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FROM FACTS TO ACTION: EXPANDING THE EDUCATIONAL ROLE OF THE GRADUATE DIVISION

by

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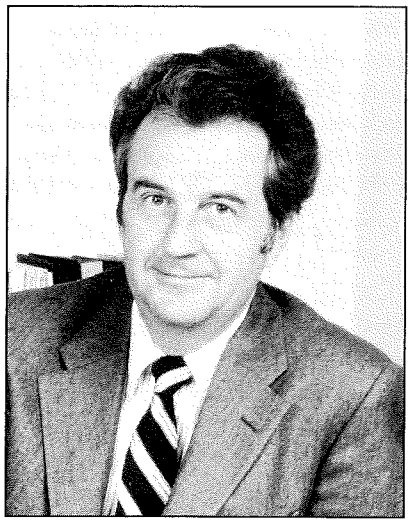
At the 1990 annual meeting of CGS, Maresi Nerad discussed much of the work described in this paper. Her presentation generated so much interest that we decided to publish this paper as a special issue of the Communicator. This work provides an excellent example of how a graduate school can play an active role in improving graduate education.

Maresi Nerad

Mounting concern over the anticipated shortage of college teachers, scientists, and engineers, and the societal need to diversify faculty has made time-to-doctoral-degree and doctoral completion major issues for graduate deans, funding agencies, and government officials. As a result, for the last several years the Graduate Division at the University of California at Berkeley has studied doctoral completion times and rates. Breaking out of its traditional administrative role, the Graduate Division undertook research and used its findings to design and implement programs that encourage students to complete their degrees and to do so in a reasonable amount of time.



Joseph Cerny

Our Berkeley study proceeded in five steps: first, we developed a number of statistical analyses based on demographic data on our graduate students to determine the average time-to-degree in our many Ph.D. programs, the completion rates, and the points in these programs at which students tended to leave without completing their doctoral degrees. Second, the Berkeley data were compared with national trends and similar analyses at comparable institutions. Third, we interviewed and surveyed students in an attempt to find the reasons for long time-to-degree and low completion rates in certain disciplines. Fourth, by combining the knowledge accumulated from quantitative and qualitative findings, a conceptual model was developed to determine the conditions under which students completed their degrees in good time and with a low rate of attrition. Fifth, this model was used as the basis for developing policies and making recommendations to the Graduate Council of the Berkeley Academic Senate, faculty, graduate students, and graduate assistants/secretaries, on ways to shorten time-to-degree and increase completion rates.

Time-to-Doctoral-Degree and Retention

How long do graduate students take to complete doctoral programs? How many students actually receive doctoral degrees, and how many fail to complete the doctorate? These were the questions pursued in the first step of our study.

Time to Doctoral Degree

The average time-to-degree from entrance to Berkeley for all our doctoral recipients between July 1980 and June 1987

(4,949) was 6.9 years.[1] This period included the time spent earning a master's degree, if it was required for the Ph.D. The time during which students were not registered and were perhaps away from the campus was also included in the total time-to-degree.

As expected, we found that time-to-degree varied widely by field of study.[2] The most substantial differences in mean time-to-doctoral-degree occurred between students in engineering (5.5 years) and the natural sciences (6.0-6.2 years), and students in the social sciences (8.4 years), arts (8.6 years), and languages and literature (8.9 years), not between minority and non-minority students or between men and women. Foreign students across disciplines completed their degrees more quickly than domestic students.

Completion Rates

Our most recent analysis of completion rates utilizes the cohorts entering in 1978 and 1979 as measured in November 1989. Most of the students, by then, should have had sufficient time to complete their doctoral programs. Only students who identified themselves as working toward the doctoral degree were included. Fifty-eight percent of the students in the 1978-79 cohorts completed doctoral degrees. Another 20% changed their plans, earned master's degrees, and left graduate school, so that a total of 78% completed a graduate degree of some kind. Doctoral completion rates varied markedly by major field of study. The biological sciences (72%) and physical sciences (69%) had the highest completion rates; the arts (39%) and languages and literatures (37%), had the lowest. Percentages in the other four fields were: for the professional schools, (48%); social sciences, (49%); and engineering and natural resources, each (65%).

When analyzing data by sex, race and ethnicity, one has to be aware that women and non-Asian minority students are more heavily represented in fields where long time-to-degree and low completion rates are the norm—the professional schools, social sciences, and humanities (see Figure 1 for men/women comparison).[3] When women as a group are compared to men as a group, the completion rates by major fields differ significantly between the compared groups (Figure 2). Overall women had a completion rate of 47% while the rate for men was 63%. More research is in progress to analyze the differences that may be attributable to sex and ethnicity.

Time of Attrition

Contrary to popular belief, the majority of the graduate students who failed to earn their doctorates left the program before advancement to candidacy for the Ph.D., not after. Although 24% of the students in the 1978-79 cohorts left during their first three years of graduate study, most of these students (83%) earned master's degrees. An additional 10% left after advancement to candidacy, and another 8% were pending at the time we analyzed the data.

