

0062

the American Scholar

SPRING 1990

PRICE \$5.50

The Ph.D. Squid
THEODORE ZIOLKOWSKI

Fields of Broken Dreams
GEORGE V. HIGGINS

Griffith

I Think; Therefore I Thank
JUDITH MARTIN and GUNTHER S. STENT

The Great War and Paul Fussell's Memory
DAN PINCK

The Torment of D. W. Griffith
KENNETH S. LYNN

Scholarship Under Glasnost
THEOPHILUS C. PROUSIS

Robert Maynard Hutchins
EDWARD SHILS

The Ph.D. Squid

THEODORE ZIOLKOWSKI

ACCORDING TO THE *Summary Report 1987: Doctorate Recipients from United States Universities*, published by the National Research Council (1989), 32,278 new Ph.D.'s were awarded in 1987. Forty-four percent of those doctorates were in fields of science and engineering: 18 percent in the life sciences, 15 percent in the physical sciences, and 11 percent in engineering. Other large groups came from education (20 percent) and the social sciences (18 percent). The humanities and professional fields (business administration, social work, theology, and others) accounted for 11 percent and 7 percent respectively. While this distribution by fields held no surprises, a special section on time-to-degree highlighted some disturbing trends. First, the median time spent in completing a Ph.D. has been rising steadily for twenty years to its present 10.4 years (including 6.9 years of registered study). But the time required to proceed from a baccalaureate to a doctorate also varies significantly from field to field: it takes appreciably longer to get a Ph.D. in the social sciences (7.2 years of registered time) and the humanities (8.4 years) than in the sciences and engineering, all of which fall well below the average: engineering (5.8 years), physical sciences (6.0 years), and life sciences (6.5 years).

What do these figures mean, and why should we care? We should care, warn leaders in education, industry, and government, because the projected need for highly trained specialists in most of the specified fields cannot be satisfied in the 1990s by the current numbers of Ph.D.'s, which have been fairly stable for the past fifteen years. To meet increasing national and world requirements, we must attract more students into our graduate schools, and we must get them through more efficiently. What the figures mean, however, is another matter altogether, one that can be explained more satisfactorily by history than by statistical analysis.

At the beginning of this century many people in the United States

❖ THEODORE ZIOLKOWSKI, professor of comparative literature and dean of the graduate school at Princeton University, is the author of, among other books, *Fictional Transfigurations of Jesus*, *Varieties of Literary Thematics*, and *German Romanticism and Its Institutions*.

were worried that there would be too many Ph.D.'s, not too few. In 1903 William James published an article deploring "the increasing hold of the Ph.D. Octopus upon American life." James's powerful metaphor of the Octopus has long dominated discussions of the Ph.D. in the United States, arousing archetypal images of a dark brooding presence strangling our students, our campuses, and indeed the intellectual life of the nation in its tentacles. (The image may have occurred to James because in 1899, much of which he spent in England, an unusual plague of octopi off the southern coast of England attracted a good deal of public attention.) Forty years later, in a reprise of James's piece (in *Teacher in America*, 1945), Jacques Barzun observed that "James was inspired when he spoke of an octopus: that describes its flabbiness, its ubiquity, and the squirting of ink which is its main reflex." According to Barzun, nothing had changed since the turn of the century. "The octopus has the young teacher in its grip and does not let him go." A "Ph.D. mania" has taken over the country; yet, Barzun claims, "After seeing degree holders and reading their theses, it is hard to say what the title shows." In a thorough and judicious study, *Graduate Education in the United States* (1960), Bernard Berelson stated that James "was concerned lest 'The Ph.D. Octopus' crush the true spirit of learning in the universities" and quoted James's essay at length because his "observations and comments reveal so well the timelessness of some issues of graduate study." To this day "the Ph.D. Octopus" is still invoked formulaically in discussions of graduate education and national life.

James, however, had in mind no such broad target as "Ph.D. mania" or "the true spirit of learning." He composed his essay with a very specific aim—to call attention to misuse of the Ph.D. by what he labeled "the Doctor-Monopoly in teaching." Writing toward the end of the period when educational leaders like Daniel Coit Gilman at Johns Hopkins, G. Stanley Hall at Clark, and Charles W. Eliot at Harvard were striving to create the first major research universities in the United States, he felt that the degree was in danger of being reduced to "a mere advertising resource," especially by the presidents and trustees of smaller institutions seeking to compensate for the lack of distinction in their faculties. Its most immediate effect was to keep many qualified but un-doctored teachers out of our colleges. "Will anyone pretend for a moment," James asked, "that the doctor's degree is a guarantee that its possessor will be successful as a teacher?"

James was voicing a concern that troubled a good many educators around the turn of the century. Five years later James's Harvard colleague, Irving Babbitt, in *Literature and the American College* (1908), bemoaned "the fetish worship of the doctor's degree on the part of certain college presidents." Babbitt believed that "this acceptance of

the doctor's degree as proof of fitness for a chair of literature . . . is doing more than any one thing to dehumanize literary study and fix on our colleges a philological despotism." At Princeton, the dean of the graduate school himself, Andrew Fleming West, expressed his regret that the Ph.D. was becoming "an employment badge like a 'union card'" (in *The Graduate College of Princeton*, 1913).

