TABLE 3 (cont.)

Institution	b/ 1963	1964	1965	1966	1967	1968	1969	1970
Bloomsburg	474	481	484	545	712	745	783	790
California	735	739	674	792	924	1084	1169	1239
Cheyney	155	216	190	210	278	343	327	293
Clarion	427	495	560	559	519	793	704	776
East Stroudsburg	359	333	367	344	404	487	552	519
Edinboro	374	433	476	437	596	800	968	1003
Indiana	876	916	958	993	1217	1428	1710	1796
Kutztown	410	450	403	459	650	658	687	817
Lock Haven	252	278	294	280	344	403	490	496
Mansfield	261	294	299	331	484	520	549	686
Millersville	448	514	527	550	710	901	913	987
Shippensburg	378	411	414	463	614	800	842	820
Slippery Rock	353	407	433	507	589	798	635	1006
West Chester	662	633	658	829	895	1040	1163	1362
TOTAL—ALL STATE COLLEGES	6164	6600	6737	7299	8936	10800	11492	12590

TABLE 4
UNDERGRADUATE ENROLLMENTS, RATES OF CHANGE: UNITED STATES, PENNSYLVANIA, AND PENNSYLVANIA STATE-OWNED INSTITUTIONS

	All US. Institutions		All Penna. Institutions		Penna. State-Owned Institutions	
	Number	% Change	Number	% Change	Number	% Change
1971-72			378,760	(5.0%)	61,583	
1970-71	6,648,000	(4.6%)	360,634	(4.0%)	60,499	(2.0%)
1969-70	6,290,167	(3.8%)	346,279	(7.0%)	59,290	(4.0%)
1968-69	5,955,644	(4.7%)	324,975	(6.0%)	57,289	(8.0%)
1967-68	5,638,616	(5.9%)	307,439	(6.0%)	52,815	(10.0%)
1966-67	5,325,000	(6.8%)	288,522		48,016	(10.0%)
1965-66	4,984,000	(6.4%)			43,829	(10.0%)
1964-65	4,684,888	(10.5%)			39,724	(17.0%)
1963-64	4,239,305	(9.6%)			33,861	(9.0%)
1962-63	3,869,837	(7.9%)			30,942	(10.0%)
1961-62	3,585,407	(7.3%)			27,958	(9.0%)
1960-61	3,342,718	(6.8%)			25,632	(14.0%)
1959-60	3,131,393	(5.5%)			22,424	(3.0%)
1958-59	2,967,558	(13.2%)			21,741	(12.0%)
1957-58	2,621,919				19,493	(22.0%)

TABLE 5
BACCALAUREATE DEGREES: YEARLY RATES OF CHANGE: UNITED STATES, PENNSYLVANIA, AND PENNSYLVANIA STATE-OWNED INSTITUTIONS

	All U.S. Institutions		All Penna. Institutions		Penna. State-Owned Institutions	
	Number	% Change	Number	% Change	Number	% Change
1971-72			51,800	(3.5%)	13,400	(6.0%)
1970-71	865,000	(4.6%)	50,068	(5.8%)	12,590	(10.0%)
1969-70	827,234	(8.3%)	47,321	(4.7%)	11,492	(10.0%)
1968-69	764,185	(14.6%)	45,218	(16.2%)	10,800	(21.0%)
1967-68	666,710	(14.3%)	38,905	(15.5%)	8,936	(22.0%)
1966-67	583,100	(5.8%)	33,689	(6.8%)	7,299	(8.0%)
1965-66	551,040	(3.0%)	31,541	(1.7%)	6,737	(2.0%)
1964-65	535,031	(7.3%)	31,002	(2.2%)	6,600	(7.0%)
1963-64	498,654	(11.4%)	30,329	(13.9%)	6,164	(21.0%)
1962-63	447,622	(7.1%)	26,630	(6.1%)	5,084	(7.0%)
1961-62	417,846	(4.8%)	25,085		4,737	(13.0%)
1960-61	398,710	(1.6%)			4,177	(6.0%)
1959-60	392,440	(2.5%)			3,936	(9.0%)
1958-59	382,904	(8.2%)			3,616	(3.0%)
1957-58	362,554	(7.4%)			3,500	

TABLE 6
RATIO OF ENROLLMENT TO DEGREES

	U.S. Institutions	Penna. Institutions	Penna. State-Owned Institutions
1970-71	7.7	5.5	4.5
1969-70	7.6	5.6	4.7
1968-69	6.4	5.5	4.5
1967-68	6.8	5.8	4.9
1966-67	7.4	6.4	5.5
1965-66	7.4	6.6	5.3
1964-65	7.0		4.7
1963-64	6.8		4.6
1962-63	7.1		5.2
1961-62	7.1		5.0
1960-61	7.0		5.0
1959-60	6.7		5.0
1958-59	6.6		4.8
1957-58	6.6		4.2

TABLE 7
PREPARATION OF TEACHERS FOR INITIAL CERTIFICATION IN PENNSYLVANIA

	Total Certifications	State-Owned	State-Owned as % of Total
1961-62	9,434	4,826	(51.2)
1962-63	10,256	5,268	(51.4)
1963-64	11,625	6,157	(53.0)
1964-65	11,912	6,507	(54.6)
1965-66	12,354	6,533	(52.9)
1966-67	12,954	6,778	(52.3)
1967-68	15,191	8,812	(53.9)
1968-69	17,228	9,641	(56.0)
1969-70	18,182	10,148	(55.8)
1970-71	19,172	10,373	(54.1)