Comparison with Other Universities

Is this situation unique to Berkeley? In our second step we compared our current sample over time and with other universities. The National Research Council data show that during the last 20 years time-to-degree, both at Berkeley and nationally, appears to be increasing. We asked the University of Michigan at Ann Arbor to work with us on a comparison of our doctoral time-to-degree and completion rates. In this case using 1975-77 cohorts, both Berkeley and Michigan found that slightly more than half of all their doctoral students completed their degrees in a period of seven years. Ellen Benkin's study (1984) at the University of California at Los Angeles showed that about 30% of UCLA students leave during the early period of the doctoral studies.[4] These comparisons showed that Berkeley was not atypical, at least among public universities.

Reasons for Lengthy Time to Degree

Third we asked, why do some students leave doctoral programs? Why do some take longer than seems appropriate? To answer these questions, we began qualitative research, mainly in-depth interviews.

Initially 40 UC Berkeley students from history, English, French, and sociology were interviewed.[5] These departments were chosen because our analysis had shown that these were departments in which students historically took a long time and had low completion rates. For comparison students from psychology and biochemistry were interviewed. All these students had nearly completed their dissertations or had just filed their theses. About half of the students took at least one year longer than the average departmental time-to-degree; the other half completed in average time.

During the interviews the students were "walked through" the five major stages of the doctoral program: (1) course work; (2) preparation for the oral qualifying exam; (3) finding a dissertation topic, selecting a dissertation adviser, and writing a prospectus; (4) the actual dissertation research and writing; and (5) applying for professional employment. These students were asked how they moved from one stage to the next, what financial and moral support they had, what would have helped them at each stage, and whether they had recommendations for what the university could do to help students finish more quickly.

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[1] The data used in this study were produced by the staff of the Information and Technology unit of the Berkeley Graduate Division: Betty Liu, Bob Tidd, and Dennis Anderson, under the direction of Judi Sui.

[2] At Berkeley Ph.D. programs are grouped into eight major fields of study: arts, biological sciences, engineering, languages and literature, natural resources, physical sciences, professional schools, and social sciences. No law (J.D.) data are included.

[3] Statistically meaningful data on minorities are not available at this point.

[4] Ellen Benkin, "Where Have All the Doctoral Students Gone: A Study of Doctoral Attrition at UCLA," Doctoral Dissertation, UCLA, 1984.

[5] Each of these students was interviewed individually for one and one-half hours.

Figure 1

DISTRIBUTION OF DOCTORAL STUDENTS
BY 8 MAJOR FIELDS OF STUDY
FOR DEGREES AWARDED 1980 TO 1987

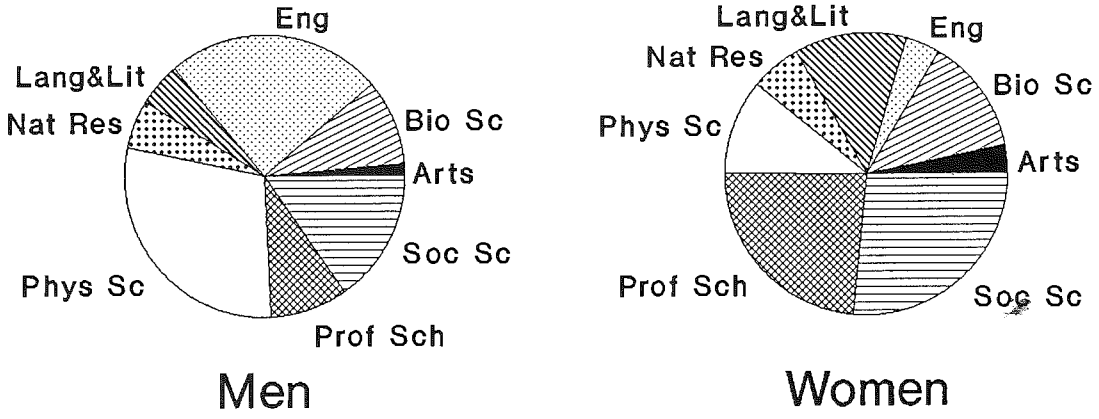
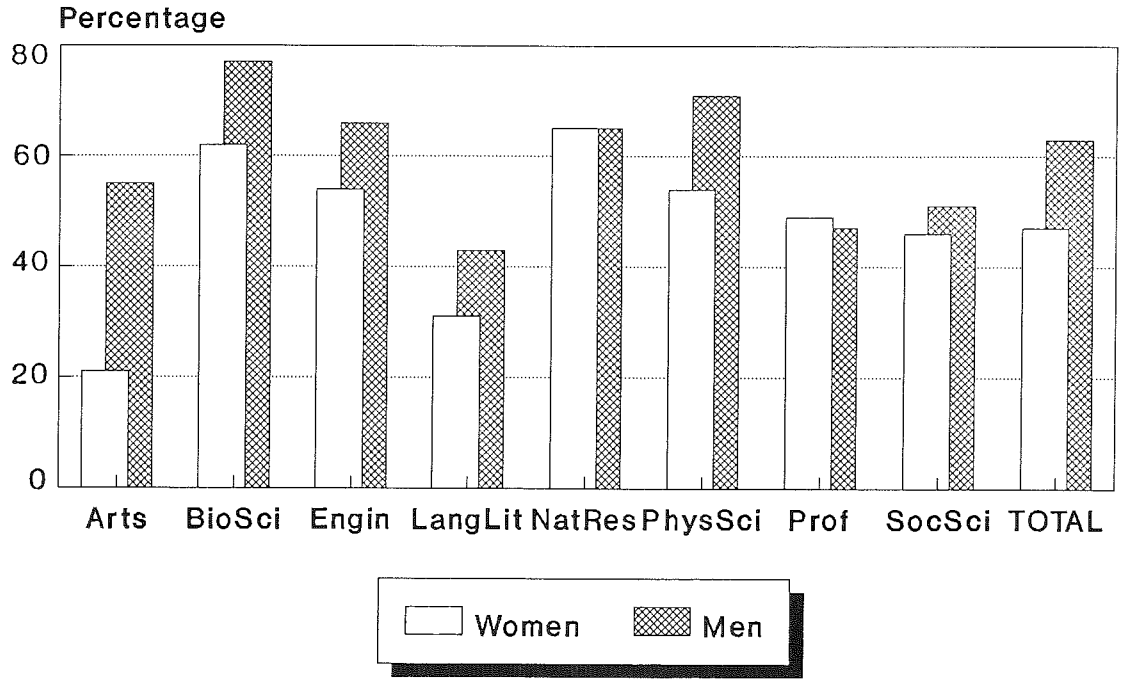