The controversy about the value of a Ph.D. for a career in college teaching is therefore a classic one, extending from James by way of Babbitt and West to Barzun and beyond—down to today's disgruntled teaching assistant who looks around to see that he or she is doing most of the work of instruction at many universities while the highly paid professors who already have Ph.D.'s are teaching only rarefied graduate seminars, if teaching at all. (To suggest the extent of the concern today, a two-day walkout of teaching assistants on the Berkeley campus of the University of California in the spring of 1989 caused the cancellation of nearly 75 percent of classes.)

For all James's concern about the relevance of a Ph.D. to college teaching, he—an M.D. and scientist who had trained graduate students in physiology, psychology, and philosophy at Harvard, among them G. Stanley Hall and W. E. B. Du Bois—did not question the value of the Ph.D. as a degree certifying ability in research. "Our higher degrees were instituted for the laudable purpose of stimulating scholarship, especially in the form of 'original research.'" While he recognized the dangers of institutionalization on a large scale—"to develop a tyrannical Machine with unforeseen powers of exclusion and corruption"—he supported both the Ph.D. as a degree and the graduate school as an institution: "It is well for a country to have research in abundance, and our graduate schools do but apply a normal psychological spur."

But other factors are involved here. When James wrote his essay, he was a tenured professor on the point of retirement following a distinguished career. He did not feel personally threatened by the research scholars with their Ph.D.'s nor, as a scientist who had studied extensively abroad, ill at ease with German scientific methods. It is no accident that many of the presidents who stimulated graduate education in this country were themselves scientists who had also studied in Germany: the physical geographer Gilman, the chemist Eliot, and the psychologist Hall. From the very start, the Ph.D. was largely a degree for scientists, intended, as the Yale faculty put it in 1860, "to enable us to retain in this country many young men, and especially students of science, who now resort to German universities for advantages of study no greater than we are able to afford." The proportions of degrees awarded over the years show that this tactic was successful. By 1920, the physical and biological sciences accounted for more than half of the

Ph.D.'s awarded in the United States. The social sciences made haste to emulate the sciences through the quantification of their methods, as did the humanities through a turn from appreciation to methodological and historical rigor.

The scientists were generally content with the new degree, whose requirements celebrated positivistic training and research. The principal opponents of the Ph.D. were humanists, whose work did not lend itself so smoothly to scientific methods. Babbitt, still an untenured assistant professor with a master's degree when he published *Literature and the American College*, felt distinctly menaced by the Ph.D.'s with whom President Eliot was staffing Harvard's departments. Not content with James's pragmatic argument against "the Doctor-Monopoly in teaching," Babbitt attacked the degree itself on the moral grounds that "the work that leads to a doctor's degree is a constant temptation to sacrifice one's growth as a man to one's growth as a specialist." The classicist Andrew Fleming West, less defensive than Babbitt although he also had no doctorate, sought to combat what he regarded as the "unenlightened specialization" of the new breed by creating at Princeton his Graduate College, a residence for a community of graduate students who, living together, would be infected by "the contagion of knowledge."

Babbitt—unlike James, who valued his scholarly contacts with Germany—was also afflicted by a rabid anti-Germanism, which led him to regard the Ph.D. as a "German incubus," to rail against "German doctors," and to claim that "the uncritical adoption of German methods is one of the chief obstacles to a humanistic revival." Babbitt almost certainly did not realize that he was recapitulating a debate whose terms had been exhaustively explored by German thinkers ever since Schiller, in his inaugural address at the University of Jena in 1789, made the classic distinction between *Brotgelehrte*, the specialists who want to learn nothing that would distract them from the fields in which they intend to earn their living, and the "philosophical minds," who see knowledge as a whole and integrate their particular interests into that unity. Babbitt went well beyond James in challenging the worth of the Ph.D. altogether, and he has been followed by others who, often unwittingly but nonetheless wrongly, attribute that humanist disdain of the degree itself to James.

In the realpolitik of an age where the Ph.D. is awarded in fields like business administration, agriculture, home economics, physical education, and recreation, it is naive to believe that what James called "our three magic letters" certify anything resembling the humanist notion of "culture." Today American universities, including the best ones, award the Ph.D. to foreign students who can barely speak English, to U.S. students who cannot understand a foreign language, to humanists who

have no grasp of mathematical or statistical or scientific reasoning, and to scientists and engineers who can barely construct a coherent paragraph of English prose. Graduate schools cannot aspire to compensate for the educational and cultural deficiencies that students have brought along from secondary schools and undergraduate colleges. The Ph.D. does not pretend to certify a command of the calculus or Latin or U.S. history or French literature that a student should have obtained earlier in life. The role of the university as a cultural agent in our society has declined proportionately as the university has become less unified in its vision and its constituency and more of what Clark Kerr described as a multiversity, catering to students from the most varied backgrounds and career interests. In such an educational system, the Ph.D. can be no more—but should also be no less—than one well-defined step in the process leading from college through graduate school and into postdoctoral careers, whether within the university or outside.

What the Ph.D. does certify, and usually quite creditably, is a degree of competence regarding the organization and methods of a general field of study (for example, history or physics) and a solid command of the chosen field of specialization (for example, German history of the sixteenth century or string theory). It is a matter of expectations: you do not expect the holder of a new driver's license for passenger cars to be able to handle an ox cart or an eighteen-wheeler. But you would reasonably expect him to understand the historical link between the ox cart and the automobile as well as the theoretical analogy between steering the passenger vehicle and the truck. However, expertise in these road vehicles does not imply a similar skill with boats or aircraft. Whether the recipient of a Ph.D. is a brilliant generalist or a tedious nerd is essentially irrelevant to the abilities certified by the graduate program with its degree.