TABLE 8

DOCTORAL RECIPIENTS IN U.S. WITH BACCALAUREATES AT PENNA. STATE-OWNED INSTITUTIONS & TEN REPRESENTATIVE PRIVATE COLLEGES

	1920-1925	1926-1930	1931-1935	1936-1940	1941-1945	1946-1950	1951-1955	1956-1960	1961-1965	1966-1970	Total
State-Owned Institutions											
Bloomsburg					2	4	14	7	29	49	105
California					4	10	22	19	31	42	128
Cheyney						1	2	1	0	2	6
Clarion					2	3	6	6	12	47	76
E. Stroudsburg				1	4	4	12	13	14	38	86
Edinboro		1			2	6	15	8	21	33	86
Indiana				1	1	9	38	29	43	115	236
Kutztown			1		1	1	9	24	23	46	105
Lock Haven				1	1	4	13	13	18	34	84
Mansfield			1	1	3	3	10	12	9	24	63
Millersville					2	8	19	13	26	56	124
Shippensburg				2	3	6	17	12	23	56	119
Slippery Rock				5	2	8	16	16	32	53	132
West Chester				1	4	12	29	32	45	71	194
Total =		1	2	12	31	79	192	205	326	666	1,544

TABLE 8 (cont.)

	1920-1925	1926-1930	1931-1935	1936-1940	1941-1945	1946-1950	1951-1955	1956-1960	1961-1965	1966-1970	Total
Ten Private Colleges											
Allegheny	13	16	25	26	28	30	49	38	71	78	374
Dickinson	8	15	22	33	18	22	28	30	31	65	272
Elizabethtown			1	7	2	8	14	12	13	22	79
F & M	14	23	33	39	25	42	75	58	81	141	531
Gettysburg	17	17	13	18	20	24	28	40	43	110	330
Grove City	5	5	6	13	17	16	22	15	31	42	172
Lycoming	1		1				1	5	12	25	45
Susquehanna	2	3	10	7	6	6	11	15	10	22	92
W & J	2	10	8	23	13	24	32	22	29	65	228
Muhlenburg	8	13	16	11	15	21	39	33	45	83	284
Total =	70	102	135	177	144	193	299	268	366	653	2,407

SOURCE: NAS-NRC Doctoral Record File

TABLE 9

BACHELORS' DEGREES AWARDED IN PENNSYLVANIA BY ALL INSTITUTIONS AND BY STATE-OWNED INSTITUTIONS (1961-62 TO 1970-71)

	Total	State-Owned	State-Owned as % of Total
1961-62	25,085	4,793	(19.1)
1962-63	26,630	5,001	(18.8)
1963-64	30,329	6,140	(20.2)
1964-65	31,002	6,600	(21.3)
1965-66	31,541	6,737	(21.4)
1966-67	33,689	7,299	(21.7)
1967-68	38,905	8,936	(23.0)
1968-69	45,218	10,800	(23.9)
1969-70	47,321	11,492	(24.3)
1970-71	50,068	12,590	(25.2)