Figure 2

DOCTORAL COMPLETION RATES
1978-79 COHORT, MEN / WOMEN



Results

We found six major patterns for humanities and social sciences students with long time-to-degree.[6]

(1) Students in departments that require an M.A. thesis spent an excessive amount of time polishing their master's theses. They seemed to receive mixed messages from the faculty. They were told to do a simple thesis, and simultaneously they were told to choose a topic with potential so they could get their feet wet in "real research." Under pressure to produce, they hoped to increase their chances for receiving a fellowship by writing an impressive master's thesis.

(2) Students in the humanities and social sciences over-prepared for their orals. They spent, on the average, from six months to one year studying, usually in isolation and withdrawn from the department. Their ideas about the structure, scope, and standards of the exam were vague. The aura of mystery which surrounded the exam seemed to lead to a self-imposed perfectionism. They were disappointed, after taking the exam, to discover that they were given the opportunity to demonstrate only a small part of their knowledge.

(3) After having passed the qualifying exam, these students spent between one and two years searching for a dissertation topic and writing a dissertation prospectus. They did not have information about the prospectus format; they knew only how long it should be. They had difficutly deciding which topics were feasible and which goals were achievable within a certain time limit.

(4) Students in the humanities and social sciences wrote their dissertations in total isolation. They felt lost in the transition from being what they called "a class-taking person" to a "book-writing person." During this period they completely withdrew from departmental activities. Most said, "No one on the faculty knows about my topic, so why should I meet with them." During the actual writing period they found it very difficult to work as a teaching assistant or at another unrelated on-or off-campus job.

(5) These students perceived the course work, orals, and prospectus-writing stages of their doctoral studies as *hurdles* that needed to be jumped, but not as steps leading to the completion of their dissertations. The curriculum structure was not seen as an opportunity to develop an overview of one's field and to decide on a research project. As a result, the students focused too narrowly on getting the course requirements out of the way or on taking the orals for orals' sake. After passing their orals, they had trouble mustering enough energy to write a dissertation proposal. In fact, they felt that they were starting from scratch as they approached writing a proposal. Once their proposal was approved, often they realized that they needed to take more courses in the area of their dissertation topic.[7]

(6) Many students in the humanities and social sciences complained that the department and faculty failed to assist them in preparing for orals, in developing a dissertation prospectus, in applying for grants, and in the actual writing of their dissertations. Further, students in those fields found that after advancement to candidacy it was very difficult to find work; and if they were employed as teaching or research assistants, they found it distracting to be doing work unrelated to their theses.

Working Model of Factors Determining Time-to-Degree and Attrition

After gaining insight into some of the reasons why students in the humanities and social sciences took a long time, we asked why students left the doctoral program before completing the degree. As expected, substantial numbers of students left for both personal and institutional reasons.

Personal Reasons

Frequently students who left graduate school after one or two years reported that their expectations about the general field of study, graduate student life, or the focus of the program were not met. Students, particularly in the professional schools and engineering who already had master's degrees, rethought their career goals and chose to leave, often after the first year. These students could return to well-paying jobs as an alternative to graduate school.

Institutional Reasons

By pulling together what we had learned from our qualitative data, the following nine-point model was developed to interpret the conditions, other than personal ones, that contribute to long or short time-to-degree or to high or low attrition rates (Figure 3).[8] (1) research mode; (2) program structure; (3) definition of the dissertation; (4) departmental advising; (5) departmental environment; (6) availability of research money; (7) financial support; (8) campus facilities; and (9) the job market. With the help of this model, the Graduate Division could begin to determine where we could recommend or implement programs to assist doctoral students.