The same applies to the pedagogical qualifications of the doctorate. The newly certified Ph.D., like his graduate school professor, may be dazzling in the classroom or an unhappy tribulation for his students. (Today, many graduate students, especially in the humanities and social sciences, have too much, not too little, teaching experience by the time they receive their degrees—unvaried, unsupervised, and poorly remunerated experience.) But those abilities are not guaranteed by the degree. None of these characteristics stand in any necessary relationship to the other. The prodigiously learned generalist may be a prodigious bore, while the specialist with no interests beyond the narrow bounds of his field may, through his very obsession, captivate his students. In sum, the terms of the debate as established by James and Babbitt have become largely irrelevant to current discussions regarding the Ph.D. This does not mean that those concerns are unimportant—just that they

are misplaced if addressed to the Ph.D. per se. As desirable as a well-rounded knowledge of one's field of specialization may be, and as important as it is to have excellent teachers in college classrooms, those problems cannot be solved by the Ph.D. alone, which exists—as James well knew—for related but distinctly different purposes. Discussion about reforms of the degree should take care not to discard what is good and distinctive about the Ph.D. by seeking to make it serve too many purposes.

For better or worse, the Ph.D. has increasingly been regarded as desirable by American society—even in fields where such certification might be thought irrelevant, such as music composition. (I note one amusing exception: I was recently petitioned—unavailingly—by a graduate student in physics to change the title of his Princeton degree from Doctor of Philosophy to Doctor of Science on the grounds that, in the Soviet Union where he was born, “the very word ‘philosophy’ came to mean the universally despised Marxist trash forcibly hammered into every head.”)

In 1903, James wrote that “graduate schools still are something of a novelty, and higher diplomas something of a rarity.” In fact only 337 Ph.D.'s were awarded in the United States that year, and (according to the National Academy of Sciences' 1978 survey *A Century of Doctorates*) barely 4,500 altogether had been bestowed since 1875. But the situation changed rapidly. The number of Ph.D.'s has roughly doubled each decade in this century—at a rate considerably more rapid than the population as a whole—bringing the annual total today to the low thirty thousands, where it has stabilized since the early 1970s. It has been estimated that, by 1984, half of one percent of the U.S. population held a doctorate.

The Ph.D. has not just multiplied, it has also spread. Almost 90 percent of the doctorates awarded in 1903 were concentrated in the fourteen founding members of the Association of American Universities, mainly though not entirely on the East Coast. The 33,456 Ph.D.'s in 1987–88 were granted by some 350 institutions. The dispersal of universities now awarding the degree is indicated by the fact that today even the top forty doctorate-granting institutions (beginning with the flagship campuses of the state universities of California, Wisconsin, Illinois, Texas, and Michigan) accounted for not quite half of them. The Ph.D. Octopus is well and thriving. Indeed, for the contemporary situation the generally small, timid octopus, which tends to confine itself mainly to coastal waters, provides an image less compelling than another cephalopod: the large, aggressive, and highly mobile squid with two prehensile arms in addition to its eight grasping tentacles.

Today most colleges and universities still decorate their catalogues

with titles, which, in James's words, "bespangle the page as if they were sprinkled over it from a pepper caster," and it is not likely that their titular ambitions will wane. It would confirm James's worst fears to know that the widely consulted *Peterson's Guide to Four-Year Colleges* routinely cites the percentage of Ph.D.'s on the faculty of each institution listed. Despite the huge increase in Ph.D.'s, the demand still outstrips the supply. The calamari, to give the squid its gastronomic designation, is regarded as a delicacy—and not just in those exotic parts of the world that send their students in increasing numbers to pursue their graduate studies in our universities, but also in the gourmet restaurants favored by the expense-account representatives of the non-academic world that is bidding for larger and larger shares of the Ph.D. market.

When James and Babbitt were writing, they had in mind principally the effect that the influx of Ph.D.'s would have on the American college as they knew it. But the Ph.D. is no longer primarily a teaching degree—especially in the sciences and engineering. Only half of today's Ph.D.'s are accepting academic employment, as compared to almost 60 percent just ten years ago. In 1987, according to the *Summary Report*, 19 percent of new Ph.D.'s went directly into industry, 11 percent into government, and more than 20 percent into other sectors (for example, elementary and secondary schools, nonprofit foundations, self-employment). The taste for squid is spreading, to the extent that some of the rarer academic varieties are virtually being pursued with drift nets. As surveys by the American Council for Education have recently shown, colleges and universities are already experiencing increasing difficulties in their efforts to identify and recruit faculty members, especially in business, computer science, mathematics, economics, the natural sciences, and the health professions. A major report by William G. Bowen and Julie Ann Sosa, *Prospects for Faculty in the Arts & Sciences* (1989), projects an increasing discrepancy between the supply and the demand in many other disciplines in the coming decades.

