years—the Needham problem (why modern science emerged in the West and not in China)[1], the social realities of scientific practice, the physics-and-mysticism nexus, and finally the sociology of mathematics, mind, brain, and consciousness. Slowly I realized that the transcendental represented the limit of the hard case, and that we had to be able to socialize God in order to tame the brute fact and pure sciences. We have just about buried Plato once and for all in mathematics, philosophy of mathematics, and mathematics education[2], but we must still solve the God problem before we can complete the process of bringing mathematics out of the clouds, out of the heavens, and down to the earth and the sites of real human labor. This also means solving the problem of the soul, of heaven, and of the after-life.

We, sophisticated ones, are equipped to understand the diversity of ways of knowing, the perversities of positivism, and the obstacles to social justice, cultural development, and the growth of knowledge posed by commitments to and defenses of CAPITALIZED Objectivity, Logic, Rationality, Truth, and Science[3]. These are not words to avoid in general except that in their capitalized forms they serve as God adjutants or surrogates. Among sophisticated students and practitioners of ways of knowing my brand of sociological materialism, and my defense of a Durkheimian social constructionism may seem out of place. Sociological materialism may appear to advocates of diverse ways of knowing and multiple realities to be too sociological (i.e., sociologistic), too deterministic, too classically positivist, too traditionally scientistic, and

[1] According to historical sociologists, notably Joseph Ben-David and Joseph Needham, modern science should have been an intellectual possibility in China. Chinese science and technology were more advanced than European science and technology between the -1st and +15th centuries. China also had scholars and intellectuals as advanced as those in pre-Newtonian Europe (Restivo, 1994: 29-48)

[2] See the articles in Restivo, van Bendegem, and Fischer (eds.), 1993, especially the contributions by anti-Platonist Restivo (Chapters 1 and 13) and modern Platonist Resnik (Chapter 3).

[3] See Restivo, 1994: 174-214; and Restivo, 2007: 61-82.

perhaps reductionist and subject to classical objections to (vulgar) materialism[4]. So let me say that whatever impresses or strikes me about the world we live in, nothing impresses me as much as the recalcitrance of reality. I am sympathetic to and an advocate of multiple realities and diverse ways of knowing, but my multiple realities and my diverse ways of knowing are grounded in a world in which it matters which way we look when we cross the street; and if you travel from New York City to London, it will matter whether you adjust to Londoners' modes of looking left and right when you cross their streets. It matter whether our drinking water is safe to drink or not, no matter where we live and no matter what ways of knowing we practice and defend. This reality is the reality my life, my research, and my theories unfold in. What about my fantasies, you may ask, my dreams? These too unfold in this reality of streets, pedestrians, directional signs, automobiles, and drinking water. As individuals (social beings to be sure), we live our lives of labor with our feet on the ground (even if we are among the few who walk on the moon or float around two hundred and fifty miles above the earth) framed by our births and deaths. Societies are evolutionary outgrowths, and if they do not progress, develop, or evolve through distinct stages they certainly change, they rise and decline technologically and economically, and they appear and disappear socially, culturally, and geopolitically.

I will in the course of this lecture and in other ways and venues engage with people who see things differently than I do, who think differently than I do. Conversations and communications will necessarily be different in different cases. I do not adhere dogmatically to any gentlemen's or gentlewomen's agreement about polite, respectful dialogue. I have in mind here a particular dialogue, the dialogue between science and religion. I view this dialogue in the same way I view the dialogue between flat earthers and same people. We have so much evidence and even proof – at eh very least by ensemble of probabilities and consilience of evidences-that religion, God, and theology have- like the flat earth hypothesis-dropped out of the conversations that engage the most progressive thinkers, and that there is no longer any grounded justification or warrant for traditional religious institutions and beliefs. This happens from time to time, does it not? Certain ideas drop out of the conversation, certain social institutions fall by the wayside. Complex, traditional, and dearly held ideas and institutions do not drop out of the conversation easily. The Ptolemaic universe did not drop out easily, nor did paganisms and polytheisms in the West. Plato, Kant, and Hegel continue to be taken as worthy conversationists in a world that has dramatically changed materially and intellectually from the worlds they knew and within and out of which they constructed their ideas. My question then is, are there limits to polite and respectful dialogue when matters of life and death, even the life and death of a species and a planet, are at stake? Are we required by the norms of civil discourse to be ecumenicalists to the bitter end?

[4] See Karen E. Field's (1995; svii-lxiii) introduction to her translation of Emile Durkheim's (1912) Elementary Forms of Religious Life, "Religion as an Eminently Social Thing;" and my defense of sociological materialism in the "Prologue" for Restivo (1994: ix-xvi).

I am a sociologist and anthropologist, and my views are grounded in decades of research and theory on science, mathematics, and knowledge and belief. In what follows, I try to capture in a few words the essentials of what we now know about science, mathematics, and mind and brain. Finally, I sketch a rationale for seeking a moral dimension in systems of science and knowledge, reason and belief.