(1) The **research mode** is a field-specific factor. Between the sciences and the humanities there are pronounced differences in the way research is conducted. Graduate students in the sciences and engineering acquire research skills through an apprenticeship mode of research instruction and team work in a laboratory setting where they benefit from frequent social interactions. The laboratory research and the dissertation work often coincide and frequently are supported by a research assistantship under the direction of a faculty investigator. The arts, humanities, social sciences, and professional schools do not have the same structure for involving students as active participants in the research process. In addition, these fields have

[6] A study conducted by M. Nerad (1990), "Graduate Education at the University of California and Factors Affecting Time-to-Degree," for the nine UC campuses revealed similar patterns for students in the humanities and social sciences who took a long time to complete their degree programs.

[7] These were students who took longer than the average.

[8] This model shows the extreme ends of a continuum. Most departments are located somewhere in the middle.

Figure 3

FACTORS DETERMINING TIME TO DEGREE AND ATTRITION

Institutional and Field-Specific Factors

1	**Research Mode**	Apprenticeship Mode Team Work Laboratory	Individualistic Learning Solitariness Library
2	**Structure of Program**	No M.A. / M.S. required QE includes Dissertation Prospectus Annual Evaluation	M.A. / M.S. required QE does not include Dissertation Prospectus Sporadic Evaluations
3	**Dissertation Definition**	Test of Future Ability to do Research	Major Contribution to Knowledge (Book)
4	**Advising**	Faculty Mentoring Departmental Advising	Absence of Faculty Mentoring and Dept. Advising
5	**Departmental Climate**	Sense of Community Students treated as Junior Colleagues	Factions among Faculty Students treated as Adolescents
6	**Research Money**	Many Sources	Few Sources
7	**Type of Financial Support**	Research Assistantship Fellowships	Teaching Assistantship Loans Own Earnings
8	**Campus Facilities** Housing Child-care Space (Office, Meeting) Transportation Library	 Affordable Available Available Efficient, Affordable Long Hours, Year round	 Expensive Overcrowded Overcrowded Slow, Expensive Short Summer Hours
9	**Job Market** Post-doc Academic Industry	Many Openings Well-paid	Few Openings Medium or Low Salaries
		= SHORT TIME LOW ATTRITION	**= LONG TIME HIGH ATTRITION**

few resources to pay for research assistants. Even though the research mode plays an important role in students' staying in doctoral programs and completing them in a timely manner, this factor is not one that can be altered by administrative intervention.

(2) In interviews with students, the **program structure** emerged as a strong determinant. If a master's degree is required in the course of receiving a doctorate, time-to-degree is affected. To investigate this point further, we used the data gathered by the National Research Council (NRC) in its annual survey of earned doctorates. These data were rearranged into the following three groups: (a) students who did not receive the master's; (b) students who received the master's and doctorate at the same institution; and (c) students who received master's degrees at an institution other than the doctoral-granting institution. The findings are not surprising (Figure 4).[9] Students with no master's degree take the shortest time (6.0 years); students with the master's from another institution take the longest time (9.8 years), since the doctoral-granting institution rarely accepts a substantial portion of the prior course work in lieu of its own program. Also students who come with a master's degree from elsewhere will often take more courses voluntarily in order to become familiar with the faculty. Students with master's degrees from the same institution complete the program in less time than those who come with master's degrees from another institution, but take longer (7.4 years) than those with no master's degree. Seventy percent of all UC students acquired master's degrees before the doctorate, half of them (35%) at the same campus as that from which they received the doctorate, and the other half (35%) from a different institution.

A Berkeley survey found that programs requiring a dissertation prospectus as part of the qualifying examination tended to have shorter time-to-degree.[10] Programs with a structure that called for an early start to dissertation research tended to have shorter degree times. Programs that evaluated the progress of their students annually and suggested improvements seemed to inspire student confidence about completing the degree. Students appreciated especially the regular progress meetings with dissertation committees after advancement to candidacy; such students appeared to "drift" less. Students also favored the custom of a dissertation defense (though this practice is no longer common at Berkeley).

(3) The **definition of the dissertation.** Another factor affecting time-to-degree is whether the dissertation is perceived primarily as a test of future ability to do research or whether it should be a book.[11] Science and engineering programs generally seem to perceive the dissertation as a test of future ability to do research; humanities and social sciences programs often expect the dissertation to be a major contribution to the field.

(4) **Advising.** The concept of advising is broad, and we have broken it into two components: (a) advising and mentoring by the dissertation director and (b) advising and guidance by the *department* independent of the individual dissertation adviser. Where department advising activities exist, there is some guarantee that "things just do not happen accidentally or never at all," and that students tend to receive more direction and drift less frequently.

In addition to the information gathered from the student interviews, further insight into student satisfaction with advising came from the Graduate Division's exit questionnaire, which is "required" at the time of filing the dissertation.[12] One question is, *How satisfied have you been with departmental advising?* The results from 1,200 students who completed their dissertations between fall 1987 and fall 1988 show that about half of all students were satisfied, one quarter were very satisfied, and one quarter were dissatisfied (Figure 5).[13] The level of satisfaction varied by major fields. Students in the social sciences and humanities were the least satisfied, and those in the physical sciences, engineering, and natural resources were the most satisfied. Proportionally more women than men were *dissatisfied.*[14]

Another relevant question asked was, *How satisfied have you been with the professional relationship with your dissertation adviser?* (Figure 6). Here the overall satisfaction level was considerably higher, more than 92%. Interestingly, students in the social sciences were more satisfied with their individual advisers than were students in the biological sciences, and those in the humanities were the most satisfied. Again, women were more dissatisfied than men. From the interviews we found that students had good personal relationships with their advisers, but many did not receive enough professional support. Students expected an adviser to be a mentor who would set standards, develop their skills, advise them on appropriate and feasible dissertation topics, and treat them as junior colleagues.