This shortage results from several factors. First, despite what Bowen and Sosa identify as the striking "flight from the arts and sciences" during the seventies—from 40 percent of total degrees conferred in 1970–71 to only one-quarter in 1984–85—undergraduate enrollments in those fields have recently leveled off and are expected to increase slightly in the 1990s (in response to the slackening interest in engineering among undergraduates, the increasing emphasis on the liberal arts not only in liberal arts colleges but also at such technological institutions as MIT, and the public concern with questions of ethics and values). Second, Bowen and Sosa point out that the anticipated steady supply in the number of new Ph.D.'s will not suffice to replenish faculty ranks, although they demonstrate (contrary to popular opinion) that there will

be no dramatic "bunching" of faculty retirements in the nineties and that the retirements will have varying effects in different fields and types of institution. (In fact, some universities are already beginning to "stockpile" Ph.D.'s against that anticipated imbalance of supply and demand.) Third, the proportion of U.S. citizens receiving American Ph.D.'s has been declining—from more than 82 percent in 1977 to only 70 percent in 1987. While many foreign students plan to remain in this country following their studies, the U.S. will face increasingly strong competition for our Ph.D.'s from abroad as other countries intensify their investments in science and technology. Finally, the steady growth of big science—in federal and industrial laboratories as well as in universities—will absorb more and more highly trained researchers in such fields as superconductivity, space exploration, and medical research. Even though James's gentle octopus has metamorphosed itself into the largest invertebrate known to man, the supply is still not adequate to meet the increasingly ravenous demand from institutions and nations competing among themselves for Ph.D.'s. In the light of this problem, the debate over specialization versus generalization, or teaching versus research, seems rather quaint.

How has this situation developed? Since 1960 the number of Ph.D.'s awarded annually in the United States has more than tripled, from 9,733 to a total last year of 33,456. That figure might suggest that students are entering graduate school in adequate numbers to meet the demand. But most of the growth had taken place by 1973, when the system peaked. The growth then stopped because, for a variety of reasons, the demand for Ph.D.'s both within and without the universities declined. Universities, which had filled their ranks with new and young professors in the 1960s in response to the matriculation of the baby-boom generation, realized that they had enough, and in some fields too many, teachers for the smaller birth cohorts reaching college age in the late seventies and eighties. In some fields—specifically, the oil and aerospace industries—economic factors caused a decline in the demand for certain kinds of engineers and scientists. At the same time, starting salaries in other fields began to reach such heights that college graduates accepted jobs immediately after school or entered more immediately gratifying two-year M.B.A. programs with a quicker payoff. For these reasons, and despite certain social achievements—for example, the proportion of women increased to its current 35 percent of American graduate students—the proportion of U.S. men declined steadily. To keep the number of graduate students at the minimal level required to satisfy university teaching and research needs—especially in research-intensive fields of science and engineering—universities began recruiting widely abroad. As a result, in 1987 only 42 percent of the Ph.D.'s in

engineering were awarded to U.S. citizens and only 61 percent in the physical sciences.

The current national graduate population of about 1.5 million students might still seem to be an adequate pool in which to cultivate squid. But most of those students are in professional or terminal master's programs. Far from all students who enter a doctoral program actually persevere to earn the degree. As many as 70 percent of students who pass their general examinations fail, for one reason or another, to complete the degree. Attrition is notoriously difficult to measure because both the definition and the data are so vague. Did the student drop out or did he or she switch fields or institutions? Did the student drop out for good or only long enough to earn some money or to have a child or to travel for purposes related to education? Universities have reliable statistics on students who received their Ph.D.'s because they are required to fill out a national survey form. But those who never finish rarely pause to explain why they dropped out.

Even if substantial numbers of these graduate students intended to stop with a master's degree or have made a happy transition into another subject or into a professional school, there are still enough disenchanting A.B.D.'s ("All But Dissertation") out there—concentrated in places like Cambridge, Morningside Heights, Hyde Park, Berkeley, and other large academic communities but visible everywhere—to have created a limbo of aging graduate students, an unhappy intellectual proletariat with its own mystique. From time to time one sees on resumés the designation "A.B.D.," as though it represented a degree actually received. The phenomenon of the A.B.D. is by no means peculiar to the late twentieth century. Two hundred years ago Johann Wolfgang Goethe provided a precise model of the type. As a law student at the University of Strasbourg in 1770–71, Goethe, as undisciplined as he was brilliant, wasted his first year in "extracurricular activities" and then, as the deadline approached, hastily patched together a dissertation, which was straightway rejected by his professors. On the basis of an oral examination he received a license to practice law—but no doctorate. Of course, a Ph.D. is not necessary for success in life, as William James well knew; Goethe went on to do quite nicely for himself, acting among other capacities as minister for higher education in the duchy of Saxe-Weimar. Moreover, his revenge on the institution was sublime: shortly after the rejection, he wrote the sections of *Faust* in which the university and its practices are wickedly satirized by Mephistopheles posing as a professor.

By 1903, what James called "this new class of American social failures" had begun to emerge in this country. His most poignant words are reserved for these persons whom he regarded as "the institution's victims."

THE AMERICAN SCHOLAR

Men without marked originality or native force, but fond of truth and especially of books and study, ambitious of reward and recognition, poor often, and needing a degree to get a teaching position, weak in the eyes of their examiners,—among these we find the veritable *chair à canon* of the wars of learning, the unfit in the academic struggle for existence.