Source: Hummel et al., *Projection 1972.*

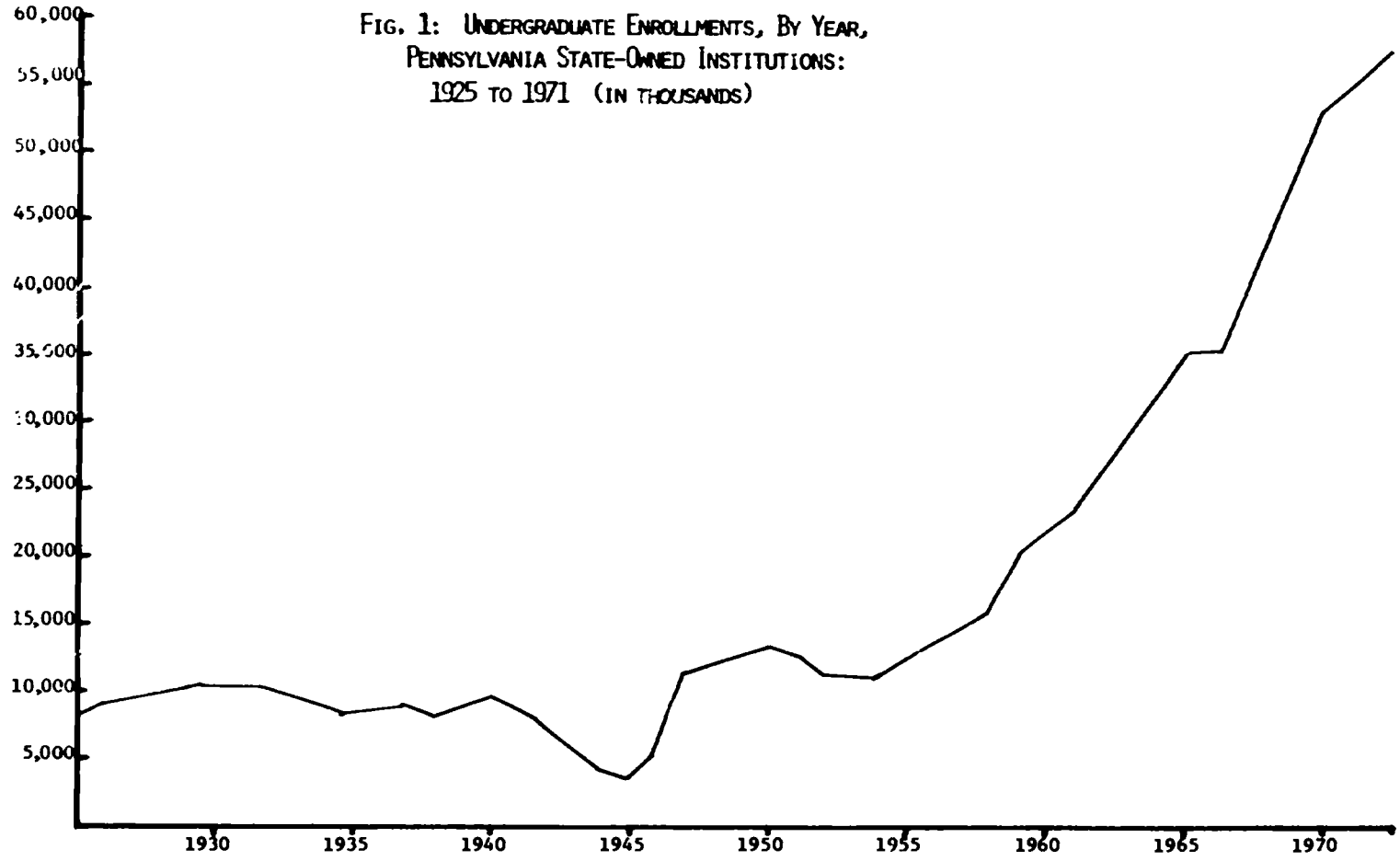
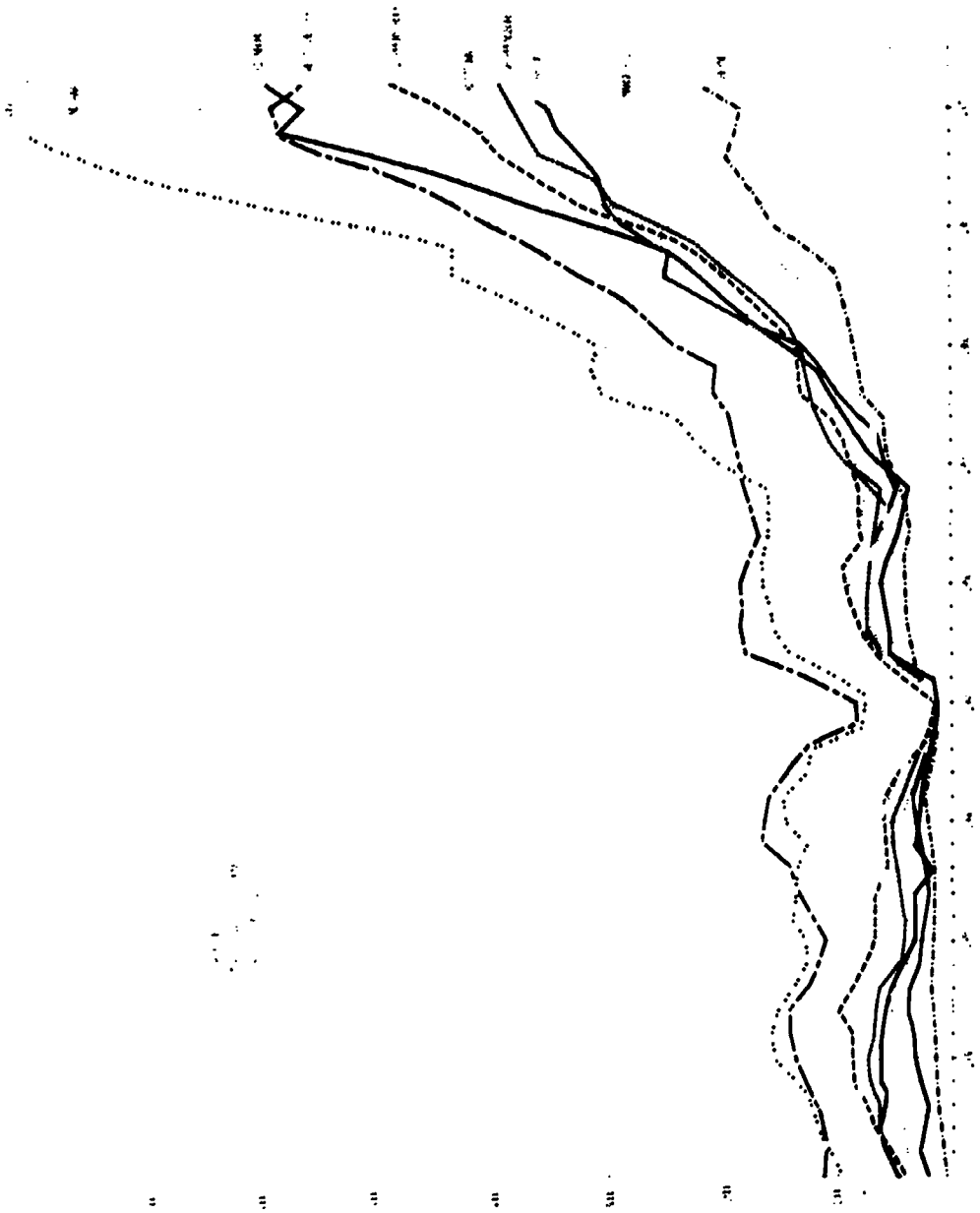


FIG. 1: UNDERGRADUATE ENROLLMENTS, BY YEAR, PENNSYLVANIA STATE-OWNED INSTITUTIONS: 1925 TO 1971 (IN THOUSANDS)