(5) **Departmental environment.** What impact does the environment in the department have on time-to-degree and attrition rates? Some departments were identified as having an impersonal environment, in which there were no professional student support activities or social events, or in which only star students were recognized, leaving many other students with a sense of being failures. These are the departments in which students were likely to take a longer time-to-degree, or from which students may frequently leave before completing the doctoral degree. The climate in a department often ties in with the kind of advising available. In contrast, departments that support their students with programs designed to assist them at

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[9] The data are for all nine UC campuses; the NRC data tapes were provided by the UC office of the President.

[10] Some life sciences programs even had students write this prospectus in the form of a grant proposal.

[11] A task force of the Council of Graduate Schools has investigated this point further in a report entitled, "The Role and Nature of the Doctoral Dissertation."

[12] A 95% return rate is obtained.

[13] It should be remembered that these results came from the *successful* students. The differences between the groups' ratings of departmental advising was significant; $X^2 = (7, N = 1097) = 31.8$, $p = .002$.

[14] However, the difference between men and women was not statistically significant.

Figure 4

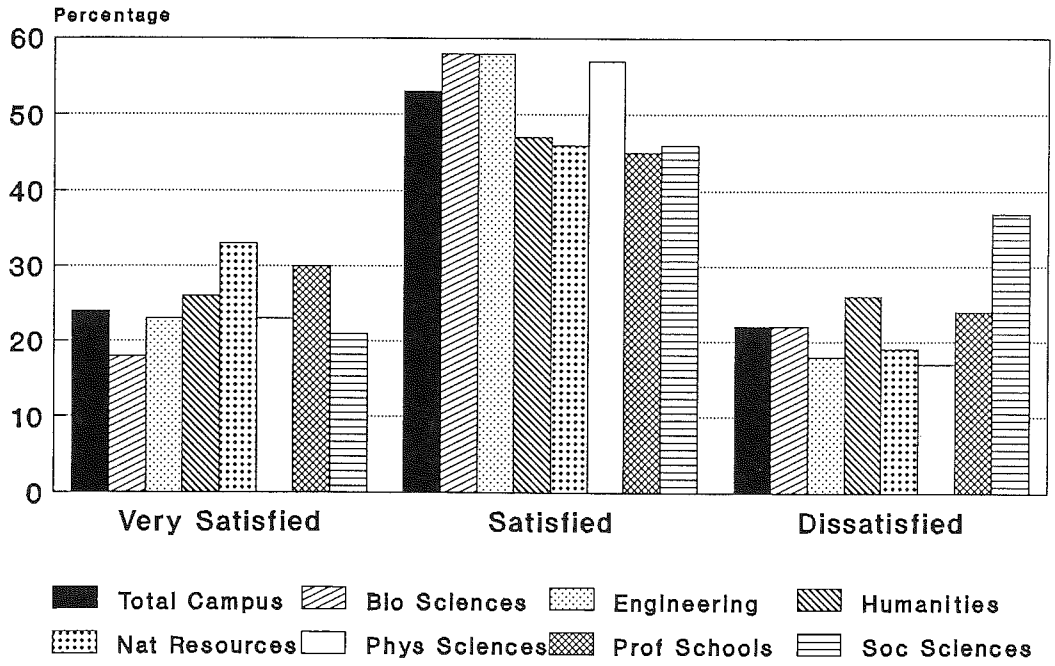
University of California
Nine Campuses
NRC Median Time to Degree
Doctorate Recipients, 1980—1988
BY MASTER'S DEGREE

	No Master's GRAD—PHD	**Master's Same Campus** GRAD—PHD	**Master's Other Institution** GRAD—PHD
Arts & Humanities	7.9	9.2	11.6
Engineering	5.5	5.9	8.3
Life Sciences	6.0	7.3	9.1
Physical Sciences	5.5	6.5	8.4
Professional Schools	7.2	9.8	12.1
Social Sciences	7.1	7.8	10.3
All Fields (Years)	**6.0**	**7.4**	**9.8**

GRAD—PHD = Time from entry in any graduate program to Ph.D.

Figure 5

SEVEN MAJOR FIELDS
UCB Doctoral Exit Questionnaire
Doctorate Recipients 1987—1988
How Satisfied Have You Been With Departmental Advising?



each stage of the doctoral program and that have social gatherings may have a lower attrition rate. This is an area in which more research is necessary.

(6) **Availability of research money.** This factor is only too familiar to everyone and is one that is largely field- and somewhat institution-specific. According to students, faculty, and many graduate deans, one of the key factors influencing longer time-to-degree is insufficient financial support for doctoral students. Many students in the arts, humanities and social sciences are adversely affected because in addition the few available faculty research grants are small. Most students in engineering, the physical sciences, and the biological sciences, however, can count on employment as research assistants on the research grants of their faculties. In many cases, that work constitutes their dissertation research as well.

