

Review of An Applied Mathematician's Apology by L. N. Trefethen

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“Good writing is clear thinking made visible” —Ambrose Bierce

This is an important book, both for working mathematicians and for working philosophers of science. I think most applied and computational mathematicians will agree strongly with Nick's observations, while (sadly) I think that most pure mathematicians, if they read the book at all, will dismiss them. But Nick's observations are very pointed, and often very surprising (even if one immediately afterwards says to oneself, “Oh, so *that's* why . . .”).

Nick makes several points about *what are the right kinds of things to be doing* as mathematicians; I won't repeat them here, because he makes them much more sharply than I could, but I will add a comment. Velvel Kahan once told me that his father (Velvel's father, of course) had said to him, “Whatever you do, I expect it to need doing.” The *point* is that people believe different things about what needs doing. Nick's book describes one deep divide in what people believe mathematics is for.

One thread of reasoning goes back at least to Aristotle. Aristotle snobbishly argued that if you were worth paying attention to at all, then you were rich, and you had slaves to do your labour for you, and your life could hardly be better in any way; therefore anything “practical” wasn't really very important. What was important was “the life of the mind” and lofty thoughts. What could be loftier than pure mathematics?

Unfortunately, consciously or not, a lot of people hold this view. It's why “Software Carpentry” is such a terrible name for a subject: intellectuals who believe as Aristotle did (and there are a lot of them, and they hold a lot of power) by and large simply do not respect anything that they regard as a mere craft.

Of course, I do not hold this view, and my views align very neatly with Nick's (as I suspect do those of most of you who are reading this review). Abstraction gives leverage; computation gives power, power to do things that are practical and power to make further advances. And I, like Nick, think that “computationally” is the proper way to do mathematics. He says it much better than I do, though, and his anecdotes and observations are fascinating.

I do have one critical comment, in that Nick himself reveals in a footnote that he is not aware of modern computational work with multivariate polynomials,

which is really quite extensive. This work, too, tends to be ignored by the pure mathematicians; but it also tends to get ignored by numerical communities, even though the numerical solution of multivariate polynomial systems of equations is a tremendously practical problem and the community has made some amazing advances (especially by the Numerical Algebraic Geometry community). But that's a minor issue.

There's my two cents. I really enjoyed reading the stories. Nick is really a master of the craft of writing, as well as of the craft of computational mathematics. This book is short, and I read it in one sitting, but it is really powerful, and you should read it too.