Rhetoric in *A Mathematician's Lament*
A book by Paul Lockhart
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Admittedly I have chosen perhaps a somewhat obscure book to analyze. The book is listed on the publisher's website www.blpress.org, but the information there is a little sparse so bear with me. I was intrigued by a review I had read of the book because I was never all that good at math. Hoping to sharpen my skills—or even acquire some to begin with—I found it in my local library. As it turned out I am no more the mathematician than when I began, but because the book is an obvious attempt to persuade his audience to change the state of math education, it has provided me with a platform to discuss our material on rhetoric. The title, *A Mathematician's Lament, How School Cheats Us out of Our Most Fascinating and Imaginative Art Form,* seems to suggest that something is wrong with our schools' approach to math. Needless to say he has a point of view and states it quite boldly. He wants to persuade us, and that makes for a good study in rhetoric.

Since Aristotle says that rhetoric is the "faculty of discerning in every case the available means of persuasion," we'll begin by seeing how well the author satisfies Aristotle's demands. First is his demand for ethos, the credibility of the speaker. In this case Paul Lockhart has the appropriate credentials for talking about math: a PhD and years of teaching at the college and high school level. He is not some crank who failed math and now has an ax to grind against established math authorities. To me he seemed to have good insight into the subject as well as a good amount of teaching experience.

Second is the issue of pathos, the emotional impact that an argument will have on the listeners. Clearly he wants this and probably attains it by means of some pretty strong language. "The mathematics curriculum doesn't need to be reformed, it needs to be *scrapped*." "Never was a wolf in sheep's clothing as insidious, nor a false friend as treacherous, as high school geometry." Pre-calculus is "a senseless bouillabaisse of disconnected topics." Math education is a "complete prescription for permanently disabling young minds" and "so the senseless tragedy known at 'mathematics education' continues, and only grows more indefensibly asinine and corrupt with each passing year." If someone were talking with me using that kind of language, I would say, "So tell me how you really feel."

I wonder what part of his readership he is trying to convince. He will most certainly engage the reader's emotions and get a response using that kind of language—and those quotes weren't even half of what he says. My suspicion is that he will inflame some, will gain a few disciples to his cause, and will cause a rebellion in those already disaffected by their high school math classes. I won't say it won't work, but I think it is the equivalent of merely shouting louder when someone doesn't understand your idea. Words like his betray his anger. I suspect that was what he wanted. As a rhetorical device anger can backfire.

Third is the component of logos, that which demonstrates his truths. I have no legitimate way to tell if his arguments were convincing. I got enough of his point to know that he thinks the entire math education process should be a lot different.

His biggest rhetorical flaw comes from Plato who believed that a good orator must know his audience, the different types of souls in the audience, and how to persuade them differently. His message comes across like a shotgun rather than a sniper. He blasts away with how he feels but seems to give no thought to addressing a particular audience. His would be a good message for educators but the way he presents the argument will likely inflame that group. I have the impression that he was more concerned with expressing his feelings with directness. He certainly did that.

Furthermore Plato thought oratory was the "art of enchanting the soul." Lockhart clearly wants to do that, but his argument is geared more toward intuitive, creative thinking. He believes math is an intuitive process and therefore he is being consistent with Plato; however, he will only appeal to those who are already creative, intuitive types. Some people actually like all the x, y, and z symbols, the

theorems, proofs, and abstractions of math instruction. I don't think his argument will affect those people in quite the same way. Rhetorically if he is trying to persuade, he is reaching a small segment of people.

I find that he and Quintilian touch each other at a particular tangent. Quintilian believed that oratory should be pursued because reason and speech are inherent in being human and therefore a good thing. Lockhart seems to believe that math is an intuitive process and must be pursued for the sheer enjoyment of discovery, for having fun. Both men decry a strictly utilitarian view of their subject matter. Admittedly that is less of a rhetorical device and more of an interesting observation about the respective discussion of each subject. Furthermore because Lockhart sees so much beauty in numbers and the field of mathematics, he might also fit in well with the Belle Letters Movement who saw beauty in words not merely as the means of communication.

As much as I appreciated his attempt to see math and math education in a different light, his intuitive approach did not appeal to me all that much, and I didn't expect to gain the sudden ability to understand math better from reading the book. Only time will tell whether his rhetorical skills will do more to inflame the old guard in educational circles or create a new generation of teachers who will ignore his inflammatory flourishes and actually make changes in the way math is taught.