(7) **Type of financial support.** We did a one-time study of the relationship of time-to-degree and financial support *per individual student.* This was a very labor intensive study for which the unit of analysis was the actual expenses and financial support of each student who completed a degree between May 1986 and May 1989 in three departments in the social sciences and two in the humanities. We assume that these five departments had an equal proportion of outstanding students—all five departments rank among the top seven programs in the nation, in their respective disciplines. First, the financial support was calculated *during each student's first five years* by amount and length of time of the various types of support. These figures were then compared with the time the students took to complete their degrees. Students who received between four and five years of support took the shortest time, an average of 7.9 years to degree, while those who received no support took twice as long—16.6 years (Figure 7). As expected, the time decreased with an increase in support.

Second, the annual (12-month) financial support was divided by the annual (12-month) expenses[15] (Figure 8). These findings showed that, on the average, support money could cover between 30% and 90% of a student's expenses during the first five years in the program. Departments varied in the type of support they gave to students, as well as in the length of time the support was provided. Not surprisingly, the department offering the most financial support had the shortest time-to-degree (Department D). The department that offered the most financial support in the form of teaching assistantships had an intermediate time-to-degree (Department B). However, Department E, with the longest time-to-degree, did *not* offer the lowest amount of financial support to its students. Significantly, the department with shortest time-to-degree (Department D) not only provided the *most* financial support, but distributed the support most equally among research assistantships, teaching assistantships, and fellowships. From these results we can reconfirm that time-to-degree is related to the amount and type of support, but also emphasize that factors other than financial support, particularly the inherent structure of the Ph.D. program, also influence significantly time-to-degree in the humanities and social sciences.

We also examined the relationship between time-to-degree and the number of years students were supported by teaching assistantships in these five departments. The study showed that students who taught three or more years took one year longer (9.9) to complete the degree than students who taught less than three years (8.8)[16]. The same differences existed for those who taught four years or more (10.1) as compared with those who taught less than four years (9.0). Given these findings, the Graduate Division would recommend that, if at all possible, many departments in the humanities and social sciences implement a support package that would give students an efficient mix of support for each stage of the doctoral program—fellowships for the first year, teaching assistantships for years two and three, fellowships at the conceptualizing stage of the dissertation, and then, if available, research assistantships and dissertation writing fellowships for the final two years.

(8) **Campus Facilities.** As noted in Figure 3, the quality and effectiveness of the library, the availability of office and meeting space, and the issues of transportation, housing and child care certainly can influence time-to-degree. Of particular concern are housing and child care costs and availability for students with dependents. In order to shed some light on time-to-degree issues for students with dependents, the NRC data on earned doctorates were used, disaggregating doctoral recipients with dependents from those without dependents. Time-to-degree was then correlated with dependent status. Of the 1980-88 doctoral recipients of the nine UC campuses, 42% had one or more dependents.[17] (Figure 9) Men and women with dependents took 1.5 (2.2) years longer than those with no dependents. Figure 9 shows also that a higher percentage of minority graduate students at UC have dependents than do white students. Affordable housing and available, affordable child care are important if these students are to remain in graduate school. Especially given the inadequate child care facilities on most campuses, this is a real problem if we want to attract more women and minority students to our doctoral programs.

(9) **The job market.** Faculty most often cite the lack of academic jobs as a major reason for high attrition and the lengthening time-to-degree in some disciplines. This factor is beyond the control of the university. However, departments, faculty, and administrative units such as career planning and placement centers can actively support students in their job search. Departments can offer seminars that address the various aspects of becoming a professional in one's field and can prepare students for national conferences at which job interviews are held. Departments can also appoint faculty placement officers.

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[15] The annual student expenses were taken from the student financial aid budgets of the appropriate year; these budgets have been extrapolated to 12 months.

[16] The difference in time-to-degree between students who taught for two years and students who taught for less than two years was statistically insignificant.

[17] According to the NRC definition, a dependent is someone receiving at least one-half of his or her support from the doctoral student.

Figure 6

SEVEN MAJOR FIELDS

UCB Doctoral Exit Questionnaire
Doctorate Recipients 1987—1988
How Satisfied Have You Been With the Professional Relationship With Your Doctoral Supervisor?