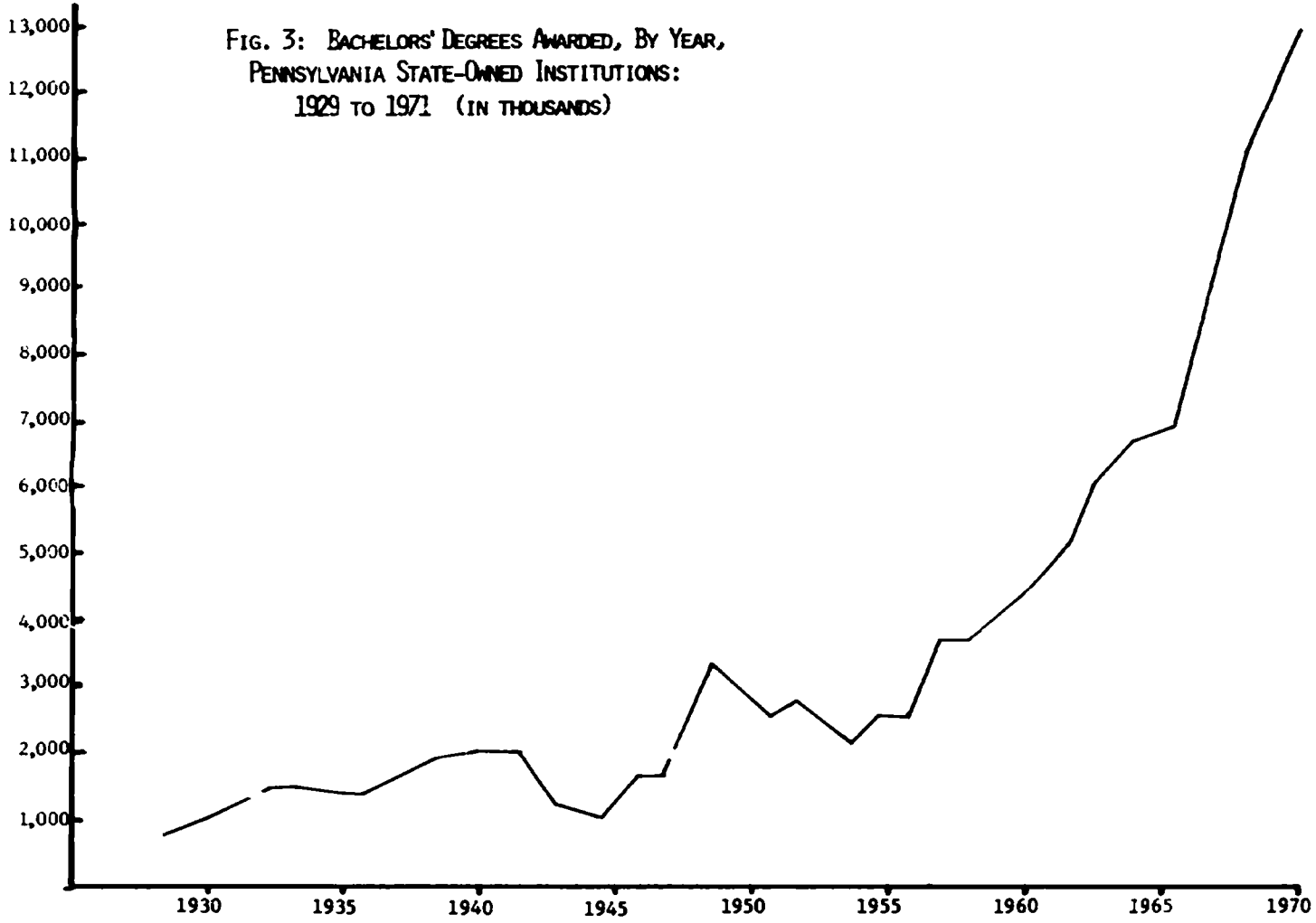


FIG. 3: BACHELORS' DEGREES AWARDED, BY YEAR, PENNSYLVANIA STATE-OWNED INSTITUTIONS: 1929 TO 1971 (IN THOUSANDS)

FIG. 4:

ANNUAL
RATE OF INCREASE
UNDERGRADUATE ENROLLMENT

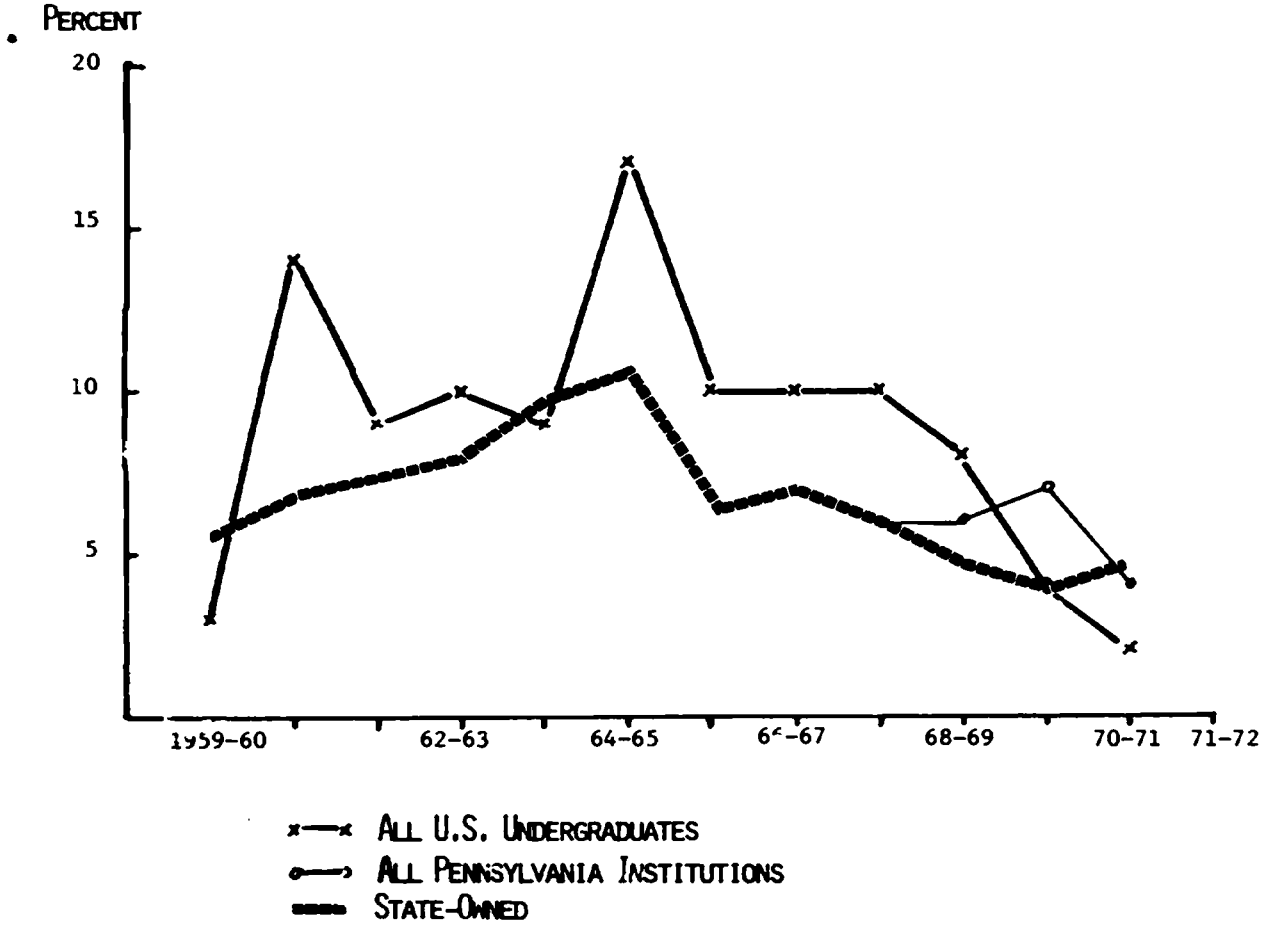


FIG. 5: RATIO OF ENROLLMENT TO DEGREES, BY YEAR, PENNSYLVANIA STATE-OWNED INSTITUTIONS: 1932 TO 1970

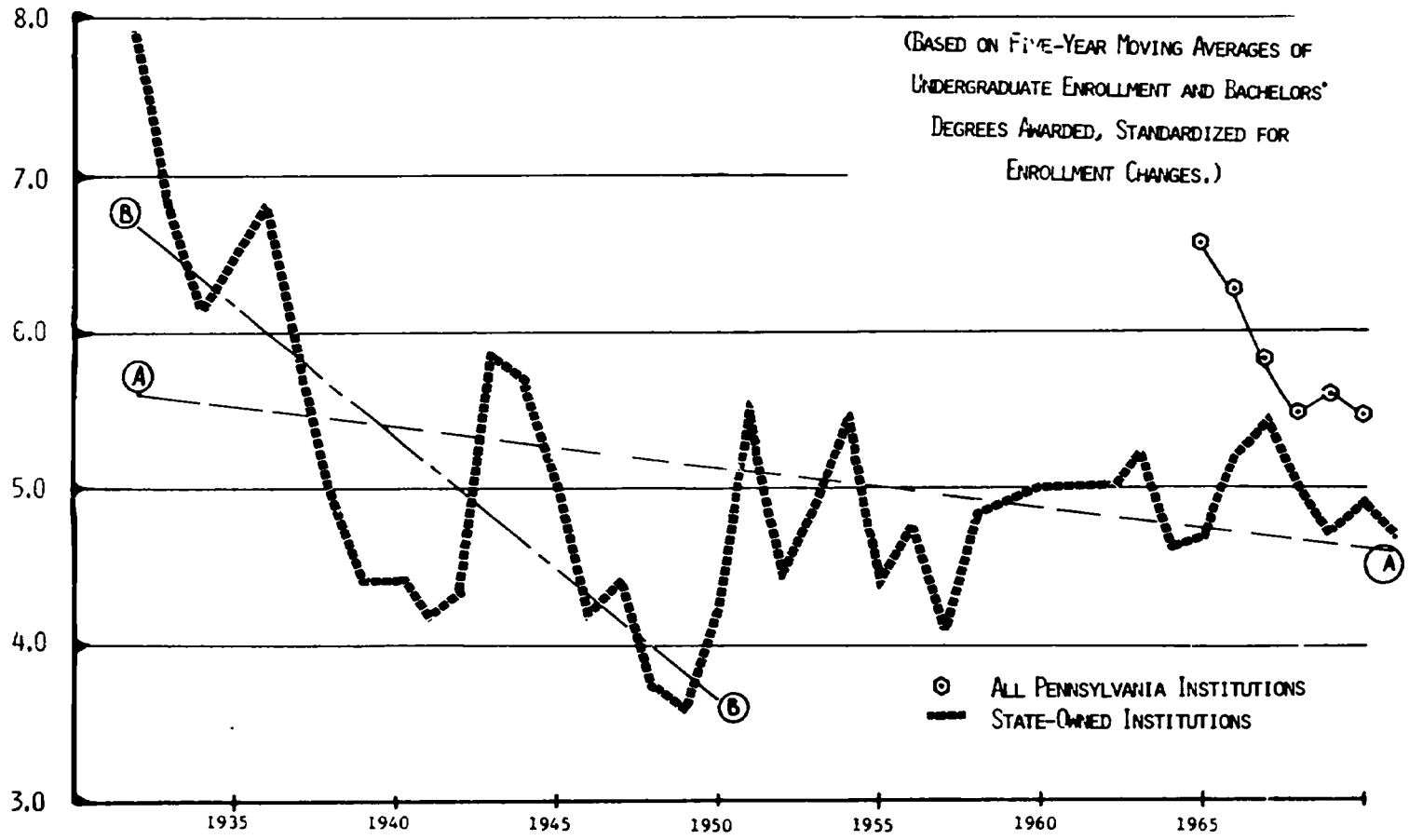
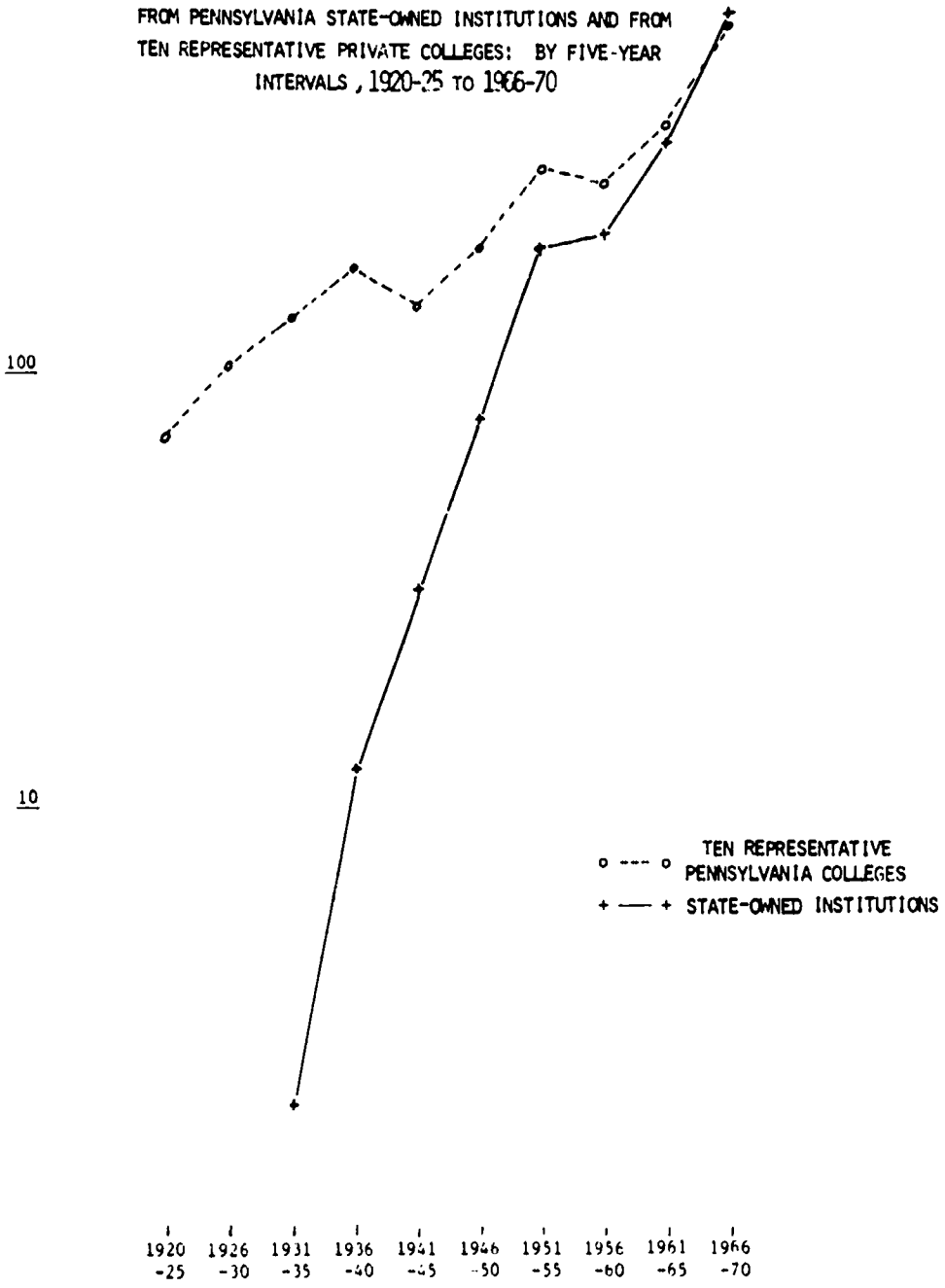