What is Science?

Scientific facts are manufactured out of locally available social, material and symbolic interpersonally meaningful resources. These resources become facts through the social interactions of scientists in a process sometimes described as creating order out of disorder. In the wake of a laboratory experiment, the sequence of writings from laboratory notes to published paper moves statements through different modes, each mode more "objective" than was the previous one. That is, statements describing the experiment progressively erase the subjective, flesh and blood human experimenters from an increasingly objective, mechanistic, and technical discourse. Facts attain "universal" status through the international activities of scientists as agents of professions and governments, and as ambassadors for the legitimacy of these facts. The field of science studies is an alternative to traditional ways of studying and understanding science. According to practitioners of science studies, not only is science a social activity, but scientific knowledge itself is socially constructed. Scientific facts and scientists themselves are social facts. Let us be clear: facts only be known, discovered, and invented through our interactions with each other in our human-made, human-incorporated, and human enabled environments. This is what we mean by social construction. Social construction is a realistic enterprise and does not entail or imply relativism. To the extent that relativistic claims engage sociologists of science they do so in opposition to absolutist claims and not to realisms. We may be right or wrong about our facts but we do not have any alternative to social construction to get at our facts.

What is Mathematics?

Mathematics has been shrouded in mystery and halos for most of its history. The reason for this is that it has seemed impossible to account for the nature and successes of mathematics without granting it some sort of transcendental status. Classically, this is most dramatically expressed in the Platonic notion of mathematics. Consider, for example, the way some scholars have viewed the development of non-Euclidean geometries (NEGs). The mathematician Dirk Struik, for example, described that development as "remarkable" in two respects. First, he claimed, the ideas emerged independently in Gẅottingen, Budapest, and Kazan; second, they emerged on the periphery of the world mathematical community. And the distinguished historian of mathematics, Carl Boyer characterized the case as one of "startling…simultaneity." These reflect classical Platonic, transcendental views of mathematics. In fact, NEGs have a history that already begins with Euclid's commentators, runs right up to Gauss and his students at Gottingen in the

early 1800's, and culminates into a social network that has J. Bolyai, Labachevsky and Riemann as its major nodes[5]

What is the Brain?

It seems to me that a sociologist, unlike a philosopher, a psychologist, or a cognitivist, has to offer some rationale or justification for taking on problems of the brain, mind, consciousness, and thought. I will begin, therefore, with a brief genealogy, a genealogy that is the root of a multi-pronged provocation for sociology of mind and brain. The classical provocation comes from the writings of the classical social theorists, notably in my case, Emile Durkheim, Friedrich Nietzsche, and Karl Marx.

There is then what might be called a neo-classical provocation rooted in the works of George Herbert Mead, Lev Vgotsky, Ludwik Fleck, and John Dewey. Their work leads to a second-order neo-classical provocation, from Mead in particular to C. Wright Mills and Randall Collins and from Vygotsky to James Wertsch among others and the social cognitionists. These provocations are direct and lead more or less explicitly and transparently to sociology of mind. For the beginnings of sociology of brain, we can look to the writings of the anthropologist Clifford Geertz:

The synchronic emergence in primates of an expanded forebrain, developed forms of social organization, and, at least after Australopithecines got their hands on tools, institutionalized patterns of culture indicates that the standard procedure of treating biological, social, and cultural parameters serially – the first being taken as primary to the second, and the second to the third – is ill-advised. On the contrary, these so-called levels should be seen as reciprocally interrelated and considered conjointly[6].

If we think of the brain and central nervous system as "logically and genetically prior' to society and culture" then we will be prompted to focus our attention on genetic and brain parameters in accounting for human behavior. If Geertz is right, then we may be "asking too much of neurons; or, if not too much, at least the wrong things"[7]

The Moral Dimension [8]

Individuals do not make decisions about what is right and wrong or true and false on their own. Such decisions are settled by institutions (cf. Douglas, 1986: 4). "Classification, logical

[5] Restivo, 1983: 232-235, discusses the social roots of non-Euclidean geometry.
[6] Geertz. 1973: 74.
[7] Geertz, 1973: 75. And see Geertz, 2000: 203-217.
[8] Here I take the liberty of quoting at length from Restivo and Bauchspies (2006: 204-205).

operations, and guiding metaphors are given to the individual by society" (Douglas, 1986, 1986: 10). It is on the basis of such Durkheimian considerations that sociologists of knowledge of my type reach the conclusion that mathematics is a moral system. It is useful t consider, at this point and in some detail, Durkheim's (1961: 29-30) remarks on the categories of space, time, and causality:

They represent the most general relations which exist between things; surpassing all our ideas in extension, they dominate all the details of our intellectual life. If men do not agree upon these essential ideas at any moment, if they did not have the same conceptions of time, space, cause, number, etc., all contact between their minds would be impossible, and with that all life together. Thus, society could not abandon the categories to the free choice of the individual without abandoning itself…

There is a minimum of logical conformity beyond which it cannot go. For this reason, it uses all its authority upon its members to forestall such dissidences….