Forty years later Barzun classified the species: "Instructors aged forty-five and fifty are found treading the mill at the point where they began. . . . They find other posts, good, bad, or indifferent, but never forget the cruel Alma Mater that took their best years and made them start anew in mid-career." Circumstances have hardly improved. A few years ago a greeting card was circulating in university circles that featured a miserable creature with a hangdog expression under the inscription: "Meet the Bitterest Person in the World: The Grad School Dropout." From time to time the *New York Times* and the *Chronicle of Higher Education* print letters or op-ed pieces in which disgruntled A.B.D.'s savage the institutions with which they have been unproductively associated for all too many years.

Ultimately, both the recruitment of talented new graduate students and attrition among current graduate students are tied to an ominous third factor: time-to-degree. The squid is not just larger than the octopus: it also has two arms that can reach out farther than the eight tentacles—the better to hold on longer to the student once seized in its embrace. If any generalization about time-to-degree is possible, it is that it tends to increase. The *Summary Report 1987* calculated that time to the Ph.D. has increased by about 30 percent over the last twenty years. While time-to-degree varies appreciably from field to field and while it can be measured in different ways—either the total lapsed time between the baccalaureate and the doctorate (what the statisticians call TTD) or just the actual period of registered graduate study (RTD)—the time spent in completing the Ph.D. has been rising steadily, from 5.4 years in 1967 to 6.9 registered years in 1987 or from 8.1 years in total time to 10.4 years. Put another way, the average graduate student is currently well over thirty (actually 33.6 years old) and has spent close to twelve years in college and graduate school by the time he or she finally receives the degree that entitles him or her to begin any career that specifies the Ph.D. as its prerequisite. They are just entering the labor market at a point when many of their contemporaries in other professions are beginning to calculate their retirement benefits.

This has not always been the case. William James may have turned his elegant irony on the Ph.D. as a prerequisite for college teaching, but he did not question the time required to achieve it. In the example James cites at the beginning of his essay—of the brilliant student of philosophy who had been working as a writer for three years and suddenly found

that he needed a Ph.D. to take a position in English literature offered at a smaller institution—the young man spent several weeks writing a thesis on metaphysics and reviewing his studies “so as to pass our formidable ordeals.” The committee could not accept the hastily assembled work: “brilliance and originality by themselves won’t save a thesis for the doctorate; it must also exhibit a heavy technical apparatus of learning.” But, unlike Goethe, James’s protégé was urged to “pad out” the thesis properly and to resubmit it, and within a year he was able to fulfill all the requirements for the degree. While the overall time-to-degree was fairly lengthy (since the years of free-lance writing would have been counted), the period of registered graduate study was quite short—or, in any case, not significantly extended by the year needed to “pad out” an acceptable dissertation.

James’s example is representative for that period. When Yale decided in 1860 to offer the doctorate, the requirements were simple: at least two years of study on campus past the bachelor’s degree, a satisfactory final examination, and a thesis giving evidence of high attainment. The first three American Ph.D.’s were in due course awarded at Yale in 1861 after just two years of post-baccalaureate study. In the decades following the founding of the first American “research university” at Johns Hopkins in 1876 and despite the increasing proliferation of “the Ph.D. Octopus,” the doctorate remained a short-term degree, normally requiring only two or, at most, three years of post-graduate study. These expectations were shared by the students. At the founding meeting of the Federation of Graduate Clubs in 1896, the representatives from various universities recommended that the minimum requirements for the Ph.D. should be two years of resident graduate study, a general examination, and a thesis. The establishment of national organizations beginning around 1900 led to efforts to standardize the degree. In 1908 the National Association of State Universities and in 1916 the Association of American Universities proposed that the period of post-graduate study should ideally be three years.

The American conception of the Ph.D. has remained remarkably constant throughout most of the century. In 1964 the Association of Graduate Schools and the Council of Graduate Schools issued a joint statement summarizing their view of the normal course of study leading to the doctorate: a year or two of lectures and seminars followed by a general examination and a dissertation. The entire course of study should normally involve no more than three or, at most, four years beyond the baccalaureate. The four-year norm has been affirmed by most writers who have analyzed the situation: for example, Bernard Berelson in *Graduate Education in the United States* (1960) and Stephen H. Spurr in *Academic Degree Structures: Innovative Approaches* (1970).

While most graduate deans have striven quixotically to maintain the ideal of the four-year Ph.D., reality has veered sharply away. Indeed, Spurr calculated that only 12 percent of graduate students in 1970 were completing their Ph.D.'s within four years of the baccalaureate. The available evidence (in a 1963 NRC survey, *Doctorate Production in United States Universities, 1920-1962*) suggests that the average total time-to-degree for the 562 students receiving their Ph.D.'s in 1920 was 7.7 years and that by 1960 it had increased to 10.4 years. The data show certain variations. Already in 1920 the pattern was evident that prevails today: time-to-degree was shortest in the physical sciences and the life sciences, the fields in which more than half of the degrees were awarded; average in the social sciences; and appreciably longer in the humanities. All fields showed a deviation downward from the trajectory during World War II (probably as a result of accelerated wartime programs) and again during the early 1950s (probably as a result of several vast postwar fellowship programs). During the 1960s the total time-to-degree fell slightly because support possibilities were very good and the war in Vietnam made it attractive for students to maintain continuous enrollment. Yet during that same period—and probably for the same reasons—the registered time-to-degree increased steadily, from 5.2 years in 1958-60 to 5.4 years in 1967 and, without a break in the curve, to 6.9 years in 1987. (The spectrum is identical with that in 1920, ranging from the shortest degree time in the physical sciences to the lengthiest in the humanities.)