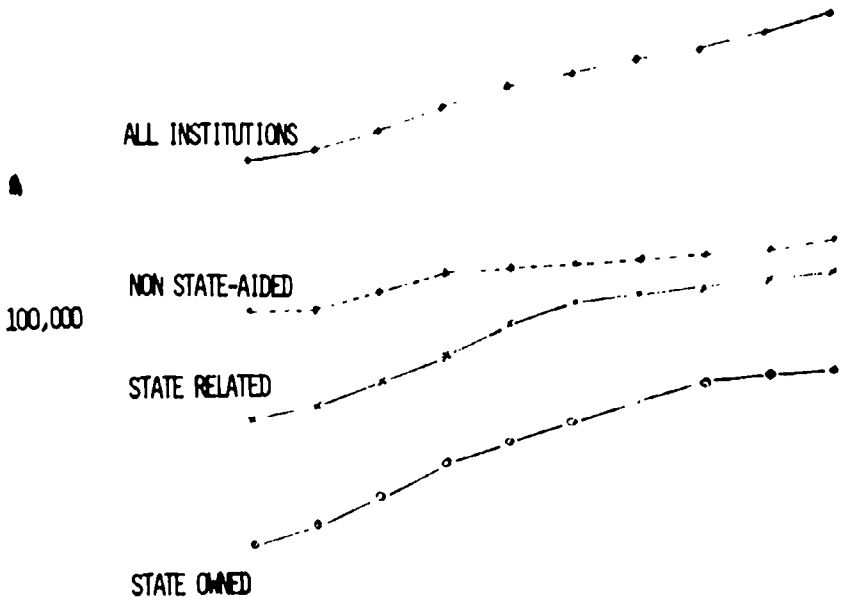


FIG. 5:

DOCTORATE RECIPIENTS IN U.S. WITH BACCALAUREATES FROM PENNSYLVANIA STATE-OWNED INSTITUTIONS AND FROM TEN REPRESENTATIVE PRIVATE COLLEGES: BY FIVE-YEAR INTERVALS, 1920-25 TO 1966-70





