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## Manifesto on Mathematical Education

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# Manifesto on Mathematical Education

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All this continued noise and agitation for “Reform”! We are fed up with it. STOP!

Yes, calculus was, is and will remain alive and applicable. Teaching it is always hard—both a problem and a pleasure. But it does not require any fashionable “rethinking.” The insights and the achievements are always there.

Slogans without substance fly about freely. In actual fact, the calculus is BOTH a pump and a filter—because it is both profound and hard.

“Mathematics for all” is about politics, not about ideas. It may help down under K-12, but even there it is badly overworked. But all college teachers know that in fact not all college students will “get it.” Some are not at all prepared, others are unwilling or unable to learn. What really matters is a goodly measure of mathematics for all those who are ready to learn and willing to study for this end. Not all students succeed. There are still grades of “F.”

From K to 12 the tradition presents the hopeful intent that the teacher can bring any and all students to learn. But beyond 12, a wise tradition states that it is up to

the college student to decide for herself whether and what to learn. It is this basic location of the initiative which is behind the much touted economic value of college education.

Yes, there are many new texts, and the NSF grants provide funds and other help to produce many more of them. But getting an NSF grant for such a purpose is not a certificate of accomplishment or a title to preach to others—it is just a license to try and to realize that no text has it all. In the old days, Granville’s calculus was later powered up by Smith and Longley down at Yale, which then gave way to Thomas and later to Hille and company and many other bids for royalties. Consorting with an Ivy League cachet can now present nothing really new.

The real struggles continue to take place in all those classrooms where teachers engage and tempt each generation of new students with the wondrous uses of limits. The calculus is still there in all its glory, from definitions to the fundamental theorem connecting differentiation with integration. The orbits of the planets and those water pressures on that dam all serve to illustrate what really gives.

This is where proof, precision and understanding lie, ready for action. Get off the pulpit and get on to tempting the students with the ideas!