Various factors have been cited to account for the lengthening time-to-degree in our doctoral programs. In some fields—engineering or business and management, for example—the candidate is often expected to gain a certain amount of practical experience in “the real world” before entering, or completing, a graduate program; but the period of registered study is not seriously extended. Another factor cited for the statistical increase in time-to-degree is the rise in the number of part-time students in graduate schools. Is it the case that full-time students are finishing in the same time while the statistics are changed by the part-time students who take longer? (While I have no national data, at Princeton time-to-degree has been creeping gradually upward—from 5.4 years in 1986-87 to 5.6 years in 1987-88 and 5.9 years in 1988-89—even though the Graduate School admits only full-time students and strives mightily to maintain a reasonable time-to-degree.)

A third factor involves type of support. According to the *Summary Report 1987*, students with fellowships or research assistantships completed their degrees significantly faster than those who supported themselves with their own earnings or with family support or loans. (But the report has no way of taking into account the fact that students may

receive fellowships because they are judged to be more capable—and therefore quicker to the degree—than those who receive no such award.) The amount of time spent teaching is another factor that varies from field to field. While teaching assistants finished in 6.6 years—that is, more slowly than those on fellowships and research assistantships but still well below the overall average—in those fields where teaching is most common, notably in the humanities, students who teach require 7.9 years to finish. (But the question still remains: do these students take longer to finish their work because they are teaching more, or are they teaching more because they need longer to finish their work?) Especially in the sciences, some professors also hold on to graduate students who have proved to be integral to a continuing research project. Finally, despite all the myths about the misery of A.B.D. status, some graduate students seem to enjoy the way of life—or at least prefer it to the uncertainties of the job market or the relegation to what they consider to be less desirable locations or institutions. The *ewiger Student* seems to have emigrated to this country from Germany along with the Ph.D. degree.

All of these considerations are less important than changes in disciplinary expectations. Something can be done, nationally and locally, about graduate student support, about part-time versus full-time study, about teaching demands, about exploitation of research assistants, and about other external factors. Disciplinary expectations, on the other hand, can be transformed only from within the individual departments. Changes here can have immediate results independent of such external factors as financial support or the job market.

Compared to the undergraduate curriculum, which is determined by the faculty as a whole and the institution's image of itself, graduate curricula are set almost exclusively by individual departments according to the expectations of the discipline (for example, the need for competence in Latin or in statistics, for archival research or the use of scientific equipment at distant locations). The graduate faculty as a whole may set certain minimal requirements: for example, at least one year of residence or a certain number of courses, a successfully passed general examination, and a thesis. But the substance of the degree is determined almost wholly by the department. Here matters have changed little since the days of William James, who noted among his colleagues "two antagonistic passions, one for multiplying as much as possible the annual output of doctors, the other for raising the standard of difficulty in passing, so that the Ph.D. of the special institution shall carry a higher blaze of distinction than it does elsewhere." These antagonistic passions manifest themselves today in pressures with which every graduate dean is familiar: to increase the number of graduate students in every

department while, at the same time, extending the expectations (and the time) for the degree.

Higher expectations for degree candidates involve the material to be mastered in the early phase of graduate study, with the result that the date of the general examination has been pushed subtly back in some departments, especially in the humanities. But the very designation "A.B.D." suggests that the central problem is located mainly in the period following the examination, when the candidate is looking for a topic, doing research, and writing the thesis. Sometimes attenuation is justified. In some fields time-consuming fieldwork is a prerequisite for adequate professional training. The ecologist needs to be in Africa when the zebras are mating, the plant biologist in South America when the trees are fruiting, or the anthropologist in Sri Lanka long enough to win the confidence of the local population. In others, the student needs to spend months in archives or museums or foreign libraries collecting material. But if the student has been thoughtfully advised and steered to a topic that is not unrealistically large or exotic, then even that research away from campus should not require substantially more time than library and laboratory work on the home campus.

It is not without significance that time-to-degree almost precisely parallels the average length of dissertations by field. From 1920 to the present, total time-to-degree has consistently ranged from a low point in the physical sciences by way of engineering and the life sciences to the social sciences and professional fields, with its peak in the humanities. According to the survey upon which Bernard Berelson based his study, the length of dissertations accepted in 1957-58 (by median number of pages) extended from the physical sciences (105 pages) and life sciences (108 pages), by way of engineering (136 pages) and the professional fields (171 pages), to the social sciences (226 pages) and the humanities (285 pages). There are of course many local variations. The often mammoth dissertations in history and political science (more than 500 pages) are balanced by shorter ones in sociology and economics to produce an average in the social sciences that is slightly below the average in the humanities. Concerns about these problems have become so widespread that the Council of Graduate Schools in 1989 appointed a task force to study "The Role and Nature of the Doctoral Dissertation."

Bulk has not always been a prerequisite in humanities dissertations. When James Morris Whiton qualified for one of the first three Yale Ph.D.'s in 1861, he submitted a six-page handwritten thesis in Latin on the proverb *Brevis vita, ars longa*—a topic that might strike today's A.B.D.'s as sadly prophetic. The young philosopher that James cites wrote his dissertation in only a few weeks, although he needed another year to "pad it out" with scholarly apparatus. By 1968, Don Cameron

Allen, in a study on the Ph.D. in English and American literature, estimated that 53 percent of the dissertations in the field came to between 151 and 300 pages, another 32 percent ranged from 301 to 500 pages, and 6 percent amounted to 500 pages or more. What's going on here?

