Vale Stephen P. Norris, June 9, 1949 - February 18, 2014

Stephen Norris (June 9, 1949 - February 18, 2014), a member of the editorial committee of *Science & Education* since its first issue in 1992, unfortunately died ten days ago aged 65 years. He was Professor and Canada Research Chair in the Department of Educational Policy Studies at the University of Alberta. Since the beginning he had contributed to IHPST conferences, to reviewing and to general discussion within the IHPST group and the wider science education (NARST) and philosophy of education (PES) research communities.

Stephen obtained his first degree in Physics (1971) at Memorial University of Newfoundland, Canada and began his career as a high school science teacher. He subsequently completed a master's degree in Science Education (1975) at the same institution, and went in 1976 to the University of Illinois, Urbana to complete a doctoral degree in Philosophy of Education (1981). The thesis, supervised by Robert Ennis, was titled 'A Pitfall in the Construct Validation of Ability Tests' and was the basis of subsequent publications on testing and measurement in education (Norris 1990, 1992).

At the time the University of Illinois was the leading centre for philosophy of education in the world (the London Institute of Education being the only other contender). Illinois had an admirable faculty list that included Robert Ennis, Walter Feinberg, Joe Burnett, Clarence Karier, Ralph Page and Hugh Petrie. The latter trained as an engineer before moving to philosophy then to education, and then to Illinois as a philosopher of education. The department had a large and energetic graduate student group with students being drawn from many countries, but in particular at that time from Australia and New Zealand. Graduate students were involved in various aspects of the administration of the journal *Educational Theory* then edited by Ralph Page at Illinois. Most of these students from the late 1970s and early 1980s, including of course Stephen, themselves went on to become senior professors and significant contributors to educational research and policy. Stephen imbued the scholarly and liberal values so apparent in the life and work of the Illinois department. This is manifest in all his subsequent publications and collegial endeavours.

I first met Stephen at the University of Illinois in December 1978 when, at the invitation of Walter Feinberg, I gave my first ever paper in the USA. At the time I was on sabbatical leave at the Centre for History and Philosophy of Science at Boston University where Feinberg's PhD had been supervised by Marx Wartofsky. The centre was also home to Michael Martin who a few years earlier had published the first English-language book devoted exclusively to philosophy and science education (Martin 1972), and where Robert S. Cohen had for decades through articles, books and presentations, maintained connections with US science teaching (Cohen 1964). My Illinois talk was titled: 'Marx's *Theses on Feuerbach'* (Matthews 1980). What Stephen made of my arguments about the epistemology of the young Marx I no longer remember, but the presentation at least served the valuable function of establishing contact

between two relatively young scholars (each of us 30 years old), and allowed us to recognise our similar academic trajectories: science degrees, high school teaching experience and PhDs in philosophy of education. A difference was that while Stephen completed his master's degree in science education at Memorial, I completed mine in philosophy and then HPS at University of Sydney. Two years earlier Denis Phillips, with the same background of science, science teaching, philosophy and philosophy of education, moved from Australia and took a chair in the Stanford Graduate School of Education and by courtesy a chair in the Department of Philosophy. At the same time (1978) Harvey Siegel completed his Harvard doctoral degree supervised by Israel Scheffler who had a joint appointment as professor in both the philosophy and education departments. The period was a high-water mark for philosophical engagement with science education; it was a fantastic time to be a scholar in the field.

The year after Stephen's arrival in Illinois Robert Ennis published his landmark study 'Research in Philosophy of Science Bearing on Science Education' in the Proceedings of the Philosophy of Science Association biennial meeting (Ennis 1979). This was music to Stephen's ears. The paper has been music in the ears of countless others in science education who have read the work over the past 30 years and who share it's contention that most significant theoretical, curricular and pedagogical debates in the field have philosophical dimensions that need explication, amplification, clarification and defence; and without such philosophical refinement debate and argument generates heat but not much light.

The value of philosophical training for science education research and discussion is clear in all of Stephen's research right through to his final works. It is manifest in his early publications on observation in science and on critical thinking in education. His early observation papers (Norris 1982, 1984a, 1985a, Norris & King 1984) were directly enriched by Hugh Petrie's classes and publications in the area (Petrie 1972, 1976), and more generally by the rich philosophical literature of the time on theory dependence of observation prompted by the work of Hanson (1958) and Kuhn (1970). Stephen regarded these papers as among the best he ever wrote.

