

# Eating *Humble Pi*

Conrad Plaut

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**Humble Pi:**  
**The Role Mathematics *Should* Play in  
American Education**

Michael K. Smith, Ph.D.

218 pages

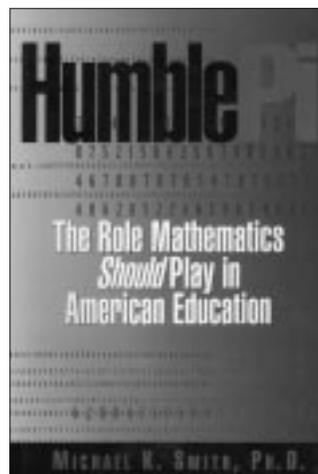
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“We live in a world dominated by mathematicians.” With these words, Dr. Mike Smith, an education and psychology professor at the University of Tennessee, begins his quixotic crusade, *Humble Pi*. Mathematicians, believing in the “supremacy” of their field, “make people feel...dumb in everything,” “may feel entitled to control whatever they can,” and “cannot escape from themselves.” Brandishing a long rubber lance of psychology, Smith sets out to free the beleaguered American high school student from the difficult and impractical mathematics being imposed by this numerologist horde. (All of this comes as a big surprise to the typical mathematician, who has little or no control over the high school curriculum and only feels dominant when grading calculus exams.)

Yet even a casual reading of Smith’s book reveals a serious misunderstanding of the history and purpose of mathematics, as well as numerous errors in basic math and logic. The first such error appears in the introduction, in the midst of a discussion, ironically, of logical ability. “Many mathematicians and mathematics educators claim,” writes Smith, “that the study of mathematics...makes (students) more logical and concise and better critical thinkers. Thus, to



do badly in mathematics makes one illogical, confused, stupid.” Indeed Smith shows throughout the book a remarkable inability to distinguish between the truth of a statement and that of its converse.

Of course Smith’s credibility in writing about reform of mathematics education depends on his having at least some mathematical ability. In the first chapter, he invites comparison of himself with Gauss, who awed his elementary school teacher and fellow students by instantly adding the numbers from one to 100. “I bet,” Smith recalls telling some schoolmates, “I can add up the numbers from 1 to 100 in my head faster than all four of you can do it together with pencil and paper.” After revealing the “trick” formula  $n(n+1)/2$ , Smith, who produces self-help materials for the SAT, considers the following SAT problem: How much greater is the sum of the numbers from 101 to 200 than the sum of the numbers from 1 to

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100? The solution, he carefully explains, is to plug the numbers 200 and 100 into the formula  $n(n+1)/2$  and take the difference, to obtain 15,050. The point he is trying to make is that this problem, like many others on the SAT, only involves remembering mathematical tricks and formulas. Yet his point remains unmade because (as the reader may already have observed) his solution is, in fact, wrong. The correct answer can be found by simply observing that each number in the first group is exactly 100 more than the corresponding number in the second group. In adding up the first group we add 100 extra 100's for a total of 10,000 more. So let the buyers of Smith's "more than a dozen" instructional materials for the SAT and other tests beware! His method of blindly plugging numbers into formulas, while popular among freshman calculus students, is not the way of success. It is also not the way of mathematics.

Smith quotes Galileo, Descartes, Bacon, Locke, Tolstoy, and contemporary mathematicians and scientists on the power and general usefulness of mathematical thinking. He then tries to argue that they are all wrong. But toppling the ideas of great thinkers requires great scholarship, and there is precious little of that in *Humble Pi*. Instead of directly attacking those he quotes, Smith assaults a much weaker foe—John Allen Paulos, author of the best-seller *Innumeracy*—and declares a general victory. To strengthen his point, he observes that people with Ph.D.s in mathematics sometimes make mistakes. He presents, as scientific evidence, an experiment that William James did on himself. (Smith, an occasional teacher of statistics, should at least know that a sample of one is not statistically significant.) Yet when the dust has settled (and there is plenty of dust in this battle), Bacon's delightful commentary on "the mathematics" emerges clean—having remained, with the rest of Smith's true foes, watching from the sidelines: "For if the wit be too dull, they sharpen it; if too wandering, they fix it; if too inherent in the sense, they abstract it."

Smith, astonishingly, contends that the nineteenth century saw "the decline of mathematics." He completely misunderstands the revolutionary developments of the 1800s: the gradual realization that mathematical concepts do not

need some kind of concrete "existence" in order to be useful. Even though we cannot physically have -5 apples, -5 is still an immensely practical concept. (Perhaps Smith, who still ponders the reality of negative numbers, has never bounced a check.) No less is true of deeper mathematical ideas like non-Euclidean geometries, which, despite the philosophical agony they caused in the last century, are profoundly useful. Smith fails to grasp that mathematics necessarily evolves from simple to complex, as the phenomena it describes become more and more complicated. Thus he repeatedly ridicules math problems which, by themselves, are too simple to represent modern real-world problems. Yet we cannot ask students to undertake complex "real" problems without first doing simpler, basic mathematics. To do so would be like asking students to study literature without first learning to read.

"Could you be admitted to college today?" Smith asks his reader. The question is rhetorical; the presumed answer is something like, "Gosh, I'm not really sure." He describes multiplication by a fraction as "complicated" and presumes the reader will agree. *Humble Pi* is a book written by someone who knows virtually nothing about mathematics, is intended for an audience which knows virtually nothing about mathematics, and makes recommendations that will ensure the next generation of Americans knows virtually nothing about mathematics. It should be a book that is taken seriously by no one. The fact that *Humble Pi* has been taken seriously by the popular media (Smith even appeared on CNN) and in some education circles does not bode well for mathematics education in this country.

What is the ultimate advice of *Humble Pi* to America? We should give our high school students the "freedom" to use their teenage wisdom and maturity to decide whether to take mathematics (but still force them to go to school). We should teach less mathematics. We shouldn't worry that our math test scores have slipped into last place, and by all means avoid setting national mathematics standards. We should let Japan develop the new technology and concentrate on our own "strengths": marketing, advertising, video games, and "quality" television. Now there are the makings of a great nation!

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