to be involved in community development; for community developers looking for innovative ways to foster civic dialogue; and for educators and artists who are looking for critical and creative ways to reflect on and write about their work.

R.R.

THREE MAGIC LETTERS: GETTING TO PHD
by Michael T. Nettles and Catherine M. Millett.
Baltimore: Johns Hopkins Press, 2006. 329 pp. $42.00.

Three Magic Letters is the first major study of doctoral education since *In Pursuit of the PhD* (1992) by William G. Bowen and Neil Rudenstine. In *Letters,* Michael Nettles and Catherine Millet conducted the largest study of American doctoral students *during* their programs — a significant departure from the National Science Foundation's yearly Earned Doctorate Survey, which captures information only upon completion. The magnitude of this accomplishment cannot be overstated. Numerous challenges exist in studying doctoral education, including the focus of doctoral education within different departments of an institution; the wide differences among departments within the same discipline but at different institutions; the dynamic in which entering cohorts rarely complete their degrees together; and the unfortunate fact that few departments or even institutions collect consistent data on their doctoral programs or graduate students. Nettles and Millett overcame many of these challenges by systematically collecting and analyzing an extensive amount of data in order to provide an informative overview of doctoral education in the United States.

The authors administered a 28-page, 88-item survey to doctoral students in twenty-one institutions. These twenty-one doctoral-granting schools are among the top sixty U.S. institutions awarding doctorates. The institutions were purposefully picked to create a sample that was sufficiently diverse with regard to race/ethnicity, public or private institution, and full- and part-time status of students. With a 70 percent response rate, the sample consisted of 9,038 respondents from eleven disciplines, collapsing into six major fields: education, engineering, humanities (English and history), sciences (biological and physical sciences), mathematics, and social sciences (economics, political science, psychology, and sociology). The respondents were beyond their first year of study and were actively enrolled as students.

Nettles and Millett sought to understand how certain aspects of doctoral education may contribute to completion of the degree, and what the return may be on the investment of vast resources, both human and financial, by individuals as well as institutions. The outcome measures included financial outcomes (funding types), socialization (relationships with peers, mentors, and advisors), research productivity (presentations and publications), satis-

faction, and degree completion. The variables tested included background information (gender, race/ethnicity, parental SES, age, marital status, presence of children, household income), admissions criteria (selectivity of undergraduate institution, GRE scores, full- or part-time status, advanced degrees upon entry), graduate school experience (years in program, enrollment status), and career expectations.

Not surprising in a study of this size, the research produced numerous findings, only a few of which will be highlighted here. Nettles and Millet found that 65 percent of the students sampled carried no undergraduate debt upon beginning graduate school. With the rising loan indebtedness of undergraduates today, this finding is most troubling for expanding the pipeline to graduate education, as it may indicate that the affordability of undergraduate education is inextricably tied to the production of PhDs in the future. Mentoring, distinct from advising, is a working relationship in which a faculty member guides the student through a graduate program and onto degree completion. While this is an important component of graduate education, 30 percent of the sample reported not having a mentor. Furthermore, women and students of color tended to have mentors of their gender or their race/ethnicity. Given the paucity of women and faculty of color in certain fields, especially engineering, the absence of sufficient mentoring is of concern. This finding points to concrete action, specifically, improving mentoring mechanisms that departments can take to improve the graduate school experience and degree completion outcomes. Mentoring was tied to research production. Nettles and Millet found that African Americans and women were less productive in research, as indicated by presenting and publishing papers. The authors concluded that the lack of sufficient mentors negatively impacted these groups, especially in the sciences and engineering.

The study also looked specifically at graduate students in education, who comprised approximately 27 percent of the sample. Unlike students in engineering, the sciences, and math, education students generally receive teaching assistantships rather than research assistantships. The book's findings seemed to indicate that teaching assistantships positively affected peer and faculty interactions. Because they may lead to opportunities to publishing articles, these assistantships also appeared to positively affect research productivity. As previously stated, Nettles and Millet found that having a mentor was also positively related to research productivity, as well as to degree completion. While education students with mentors experienced outcomes associated with future academic careers, only 38 percent of education graduate students expected to pursue faculty positions or postdoctoral positions upon degree completion.

Previous research has documented attrition rates in graduate programs ranging from 20 percent to as high as 70 percent. Bowen and Rudenstine even described one department as having 100 percent attrition over the course of a decade. These kinds of statistics are unacceptable at any other lev-

el of education and need to be addressed by institutions of higher learning. The findings presented in *The Magic Three Letters* provide some clear ways to improve graduate education. When considered in conjunction with Barbara Lovitts's 2001 publication, *Leaving the Ivory Tower: The Causes and Consequences of Departure from Doctoral Study*, graduate program directors, faculty advisors, and faculty mentors ought to take a moment to consider the implications small changes can have on doctoral education. Students who have committed themselves to graduate education and have clearly crossed every hurdle of the education system deserve better. *Three Magic Letters* may help lead the way.

H.R.-F.