From the President's Pen

In the introduction to his book *Beyond Numeracy,* John Allen Paulos (1991) refers to a misconception held by many that mathematics is like a totem pole—"first arithmetic, then algebra, then calculus, then more abstraction, then whatever." It interests me to think about the different ways those who are (and those who are not) literate thinkers in their fields see the essentials of the various arts and sciences.

As the child of a cutting-edge research scientist, I remember hearing about the roles imagination, dead ends and noticing the unexpected played in the early development of gene identification in animals. In school, I was exposed to *the* scientific method, which reduced an extremely complex, multifaceted process to the categories of aim, materials, method, observations and conclusion. Exclusive focus on the scientific method—without speculation, imagination and the ability to notice---does not lead anyone to scientific literacy.

I have watched the competing claims in the literacy wars argued and demonstrated over years. It continues to be that some children learn to read without apparent effort and without instruction, most learn to read through whatever method of instruction is used, a small number learn through idiosyncratic processes, and an extremely small number never learn to read well. This has led me to an instant suspicion of any approach that seeks to simplify the complex and varied ways in which we learn.

In my reading, I have come across the suggestion that teaching for children in the early school years should focus on number to the virtual exclusion of other aspects of mathematics. Often this is accompanied by the suggestion that early remedial math (focused again on number) is needed to prevent later failure.

The math achievement levels in some Asian countries and the focus on number in the early grades in those countries are offered as evidence that this is a promising approach. Alberta, which has been following a well-rounded curriculum based on all the strands and processes of the standards of the US-based National Council of Teachers of Mathematics (NCTM 2000), is also achieving at these high levels on international assessments such as the Programme for International Student Assessment (see Bussière et al 2004).

Is mathematics more about number or more about patterns and relationships? Do the ways in which mathematics and culture interact affect how children learn as well as what they learn? If we want to adopt the math curricula of Asian countries, do we also need to adopt their cultures and languages?

Can we reduce the complexity and beauty of mathematics to a totem pole? Would we be wise to do so?

References

Bussière, P, W T Rogers, T Knighton and F Cartwright. 2004. *Measuring Up: Canadian Results of the OECD PISA Study: The Performance of Canada's Youth in Mathematics, Reading, Science and Problem Solving: 2003 First Findings for Canadians Aged 15.* Ottawa: Statistics Canada. Also available at www.cmec.ca/pisa/2003/Pisa2003.en.pdf (accessed 2006 03 09).

National Council of Teachers of Mathematics (NCTM). 2000. *Principles and Standards for School Mathematics.* Reston, Va: NCTM.

Paulos, J A. 1991. *Beyond Numeracy: Ruminations of a Numbers Man.* New York: Knopf.

Janis Kristjansson