Stephen's critical thinking publications (Norris 1984b, 1985b) owed a debt to Robert Ennis' supervision, classes and publications (Ennis 1980, 1987, 1991). He and Ennis published co-authored works in the field (Norris & Ennis 1989, Ennis & Norris 1990). This interest led to Stephen hosting a conference on Critical Thinking at Memorial University in 1989, the papers of which were published in his anthology *The Generalizability of Critical Thinking* (Norris 1992b). Among the contributors were scholars who subsequently published on science education topics: Robert Ennis, Harvey Siegel, Sharon Bailin, Linda Phillips, Jane Roland Martin and John McPeck.

On his return to Memorial University Stephen began, with his wife Linda Phillips, their decades-long research programme on science, reading and literacy. This resulted in numerous articles, book chapters, anthologies and monographs (Norris & Phillips 1994, 2003, 2009). Different of these publications have been awarded international and national prizes. They have led to invitations to take up visiting professorships in different universities around the world. More recently, Stephen worked with Anat Yarden (Yarden 2009) on how primary literature can be adapted to support the development of literacy in science and he, Anat and Linda were working on a book about the use of adapted primary literature in secondary schools.

One month before Stephen's untimely death, he and Linda, with David Burns, completed revisions for a chapter, 'Conceptions of Scientific Literacy: Identifying and Evaluating their Programmatic Elements' in the soon-to-be-published *International Handbook of Research in History, Philosophy and Science Teaching* that I am editing (Norris, Phillips & Burns 2014). It is fitting that one of his final publications will be in a History, Philosophy and Science Teaching anthology.

Stephen authored or edited 16 books, 73 articles and 42 book chapters. He held a Tier 1 Canada Research Chair in Scientific Literacy and the Public Understanding of Science, and was the sole scholar in Canada awarded a Canada research chair in the field of science education.

Stephen's passing is an occasion for appreciating the strengths that philosophy, and particularly philosophy of education, can bring to both deliberations in science education and to classroom practice. The benefit of a philosophically informed perspective can be seen in all of Stephen's publications; and in the already cited works of Hugh Petrie and Robert Ennis. They are also apparent in the many science education publications of scholars such as Harvey Siegel (Siegel 1978, 1982, 1989, 1993, 2004) and Denis Phillips (1978, 1981, 1985, 1995, 2000). These benefits have been laid out and defended in 23-years of contributions to *Science & Education*; and in two soon-to-be-published works of my own (Matthews 2014a, 2014b). They are also laid out in detail by Roland Schulz in an article and a soon-to-be-published book (Schulz 2009, 2014). Unfortunately for science education research, curriculum development, and for classroom teaching, such training in philosophy is becoming increasingly rare in graduate programmes.

The kind of invaluable training that Stephen received in Illinois, 1976-1981, is simply no longer available to any student anywhere: philosophers are just not present in such numbers in any school of education anywhere in the world. Trained philosophers of education with interests in science education are an endangered academic species, indeed verging on being extinct. Schools of education and teacher training programmes are increasingly given over to applied, classroom-management courses and school experience; with learning theory and some form of 'cultural studies' or 'social studies' occupying what little theory space there is available in the programmes. This is not the occasion to comment on the scholarly contribution of the latter fields, but my own views can be read in Matthews (2014b, chap.12).

Jonathan Osborne at the Graduate School of Education at Stanford hosted a talk by Stephen three weeks before his death: 'Four Arguments for Teaching Reading in Science'. Jonathan was a close friend of Stephen's and also a member of the *Science & Education* editorial committee, he penned an obituary that was sent to the NARST list two days after Stephen's death. In part it said:

> At his heart, Steve Norris was what all communities need – a critical friend. Watching a presentation by him was to observe a model of clarity both in the deliberate thoughtful manner it was presented and in the depth of thought that had gone into his arguments and questions. He was somebody who recognized that the first duty of an intelligent man is to state the obvious and ask the hard questions that others had avoided. In doing so, he enriched our community and advanced our thinking. He was also an individual of great wit and charm who took a profound interest in helping and supporting all. He passed away of a heart attack doing something he loved, outdoors snowshoeing with his wife and friends. For him, it was swift and painless. For those of us who knew him it is another rent in the fabric of life. For our community it is a great loss.

These sentiments can be endorsed by everyone. And sympathy and thoughts can be extended by all to Linda - Stephen's partner in life and work for nearly 40 years.

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