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TOWARD A DEFINITION OF 'HUMANISTIC MATHEMATICS'

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Teachers of the so-called "humanities" have a good thing going for them. The very word "humanities" suggests that in a humanities class the student will become, I assume, a more compassionate person, a better citizen, and a wiser parent. Of course this is nonsense. My colleagues in the humanities departments have never struck me as more caring, more involved in improving the human condition, more empathetic with the downtrodden than my colleagues in, say, physics, chemistry or mathematics. Nor do they seem to get along with each other any better than do the scientists.

When you stop to think about it, why should they be expected to be finer people just because they have mastered counterpoint or the structure of a novel or the history of classical Athens? I don't see why, any more than the unique skills of a plumber or a carpenter provides a special insight into the human condition.

So, when I agreed to participate in the first "humanistic mathematics" conference, in Claremont, I was leery of the word "humanistic". It gave off pleasant connotations, but I was anxious to find out what it meant, especially in the context of mathematics. (What, after all, would be its antonym?) As it turned out, the conference proceeded quite well without ever stopping to define the key word in its description.

Since then, every so often, I have pondered the meaning of "humanistic mathematics". I've thought that it must be what was common to all the contrib-

uted talks at the conference, on such varied topics as teaching the nature of mathematics, the role of history in a mathematics course, or how to pose questions. This approach, while logically appealing, did not lead me to a definition.

Instead, I decided to capture the underlying mood of the meeting. There certainly was something that united those teachers who attended the conference. I believe that they wanted to influence their students in ways that go beyond just improving their mathematical skills. Ideally, when they prepare a lecture they give at least as much attention to what they expected their students to do afterwards as they do to what they themselves will do in class. They try to keep in mind that, at minimum, they want to improve their students' ability to think independently, and to communicate through both the spoken and the written word. Even at a research university they retain an active interest in teaching, even of undergraduates, even of freshmen and sophomores, even those who will not go on to graduate—level math, even those who are not math majors. They feel a responsibility to provide a liberal arts student an opportunity to appreciate the substance and beauty of mathematics.

What I am describing is "humanistic mathematics instruction", not "humanistic mathematics." (I don't think one can point to any particular theorem and say it is or is not humanistic.) The definition of course could be adjusted to fit other disciplines. So, even in the humanities we can find both humanistic and non—humanistic instruction.

Yet there is something about mathematics that makes it an especially suitable vehicle for humanistic instruction: the student need not lean on authority or received wisdom: every step can be checked and independent exploration can be carried out. This is not true of many disciplines, where the beginner must accept key assertions on faith for they depend on historical events which grow more remote each year or on experiments too complex or expensive to be performed for each class.

So it should not come as a surprise that a brass plaque fastened to a brick wall along the central quadrangle of the University of Virginia displays these words:

William Holding Echols, 1859-1934, Professor of Mathematics.

By precept and example he taught many generations of students with ruthless insistence that the supreme values are self respect, integrity of mind, contempt of fear and hatred of sham.

Professor Echols may well serve as a model of the humanistic teacher, who, without sacrificing the beauty or substance of his subject, sees it also as a means of developing qualities in students that will serve them after they graduate, even if they never see another theorem, proof, or algorithm.