The necessity with which the categories are imposed upon us is not the effect of simple habits whose yoke we can easily throw off with a little effort; nor is it a physical or metaphysical necessity since the categories change in different places and times; it is a special sort of moral necessity….

We should explore the number's unique role in molding our conceptions of abstraction, purity, and the sacred, and its primacy in constructing relations, separations, and boundaries between minds and bodies.

Then moral necessity of the sciences is enhanced as the professional boundaries are constructed and concretized around those thought communities and thought collectives (Fleck, 1979/1935) dedicated to their ideas. Foremost among these communities and collectives are mathematicians (and logicians).

All institutions provide the categories of thought, set the terms for knowledge and self-knowledge, and fix identities. But more than this, they "must secure the social edifices by sacralizing the principles of justice" (Douglas, 1986: 112). In mathematics, classifications and theories, proofs and conjectures are held together by the sacred glues of logic and reason. Given this conception of the nature and function of institutions, it should not be surprising to find that questions and issues of morals merge with questions and issues of what is real and what is illusory, and what counts as a "good" or legitimate argument. We are left with the following question: how does classroom practice change if we understand that problems of truth and falsity, what is right and what is wrong, are moral problems? What would it mean to address our classroom practices in this context?

Conclusion

I have laid out a pathway to rejecting transcendentalism and supernaturalism. I have also shown why God is a formidable barrier to ending the hegemony of pure reason. Without the end of God, there is no end to pure reason, no end to pure mathematics, no end to hegemonic views of what mathematics is. By following this path, we risk ending mathematics itself, science itself. But if we keep in mind that we are opposed to absolutisms and not to realisms, we can avoid this consequence. There are battles and struggles, conflicts and controversies on all of the paths before us. Plato and God (and Hegel and Kant) must all go if we are going to seriously undermine tendencies purify and essentialize the distinctions and differences, the categories and classifications that inevitably and universally organize our social and moral orders. The social problems of sex, gender, race, and class will not be vanquished easily; but they will offer more resistance if we leave in place Big Ideas that nourish purities and essentialisms. It's not too much to suggest that the deconstructions proposed by Professor Mendick (2005) in her article "only Connect…" are at least in part made necessary by the binary thinking imbedded in a world divided into transcendental and material realms presided over by a god or a Plato. To the extent that these issues are functions of language (language-in-use), perhaps we need to consider simultaneously aleatoryizing and verbifying language (see here the relevant writings on language by the late David Bohm, 1975 and on human posture by the late John Schumacher, 1989). We don't necessarily need a wholesale transformation of language – our languages tend to be stable and noun-based for the good reason that our environs are thing-based and relatively stable. We have needed postmodernism to shake up old and rusty systems of categories and classifications. What we may need in more specific terms is an aleatory/verb strategy in language. A Jeffersonian/Maoist?Trotskyist principle of permanent revolution could be inbedded in language systems as whole systems, or used situationally and strategically[9]. It is only a short leap to aleatory and verbal bodies, technologies, classrooms, students, teachers, and subjects. Philosophically, the aleatory function may have no limit; scientifically, it must have a limit (defined in part, for example, by the principles of sociological materialism). The variability an

[9] The idea of permanent revolution comes in many forms and through the lives and thoughts of many people. It is generally associated with radical political thought and theory. Marx and Engels introduced the term in The Holy Family (1975). Trotsky (2007) used the term to explain how the struggle for democracy woul have to carry over into a struggle to develop socialism and how this struggle could never be confined to one country. Thomas Jefferson, in France during the period of Shay's Rebellion (1786-87), wrote to a friend that "a little rebellion now and then is a good thing:" "God forbid," he wrote, "that we should ever be twenty years without such a rebellion." He went on to write famously that "The tree of liberty must be refreshed from time to time with the blood of patriots and tyrants. It is the natural manure" (quoted in Zinn, 1995: 94). Schram (1971) reviews the political history of the idea of "permanent" or 'uninterrupted" revolution. I co-opt the term for a vision of science or more generally inquiry. Progressive unfettered inquiry is necessarily anarchistic (cf. Feyerabend,) and revolutionary (cf. Kuhn, 1972). By definition it cannot settle into a concrete form. All science is always in transition. Donald Campbell (1969) described it this way in his corrigible, hypothetical or critical realism.

aleatory approach gives us, even with (realistic) limits, should be sufficient to address the specific issues of this conference and the wider issues of this conference and the wider issues abroad in our world today. I can imagine no better way to conclude this excursion that by recalling Oswald Spengler's insight that there is no Mathematik, only mathematics.

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