James and Babbitt were both right. The Ph.D., as it was imported into the United States from Germany during the heyday of positivism, was neither a teaching certificate (as James pointed out) nor a cachet of culture (as Babbitt stressed). It was essentially a badge of research competence in the sciences, introduced into this country by presidents who were German-trained scientists and monitored for the past century by graduate-school deans who have come preponderantly from fields of science or engineering. (About two-thirds of the fifty-eight deans currently representing their institutions in the Association of Graduate Schools are scientists or engineers: at many universities, moreover, the dean of the graduate school serves concurrently as dean or vice-president or director of research.) For this reason, the worries about the degree have come principally from the humanists—not from the scientists and engineers, who have been generally quite content. (Berelson reported that 64 percent of physicists and 59 percent of mathematicians described the current state of their discipline as “very satisfactory,” as opposed to 19 percent in history and 10 percent in English. The level of satisfaction was lowest—6 percent—in the field with the longest average dissertations, political science.)

Why should this be so? Scientists and engineers generally have a keen sense of the state of the art, a consensus regarding the problems that need to be addressed at any given time. Moreover, they have been resourceful over the years in adapting the requirements of the Ph.D. to the needs and practices of their various disciplines. In most sciences the graduate student rapidly becomes affiliated with a group or a laboratory working on a specific problem; the dissertation emerges from, or as a component of, the group's work. The professor often has a personal stake in seeing that piece of the project done competently and expeditiously; otherwise it could delay or jeopardize the entire project. What most dissertations of this sort constitute, to be sure, is not an “original” piece of research, but rather—and perhaps more important—a “contribution” to knowledge certifying the ability to carry out research according to the current standards of the discipline. Accordingly, the “dissertation” is increasingly no longer a monograph in the traditional sense of the word but a presentation according to the publication practices in the field: it often includes material already presented at conferences and published by the candidate and his or her research group. The Ph.D. thus earned does not attest the pedagogical abilities or the cultural sophistication or

the emotional maturity of the candidate; but it does certify that the degree holder can assume a place smoothly and productively in research groups on other campuses or in non-academic laboratories.

Some social scientists and most humanists bring quite different expectations to the degree. Many regard graduate school not simply as the place to acquire a certain level of knowledge and proficiency in a field but as an open-ended status where the aspiring Ph.D. can sit and "mellow" (like a wine?), "ripen" (like a cheese?), and "grow" (like a vegetable?)—the organic metaphors flourish in the prose of departments seeking more time and support for their students. These expectations were explicit in Irving Babbitt's opposition of Germanic "specialization" to the more humane "growth as a man." But they are still all too often implicit today in the expectations of departments interviewing candidates for their positions. How often is the gifted scholar, who has worked hard to complete the degree in a reasonably short time, passed over for the more "mature" candidate, who has acquired years of teaching experience while laboriously grinding out his or her four hundred pages? In the sciences, new Ph.D.'s are expected to mature in the post-doctoral positions that have there become the norm. But in the humanities and some of the social sciences this process of maturation is increasingly calculated into the degree expectations. They not only want squid—they want mature squid whose plumpness has been induced by hormones! The correlation between time-to-degree and dissertation length makes the skeptical dean sometimes suspect that the dissertation is long because the "ripening" time needs to be filled out, and not vice-versa.

To look at it another way, American humanists and social scientists are increasingly making the same demands upon the Ph.D. that are fulfilled in Germany by the post-doctoral *Habilitationsschrift* or in France by the *thèse d'état*—that is, a major piece of post-doctoral research carried out by a candidate who is already employed as a teacher. Instead of regarding the degree as the beginning of a career—as the certification that the degree holder is now ready to enter the first level of the profession as a teacher and as a scholar—many colleges and universities choose to regard it as proof that the well-ripened recipient has dutifully churned out four hundred pages of carefully documented, though often dull, prose; published several forgettable papers; and taught the same elementary courses many times over. These well-cured Ph.D.'s, in turn, place a burden on the system by occupying the places, and the support, that might otherwise be given to new candidates. If universities do not succeed in getting them through the system more quickly, then they shall surely be unable to meet the demands of the nineties.

What can be done? In the first place, as James suggested as early as 1903, universities might "lower their fantastic standards" by scaling the Ph.D. in the humanities and social sciences back to what it was originally intended to be and what it still is in many of the sciences and in engineering: not a *Habilitation* but simply, as James put it, "a diploma certifying mastery and marking a barrier successfully passed." The problem does not lie so much in the preliminary phases as in the dissertation. But here much could be improved. Professors should discourage students from undertaking topics that are not reasonable in scope. (The student who boasted in the *New York Times* of August 24, 1989, that he had spent eight years merely identifying a thesis topic was either irresponsibly advised or an unregenerate *ewiger Student*.) Departmental committees should monitor every stage of the process and make sure that the candidate understands the expectation that a reasonable topic can be managed in two or, at most, three years. (The graduate schools, in turn, can establish procedures that make it increasingly difficult for students to submit their dissertations if too much time has elapsed.) Studies of dissertation length and time-to-degree suggest that universities should impose a strict upper limit on theses and refuse to accept those that are too long. This would teach students early in their careers about the realities of publication deadlines and length restrictions. (Excessive length is sometimes an indication, of course, of the thesis adviser's own lack of writing and publishing experience.) Length requirements might also ensure that the dissertation will receive a more conscientious reading than is now often the case, when lengthy tomes are returned to the student without a mark on their pages and with the most cursory of reader's reports. All the studies have shown that few factors affect rapid completion of the Ph.D. as powerfully as a close and encouraging relationship between student and adviser—a relationship that thrives much less easily in the lonely "library disciplines" than in the more convivial laboratory sciences.