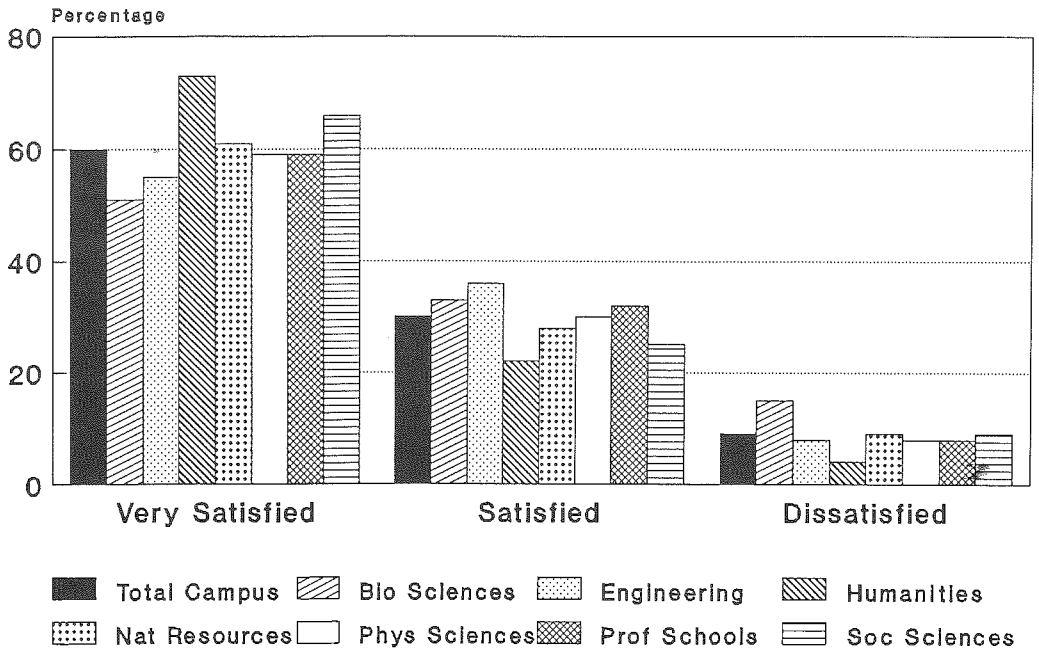

Figure 7

UNIVERSITY OF CALIFORNIA AT BERKELEY

Relationship between Time to Doctoral Degree and Years of Support
During the First Five Years of Doctoral Studies
Doctorate Recipients, May 1986 — May 1989
For Five Selected Departments in the Humanities and Social Sciences

ALL TYPES OF SUPPORT*

MEAN TIME TO PH.D. DEGREE

Years of Support during the First Five Years

0yr		0–1yr		1–2yrs		2–3yrs		3–4yrs		4–5yrs		Overall	
Mean Time	N	Mean Time	N	Mean Time	N	Mean Time	N	Mean Time	N	Mean Time	N	Mean Time	N
16.6	(13)	13.0	(8)	9.8	(16)	9.2	(48)	8.2	(83)	7.9	(54)	9.1	(222)

* Types of support are: Fellowship, teaching assistantship, research assistantship, reader, and other employment. Loans are excluded. Expenses used in calculation of years of support are based on 12 month estimates.

Figure 8

UNIVERSITY OF CALIFORNIA AT BERKELEY

Annual Expenses Covered by Financial Support
During the First Five Years of Doctoral Studies

Doctorate Recipients, May 1986 — May 1989

Five Selected Departments in the Humanities and Social Sciences

BY 5 TYPES OF SUPPORT

Department	Year	TYPE OF FINANCIAL SUPPORT						Mean Time	Students
		TA %	RA %	Reader %	Other Employ. %	Fellow-ship %	**TOTAL** %		
A	1	0.0	6.9	9.1	4.0	10.1	**30.2**		
	2	11.6	5.3	16.8	3.0	8.9	**45.5**		
	3	57.1	2.2	7.6	0.9	5.2	**73.0**		
	4	63.9	1.7	1.8	1.5	11.6	**80.5**		
	5	55.4	2.8	2.8	2.0	11.8	**74.9**	9.7	(54)
B	1	57.4	0.0	0.0	1.4	6.3	**65.1**		
	2	68.9	1.4	0.0	0.4	19.7	**90.3**		
	3	63.9	0.3	0.0	3.3	9.4	**76.9**		
	4	55.1	1.0	0.0	0.0	1.0	**57.1**		
	5	47.4	0.5	0.0	1.6	6.6	**56.0**	9.4	(12)
C	1	2.5	5.3	11.5	3.0	16.3	**38.4**		
	2	22.2	12.7	11.6	3.8	10.7	**61.0**		
	3	38.1	9.8	3.1	0.9	15.4	**67.3**		
	4	33.3	8.4	2.5	1.1	22.7	**68.1**		
	5	26.4	5.7	2.7	0.7	21.7	**57.2**	9.8	(64)
D	1	29.5	20.3	0.9	0.3	27.5	**78.4**		
	2	30.1	24.6	2.8	1.2	29.0	**87.8**		
	3	33.5	27.7	1.3	1.2	23.1	**87.0**		
	4	29.5	29.7	1.2	0.5	12.0	**72.9**		
	5	25.8	27.7	2.8	0.1	9.3	**65.6**	6.7	(47)
E	1	11.8	12.2	5.2	0.9	22.3	**52.3**		
	2	31.4	13.7	2.7	0.0	21.7	**69.5**		
	3	30.3	15.1	2.2	0.2	25.9	**73.7**		
	4	30.6	9.4	3.5	1.3	21.2	**66.0**		
	5	31.8	11.7	1.5	0.3	17.3	**62.6**	10.2	(45)

Developing Recommendations

As our last step, the Graduate Division developed recommendations and designed and implemented activities to work toward decreasing time-to-degree and lowering attrition. In this process we worked with faculty, graduate students, and graduate assistants/secretaries (the departmental staff who often know most about the difficulties of graduate students, who are the most knowledgeable about formal rules and regulations concerning graduate education, and who often act as counselors and therapists for students). Finally, many of these recommendations have been developed in conjunction with the Graduate Council of Berkeley's Academic Senate.