100,000

10,000

1,000

1962 1965 1970

FIG. 7
UNDERGRADUATE ENROLLMENTS IN PENNSYLVANIA
BY CLASS OF INSTITUTION
1962 TO 1971 (SEMI-LOG SCALE)

THE QUALITY OF GRADUATE STUDIES:* PENNSYLVANIA AND SELECTED STATES

William Toombs and Stephen D. Millman

It is a minor paradox of higher education that graduate study, acknowledged to be the most costly and complex phase of university activity, should have the least attention. Institutions vary widely in the amount of self-inquiry they direct toward graduate work, and information collected over a wider area by standard methods has been difficult to come by. Several national studies conducted recently under the auspices of the American Council on Education, however, offer a useful means of making local and regional comparisons.[1] When the data are rearranged into regional or local subsets, the kind of relationships that are revealed give clues about the effects of past policy and future planning, clues that are not attainable by other means.

This study collects and organizes the basic data from the Roose-Andersen evaluation of graduate faculty to give comparisons that have special significance for Pennsylvania. The collected information for the Commonwealth is compared with similar data for New York, Illinois, Michigan, Ohio, and California, and for the top ranked fifty schools in the study. The nature of the relationships between enrollment and ranking, the number of fields and ranking, and resident students enrolled and ranking make possible some rather clear observations about graduate education in the state.

Graduate Evaluation: A Look at Precedents

In 1861, a precedent was set in American higher education; for in that year Yale awarded the first Ph.D.s in American history. It is fair to assume that the ink was hardly dry on the parchment

*Originally Center Report No. 14, February 1972.

[1] Kenneth D. Roose and Charles J. Andersen, *A Rating of Graduate Programs* (Washington, D.C.: American Council on Education, 1970); and John A. Creager, *The American Graduate Student: A Normative Description* (Washington, D.C.: ACE Research Reports) 6 (5) 1971.

before questions arose concerning the quality of that small doctoral program at Yale. "By 1876, the year that Johns Hopkins dedicated itself to the development of the Ph.D., the precedent set by Yale was being followed in twenty-five institutions, which that year awarded a total of forty Ph.D. degrees."[2] By this time, the American penchant for competitiveness must certainly have spawned a desire to know which program was the best and why. Such judgments were no doubt made, but they appear to have been made individually and with varying degrees of individual knowledge.

By the turn of the century, however, it became obvious that the task of evaluating or grouping schools offering studies leading to the doctorate needed to be approached with more rigor. It is not surprising, therefore, that in the year 1900, fourteen institutions, which together accounted for 88 percent of all doctorates awarded at that time, came to form the Association of American Universities. While the AAU never set about formally to evaluate institutional programs, it has served a function which might be called evaluation and certification by regulating admission to its ranks. Proposals to make more specific inquiries have been suggested, but not adopted—albeit narrowly so.[3] Nonetheless, membership in AAU has served as an indicator of academic quality to many, including German institutions which, at the time of AAU's formation, were attracting numerous American scholars. Membership has grown from the original fourteen to the present number of forty-six. To see clearly that membership is still an evaluative measure, one need only note that those forty-six members stand in an exceptional condition when compared with the Council of Graduate School's current membership of 300. (Membership in CGS is open to institutions that have granted thirty graduate degrees, A.M., M.S., or Ph.D., in at least three fields over a three-year period.)

In 1925, Raymond Hughes undertook a modest but pioneering study of the quality of graduate training which was reported to the annual meeting of the American Council on Education.[4] This

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[2]Frederick Rudolph, *The American College and University* (New York: Vintage Books, 1962), p. 335.

[3]G. O. Arlt, "Purifying the Pierian Spring," The *Graduate Journal* 8 (1971): 237-276.

[4]D. A. Robertson, ed., *American Universities and Colleges* (New York: Scribner, 1928), pp. 161-163.

first formal national ranking was followed in 1934 by another study performed by Hughes. The place of formal evaluation of graduate departments by peer judgment had now been established.

Hayward Keniston was commissioned in 1957 to evaluate graduate programs in the arts and sciences at the University of Pennsylvania.[5] In order to compare the quality of programs in twenty-eight fields at Penn, Keniston collected and analyzed evaluations of that institution along with the other members of the AAU, which then numbered twenty-five.

In addition, various professional organizations have undertaken evaluation studies of graduate programs in their specific disciplines. Such research has been done in history, English, American literature, physics, sociology, psychology, education, and some other fields.

During the 1964-65 academic year, Allan M. Cartter, then vice-president of the American Council on Education, introduced a new evaluation of the quality of graduate programs.[6] Although there is obviously no perfect way of making such evaluations, many believe the Cartter method to be the most thorough yet devised. At first glance it might appear that such objective yardsticks as size and "quality" of faculty, nature of facilities, type and quantity of funding, etc., might yield a reasonable indication of relative quality among institutions. However, these physical attributes may or may not directly affect the quality of the resulting educational experience. Cartter chose to use the tool of peer evaluation by soliciting the opinion of scholars in regard to their view of quality departments in their field. Such a process is consistent with the use of professional peer judgment as it exists in the medical, legal, and engineering professions.

It was specifically suggested by the study advisory committee that the 1964 study be replicated within five years "to avoid 'fixing' reputations when in fact the academic scene is changing constantly."

[5]H. Keniston, *Graduate Study and Research in the Arts and Sciences at the University of Pennsylvania* (Philadelphia: University of Pennsylvania Press, 1959).

[6]Allan Cartter, *An Assessment of Quality in Graduate Programs* (Washington, D.C.: American Council on Education, 1966).

Following through on this recommendation, a replication with certain modifications was conducted in 1969 by Kenneth D. Roose and Charles J. Andersen.