The dissertation must continue to be the center of doctoral education. For many Ph.D.'s it will remain the single extended piece of research and writing they will ever do. Even if the dissertation has not made a "contribution" to knowledge, it has made a contribution to the candidate's own knowledge: it should have taught him or her to identify and analyze a reasonable problem in the field, to treat it according to accepted procedures, and to present it in an accessible manner. At the very least, the dissertation as an exercise should prepare the new Ph.D. to organize his or her first college course and to appreciate what it takes to write a good book. (A valuable by-product of this change might be the disappearance of the vanity presses and the series that exist simply to publish, with a heavy subsidy and at expensive prices, the poorly edited

↓
well

and usually critically ignored dissertations currently being churned out by the system.)

The humanities might also emulate the sciences (and such social sciences as economics) in their tendency to accommodate the thesis to the current practices of the field. (This is not to suggest approval of the practice in some fields of accepting as dissertations works that amount to published articles bound or stapled together.) At many institutions, the locally approved manual of style has become so dominant and so tyrannically enforced that the candidate comes away with the notion that style matters more than substance. A dissertation should present research results in the format appropriate to the discipline. Why should a student spend hours mastering forms that he or she will never need again? Many a new Ph.D. revising a dissertation for publication has discovered that the first things that must go are the introductory survey of research, the lengthy footnotes, and the cumbersome bibliographical apparatus often required for the dissertation. It would be far more helpful to the student's career as a scholar to learn the style used most widely in journals of the field, to practice the art of selective quotation, and to recite the credo of scholarly ethics. The dissertation should demonstrate the student's command of the basic skills of the discipline. Whether or not the Ph.D. then goes on to use those skills is another matter altogether—one that depends on personal energy, ambition, and a variety of other factors. The degree should be awarded like the doctorate bestowed upon that promising but lazy student in seventeenth-century Avignon recalled by Jacob Viner: *sub spe futuri studii*.

None of these changes can take place until the hiring departments modify what literary critics call their horizon of expectations—and here the entire weight of the history of Ph.D.'s just reviewed drags heavily on the present. If the expectations do not change, the system will produce more and more A.B.D.'s and an inadequate number of Ph.D.'s for the future. Departments should be seeking neither the scholar who has "ripened" long enough in graduate school to have compiled a five-hundred-page (and therefore probably poorly supervised) dissertation nor the scholar who has "matured" long enough to have acquired years of teaching or research experience (and therefore probably a corresponding sense of bitterness at having been exploited by the graduate institution). Departments should instead be happy to appoint well-trained young Ph.D.'s who have demonstrated their commitment by moving expeditiously through a reasonable program to a degree that certifies their competence to begin a career in teaching and scholarship. Let the hiring department participate in the continuing education of new Ph.D.'s, as is the case in many of the sciences, by supervising their development as teachers and scholars. If that happens, Ph.D. shortages

in the 1990s in the humanities and social sciences will be avoided. In science and engineering, the problems are different: they are not time-to-degree or even attrition but rather recruitment into graduate programs of U.S. citizens adequately motivated and prepared in mathematics and basic science. But that is a problem that reaches back beyond the graduate schools into colleges, secondary schools, and society itself. Indeed, the educational deficiencies of American students have emerged as a national scandal that has concerned blue-ribbon panels and caught the editorial attention of the national journals.

Why should one care about issues that might seem to be the proper and rather specialized concern of the graduate schools? First, more than half of our Ph.D.'s are no longer remaining in the academic cycle but are going into government, industry, and other sectors of our society. The worldwide need for specialists qualified to the level of Ph.D. is going to increase in the coming decade. In a certain sense, our national future depends on the graduate schools. But it is also in the urgent interest of the nation at large to see that the universities recruit and retain graduate students of excellence in every field, from Assyriology to astrophysics, and train them within a reasonable time to assume an appropriate place in a college or university. If universities continue to permit or require students to spend ever longer portions of the most productive period of their lives in graduate school, then the students entering graduate school this year will not yet be finished by the time of the excess demand predicted for the years 1997–2002.

Education can follow either an exhilarating trajectory or a vicious circle. If we do not have the best students with the finest minds in our universities, the institution itself can rapidly decline, as it did in the seventeenth and eighteenth centuries, when the brightest thinkers preferred to be associated with academies—that is, the counterpart of today's non-teaching research institutes—rather than with the universities. The principle of gravity and Gresham's law both provide analogies for intellectual history. Water seeks the lowest level; bad money drives out the good; second-rate scholars don't like competition, either among their peers or among their students. If universities do not succeed in attracting excellent students into graduate programs (in the sciences and engineering) and seeing them through to the Ph.D. within a reasonable time (in the humanities and social sciences), undergraduates in the nineties and the first decades of the new millennium will be taught in a dizzying downward spiral by second- and third-rate Ph.D.'s—and *that* giant Ph.D. Squid would defy not just William James but even Captain Nemo.