Faculty

A monthly invitational seminar on graduate education at Berkeley was initiated. Membership in the group of 35 included faculty and department chairs, senior administrators from the Berkeley campus and UC systemwide office, some members from the Graduate Council, graduate students, senior graduate assistants, and the several deans of the Graduate Division. The seminar had several goals: to inform and sensitize a part of the campus community, particularly the faculty, about particular issues of graduate education; to generate ideas on what changes should be made; and to receive feedback on recommendations we had developed.

The administrators in the Graduate Division also met monthly with faculty and students who served on an *ad hoc* subcommittee of the Graduate Council, which is the legislative arm of graduate education at Berkeley, in order to specify appropriate recommendations. Last year, one focus of these meetings was to formulate a new policy requiring students to meet annually with at least two members of their dissertation committees in order to review their progress on their dissertations and to map out a plan for the following year. This annual review is designed to improve communication between students and their committees and to provide students with feedback on their work.

The Dean of the Graduate Division sent to each department a data packet that included: time-to-degree and completion data for each department at Berkeley; the frequency distribution of departmental time-to-degree; a list of department faculty with the average time to Ph.D. of their advisees during the last ten years; and some key results from the doctoral student exit questionnaire. Responses were requested from each department's senior graduate advisers on what steps the department had been taking or could take, if appropriate, to improve the situation for their graduate students.

Graduate Students

Meetings were initiated with interdepartmental student focus groups. *The best ideas emerged from these focus groups.* Each semester a monthly meeting was held with a group of 12-15 doctoral candidates from various departments within one major field of study. These meetings served several purposes: first, they functioned as a support group for the students, giving them a chance to recognize that others shared the same difficulties and worries, and they made students aware of what other departments were doing for their students. Second, it told these students that their problems were being taken seriously, it helped develop possible solutions with them, and it encouraged them to initiate departmental support activities. Third, the Graduate Division developed a better understanding of the specific needs of students, and received ideas about educational activities that we could offer or that we could encourage the department or other campus units to provide.

From these meetings with the humanities student focus group emerged the idea of a workshop, sponsored by the Graduate Division, on practical tips for dissertation writing. Rapidly it became a hit with students in the humanities and social sciences. The information packet that we are now distributing to all doctoral students when they advance to candidacy is another idea developed from one of the focus group meetings. This packet is intended to help students make the transition more easily from taking classes to doing research and writing.[18]

Another event sponsored by the Graduate Division is an annual faculty forum entitled, "The View from the Other Side of the Desk." At this forum faculty were asked to discuss how they saw their role as dissertation advisers and what their opinions were regarding the purpose of the dissertation.[19]

Graduate Assistants

An advisory group of graduate assistants was formed whose function is similar to that of the student focus groups: to exchange information about shared problems, to develop ideas and recommendations, and to reflect upon implementation of these recommendations. Close collegial contact with the graduate assistants is essential since they are important to the actual implementation of our policies. In addition, the Graduate Division is developing at the present time a "generic" resource guide for departments based on successful departmental activities currently offered to graduate students. This guide will provide departments with ideas for support activities (often inexpensive) such as a day-long student-organized research conference or a series of workshops on becoming a professional in one's field.

The activities we have described were possible because of the creation of a professional research position in the Graduate Division; the expansion of the publications unit to include a full range of outreach activities, in addition to publications aimed at helping students to succeed in graduate school; and the ability of

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[18] The packet contains a question and answer sheet relating to major problems that may arise for a doctoral candidate; reprints from our graduate student newsletter on "Choosing your Dissertation Topic," "Writing a Successful Grant Proposal," and "Writing your Thesis;" and a list of services for Ph.D. students seeking academic employment.

[19] Some faculty participants were quite amazed to learn the opinions of their colleagues on these issues.

our information and technology unit to develop ways of using our historical database to address pressing issues in doctoral education.

To summarize, we have described how the Berkeley Graduate Division has used various research activities to address the issues of time-to-doctoral-degree and doctoral student retention with a focus on their improvement. Quantitative analyses have been supplemented with qualitiative methods to develop a basis for designing recommendations and programmatic outreach activities. This approach—working with the Academic Senate, faculty, graduate students, and graduate assistants—has led to more awareness of the issues to be resolved and has increased dedication to their resolution. It has also demonstrated that a graduate division, although part of the administration, can function more as an educational agency and less as a bureaucratic unit. ■

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Figure 9

UNIVERSITY OF CALIFORNIA
Nine Campuses
Doctorate Recipients, 1980 — 1988
MEAN TIME (GRAD-PHD)
BY DEPENDENTS / NO DEPENDENTS

Years	One or More Dependents	No Dependents
Men (all)	9.1	7.6
% with Dependents	47%	
Women (all)	11.3	9.1
% with Dependents	29%	
White	9.8	8.3
% with Dependents	37%	
Asian	9.2	7.5
% with Dependents	45%	
African Am.	12.5	11.4
% with Dependents	48%	
Chicano/Latino	9.7	8.6
% with Dependents	55%	
Total	9.5	8.2
% with Dependents	42%	

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