

So for the first time, I attend a maths education conference, and to some extent enjoy it. I meet one or two people who later become friends. It is good to have David with us, but I wonder if it is maths that we have in common. More perhaps to do with learning and teaching, people and reading? One of my sons is doing badly at maths. How can that be, I ask David, and what should I do? He says, far too many people are already good at maths. Is he able to cope with life? Does he have enough skills for that? And, of course, he does. (Later, he gets 6% for School Certificate maths, but now, nearly twenty years on, he understands mortgages well enough.) We eat out, have coffee, David catches the ferry across the harbour, and walks the long distance home.

This journal, with its significantly uncapitalised and focused title, arrives three times a year in my letter box – the only maths education journal I actually look forward to reading. At least it will be interesting. Probably it will be provocative, often it will make links with surprising ideas and fields. Like David himself, it will certainly not be intellectually flabby.

*Vancouver, its mountains close and generous against the sky. Everywhere, daffodils and trees in blossom. Round English Bay, Sunday morning walkers with dogs, and coffee in silver thermos cups. Bicyclists in Stanley Park. And from here, on the sloping road near David's, blossom against the bay, the mountains, the sky.*

And David is sick. Stubborn, sometimes furious, always independent, in and out of hospital, a despair and a delight to a group of his friends, who talk and do crosswords with him, care for him, bring CDs and tulips, keep up with his extensive email friendships, and meet each other, some for the first time. But it is the last time that I see David.

I miss his edginess, his provocation. It would be so easy to become morally, intellectually, emotionally flabby. I miss him.

## Mathematics is About

### TOM KIEREN

Many years ago I was speaking at a conference in Regina, Western Canada. On one of my OHPs I had the phrase: "MATHEMATICS IS ABOUT ...". David Wheeler was at that conference too and happened to listen to my presentation. Afterwards, he came up to me and commented on some things I had said. In referring to the slide mentioned above, he said when he first saw it he took it to mean that mathematics was *about* – that is, that somehow we were always in the presence of mathematics: it was around us to be seen or looked at.

Of course, that was not what I had meant at all. I was trying to make the point that for each of us our mathematics knowing is in some way about other experiences we have had or, as Freudenthal suggests, it is a way for us to organize our experiences. David had a comment on that too. I had explicitly invoked 'recursion' to capture the sense of 'about-

ness' suggested by the phrase above. Rightfully so, David both questioned my use of the word 'recursion' and cautioned me about using words in imprecise ways in talking about mathematics or its knowing and of coming up with jargon in the process. Those of you who know us both will not be surprised that it was neither the first nor the last time David so cautioned me.

Although I frequently was subject to and likely earned his friendly criticism over the years, ideas that came up in David's responses to my words (as well as in his own thinking and writing to be sure) still crop up in my own thinking about mathematics and its knowing. Consider his comments above. When we think about mathematics knowing today, it is tempting to think about the mental operations and abstractions that a person uses to think and act mathematically. Or it is reasonable to think about our interactions with others, especially more knowledgeable others, as a source of or at least a basis for our own knowing of mathematics.

David's comment on mathematics being around us or our being in its presence reminds me to think about the cultural dimension of our thinking. David was blessed with co-ordinated hindsight and foresight, in that he could consider the mathematical problem-solving actions of a student in front of him in light of the nature of ideas and practices of the historic as well as the contemporary mathematical communities. As I observe the actions of students of many ages, I am prompted to ask in what ways the 'mathematics being about' or the 'presence of mathematics' might be observed to occasion the knowing actions or might be used to do so.

I have continued to use recursion as a way of thinking about and observing how students modify their own thinking over time (and through re-presentation possibly modify the thinking of others). In so doing, I am necessarily conscious of my use of the word and particularly its implications for the way in which the person uses and modifies their 'memories' and changes their own mental structures. I am also necessarily conscious of how one represents such changes or growth in thinking for others. Whenever I do this, I think of that long-ago challenge from David.

Finally, I have not stopped using words in unusual ways or even coining them in my writing and speaking. But I never do so that I am not prompted to think about the consequences for me and others as we think about how persons come to know mathematics and use that knowing in helping students in their knowing or devising elements of a 'better' mathematics curriculum. I hope I am thinking more clearly both about mathematics and its knowing. To the extent I am successful, it is in part that David and his work has occasioned and continues to occasion my own knowing.

## Recalling David Wheeler

### JEREMY KILPATRICK

In early 1989, David began his role as chair of the International Program Committee of the Seventh International