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How To Let Go and Still Hold the Line

Although the demand for mathematics teachers with Ph.D.'s has greatly increased in recent years, the supply, contrary to the familiar economic law, has been diminishing. Enrollment in mathematics courses is growing much faster than total enrollment in college, with the greatest growth in advanced courses. At the same time, although the number of new Ph.D.'s turned out each year has also grown, with so many mathematicians going into government or industry, the number becoming teachers is not even enough to balance annual losses. This surprising situation was reported by Edwin Moise, of Harvard University, in the April issue of the American Mathematical Society's *Notices*. Moise was speaking for a special committee of mathematicians. What is also surprising is that the committee goes on to suggest that the remedy does not necessarily lie in redoing the entire value structure of American society, but in redoing some of the values entertained by the mathematical community.

To get a doctorate in mathematics, the candidate must now pass preliminary examinations and then write a dissertation offering some new and interesting mathematical proofs. The idea behind this procedure is that to teach mathematics you have to be a creative mathematician yourself. The committee questions this assumption. It suggests an alternative program of study in which the creative dissertation is replaced by "a scholarly dissertation which could be historical, critical, or philosophical," with history understood to include very recent history. Such research, it is claimed, would also be sensible preparation for effective teaching and would result in something of value to the mathematical community. To distinguish the new program from the traditional one, there would also be a new graduate degree in mathematics, the Doctor of Arts.

Official groups of the American Mathematical Society and of the Mathematical Association of America have approved these sentiments in principle, but not all mathematicians are so happy about the proposal. Some criticisms are expressed in a letter to the editor in the June issue of the *Notices*. One criticism is that there has not really been a study of why, with B.A.'s in mathematics comparatively plentiful, Ph.D.'s are so scarce, and that such a study might well show that the hurdle is not the dissertation but the preliminary examinations. A second criticism is that the introduction of a new program of study would mean the introduction of class distinctions among mathematicians, with the upper and lower classes regarding each other with condescension on the one side and envy on the other.

The proposal does have a certain appeal, however. In another field, no necessary connection is expected between being a good novelist and being a good teacher of literature. A key question about the proposal is whether its proponents really mean it when they say that the new kind of dissertation would be both preparation for teaching and a contribution to scholarship. If so, then why not accept the new dissertation but drop the idea of a new "Doctor of Arts" degree, and let the Ph.D. degree serve here as well? The number of additional teachers that would result is not known, but the idea would then seem quite worth pursuing. Differences in status we will always have with us. There are differences now regarding universities, supervisory professors, and dissertation topics. But neither these differences nor those between creative and scholarly work need be shouted from roof tops to be appreciated.—J.T.