

Editorial

Has Constructivism Become Too Comfortable?

Nerida F. Ellerton

Although it can be argued that constructivist epistemologies have been around for a long time (Mousley, 1993; von Glasersfeld, 1983), perhaps the first time the international mathematics education research community was directly confronted with the claims of radical constructivism was at the 11th annual conference of the International Group for the Psychology of Mathematics Education (PME), held in Montréal in 1987. At that conference, the level of understanding of what radical constructivism might mean ranged from high, for those who were presenting keynote addresses (Kilpatrick, 1987; Sinclair, 1987), to almost nothing for many in the audience. The terminology was new, and it took time to bridge the gulf between those who were actively debating and researching constructivist ideas and those who had been researching and debating issues in other areas.

Participants at that 1987 Montréal Conference could not miss the intensity of feeling among those debating facets of radical constructivism. Like anything new, there seemed to be an aura about the word, and with retrospect, it is not surprising that over the past ten years, the major tenets of "radical constructivism" have defined an important, albeit sometimes unconscious, epistemological framework for many mathematics education researchers. At the same time, other kinds of constructivism have been posited, to the extent that Phillips (1995) was able to assert that "constructivism has many sects" (p. 1), each of which harbours some distrust of its rivals.

In the 1990s curriculum frameworks for school mathematics and teacher education programs have increasingly carried specific references to radical and other varieties of constructivism. One often hears expressions such as the "constructivist classroom" and the "constructivist teacher" (Bossé, 1995). But what do such expressions really mean? And, when such words flow from the lips or pens of researchers, have the researchers thought about the implications of their utterances, both with respect to the research framework within which they are operating, and from the perspective of the teachers and schools with whom they are working?

Constructivism as Part of the Culture of Mathematics Education Research

Many mathematics education researchers who are quick to comment on the cultures which pervade mathematics classrooms, seldom reflect on the cultures which define the milieu of their own research community. Some believe that there has been too little debate on the key claims of radical constructivism, and an over-hasty general acceptance of the view that debate about such matters should be left to those few who wish to engage in various philosophical and epistemological questions.

But von Glasersfeld's radical constructivism has been subjected to serious philosophical challenge (see, for example, Phillips, 1995), and this is especially the case in various articles which have appeared in the Kluwer journal *Science & Education*. In launching that journal, six years ago, the foundation editor, Michael Matthews, stated that "for the first time a specialised journal will promote contributions that historical, philosophical and sociological studies make to practical and theoretical issues in science and mathematics education" (quoted in Matthews, 1997, p. 1).

Although Ernst von Glasersfeld was on the editorial committee of the journal, Volume 1 contained an article by W. A. Suchting (1992) which was highly critical of von Glasersfeld's writings. Suchting (1992), who went so far as to describe von Glasersfeld's radical constructivism as "simply unintelligible" and "confused" (p. 247), accused von Glasersfeld of repeating words and combinations of words like mantras (p. 247). von Glasersfeld (1992) formally replied to Suchting's attack but, interestingly, relatively few mathematics education researchers have ever referred to the Suchting/von Glasersfeld *Science & Education* debate.

Given its title, *Science & Education*, it is not surprisingly that the journal failed to attract many mathematics education researchers, either as subscribers or as contributors of articles. As Matthews (1997) wrote recently:

Unfortunately the journal's impact has been far greater in the science education community than in the mathematics education community. The attempt to bridge the two research communities has not succeeded to the degree hoped for and, reluctantly, the journal will no longer try to embrace the two communities. (p. 1)

Perhaps *Science & Education* "failed" to bridge the two communities because the bridge which mathematics educators were asked to cross was obscure. One wonders, for example, how many science education researchers would contribute and/or subscribe to a journal carrying the title *Mathematics & Education*. Furthermore, no matter how worthy certain intentions may be, it is difficult to build bridges between two cultures with distinctive but different traditions.

Both science education researchers and mathematics education researchers are proud of their achievements, and both are undoubtedly somewhat possessive of these achievements. Before an effective bridge could be built between the two research communities, however, there needed to be to be a genuine willingness, on both sides, to share and contest ideas, in debate, in joint projects, and in genuine partnerships. It is unfortunate that the *Science & Education* bridge-building exercise failed because these foundational cornerstones were not in place.

Having said this, however, I believe that mathematics education researchers have much to gain from reading the commentaries on constructivism in Volume 6 of *Science & Education* for 1997. For example, Hardy and Taylor (1997)—in the course of defending radical constructivist concepts—reflected on what radical constructivism might mean for those seeking to reform science and mathematics teaching. They concluded that "in its current cognitivist form, radical constructivism may be insufficient to empower teachers to overcome objectivist cultural traditions" (p. 135).

Building Bridges

Bridges are likely to provide a more effective mode of communication if the architects and engineers who are involved in their design and construction have a sound understanding of the work done by those on both sides of the bridges, and a realisation that the bridges should not only include cultural and philosophical exchanges, but should also enhance the quality of existence of all parties involved. From that perspective, bridges are likely to be maximally effective when they contribute not only to co-operation and sharing, but also to fair and healthy competition. Perhaps by admitting the failure of one bridge, the editor of *Science & Education* has shown the need for both science educators and mathematics educators, after reflecting on their respective cultures, to reach out and start building new bridges which will incorporate a *genuine* sharing of ideas, marked by lively discussion, joint projects, and democratic partnerships.

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Editor's Note

The Editor has been informed that the following name and thesis title were not included in the Summary of Mathematics Education Dissertations compiled by B. Waldrip and published in *MERJ* 9(1), 100–112. This dissertation should have been listed under "Concept Formation."

Production system model of children's development of number concepts.
Nason, R.A., Deakin University, PhD, 1989.