As with the Cartter study before it, the Roose-Andersen report triggered criticism in regard to rationale and methodology. As Logan Wilson, president of ACE pointed out, "In general, the unhappy critics are those whose institutions did not stand up in the ratings."[7] In bearing out this point, Dutka indicates great dissatisfaction with the report at Columbia, the institution which appears to exhibit the greatest slippage between 1964 and 1969. She notes, "Most professors quickly point out the inability of outsiders to accurately judge the effectiveness of a program, the vagueness of the wording on the questionnaire, the random character of the sample, and the built-in time lag."[8]

Other criticisms were not tied to a particular institution's individual woes. Jacobson notes the following points which arose at an ACE news briefing to discuss the report:

1. The selection of respondents was made on criteria more than ten years old, thereby creating a bias against newer programs.
2. Some evaluators may have used the catchall "not sufficient information" as a kind way of expressing low esteem.
3. The disciplines studied excluded a number of fields, including education, agriculture, and medicine.
4. All evaluations were one and one-half years old when reported.
5. Some fields had more judges than others.

While the method of peer evaluation may be subjective, a more objective assessment of the outputs of higher education has not yet been fully operationalized although it is under investigation.[9] In

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[7] R. L. Jacobson, "Ratings of Graduate Departments Raise Questions About Who's 'Best,' " *Chronicle of Higher Education*, January 11, 1971, p. 9.

[8] E. Dutka, "Poor Marks for Columbia Graduate School," *Change* 3 (1971): 33-34.

[9] B. Lawrence, G. Weathersby, and V. W. Patterson, eds., *Outputs of Higher Education* (Boulder, Colo.: WICHE, July 1970).

any case, decisions such as what students apply, what faculty are attracted, and what grants are awarded are probably made largely on the basis of subjective judgments rather than truly objective criteria. Reputation, no matter how imperfect or inaccurate, is a factor to be recognized.

The initial Cartter report and the Roose-Andersen study of graduate quality dealt with two components—rated quality of graduate faculty and rated quality of doctoral programs. The present study deals exclusively with the first component, an emphasis that has been traditional for inter-university comparisons.

American Council on Education Studies

The Cartter study reported strengths of leading individual institutions by general areas of study. This was as close as the study came to making overall judgments. Any evaluation based on a combination of rankings was eliminated from the 1969 data. Roose and Andersen state, "In this new survey, we have tried to deemphasize the pecking order relationships inherent in most scoring systems, for it is not our purpose to bolster or deflate egos. We have, therefore, not presented scores for individual institutions."[10]

However, if ACE was not willing to publish comparative rankings of institutions, others were quite ready to draw inferences that depended upon an aggregation of the departmental data. Jacobson reports, "The council's report scarcely had been made public when a number of universities sent out news releases of their own, mainly to call attention to survey results that were favorable to them. At least one institution used its own statistical weighting to give itself a higher comparative standing than it had attained in the list of those most often in the top five."[11]

Raymond Ewell has developed a simple method for constructing composite scores for institutions. The approach, which was

[10] Roose and Andersen, *A Rating of Graduate Programs*, p. 2.
[11] R. L. Jacobson, "Ratings of Graduate Departments," p. 9.

first used in reference to the Cartter study, is described elsewhere.[12] Basically, the technique is as follows. Institutions are awarded points in accordance with their ranks in individual fields. For each field, a university gets the points indicated below. The composite score for an institution is the sum of the points for all fields in which it was rated.

DISTINGUISHED/STRONG – – – – Inverse rank + 14 points*

GOOD – – – – – – – – – – – – – 10 points

ADEQUATE PLUS – – – – – – – – 5 points

*BY USING THIS METHOD, WEIGHT IS GIVEN TO FIELDS WHICH HAVE THE GREATEST NUMBER OF *DISTINGUISHED/STRONG* ENTRIES. THE CONSTANT OF 14 ASSURES THAT EVEN THE LOWEST IN THIS CATEGORY GET FIVE MORE POINTS THAN THOSE RATED *GOOD*.

Ewell notes in his report, "I checked this rating system with Dr. Cartter, and he felt that this was the best of several systems which had been proposed to convert his disciplinary data into composite ratings for inter-university comparisons."[13]

When the departmental evaluations gathered by the Roose-Andersen study are weighted and summed by Ewell's method we have a composite score for each institution. Such a conversion was tabulated by J. William Johnston, and his summary provided the basic institutional scores cited in the paragraphs and tables that follow.[14] The relation of institutional characteristics and de-

[12]R. Ewell, "A Quantified Summary of the American Council on Education Report 'An Assessment of Quality in Graduate Education' [Cartter Study]," mimeographed (SUNY at Buffalo: Office of the Vice-President for Research, December, 1967).

[13]Ibid., p. 2.

[14]J. W. Johnston, "A Composite Ranking of Institutional Graduate Disciplines Based on the American Council on Education Report 'A Rating of Graduate Programs' [Roose-Andersen study]," mimeographed (University Park: The Pennsylvania State University, September 11, 1971).

partment ratings has been the object of some speculation but not of definitive study.[15]

The Aim and Method of The Study

In the present study certain objective information about institutions is compared with the aggregated Ewell ratings. The central focus is on Pennsylvania institutions. They are compared with those of Ohio, Michigan, New York, Massachusetts, Illinois, and California. This frame of reference allows some comparison of the collective rankings for Pennsylvania with states that are similar in population: Ohio, Illinois, and Michigan, and with states that have a somewhat similar pattern of public and private institutions: Ohio, Massachusetts, and New York. It also permits a contrast of Pennsylvania with states that are heavily committed to public higher education: California, Michigan, and Illinois. Pennsylvania merits this distinctive set of comparisons because of its unusual pattern of public support. For some years now it has been the practice to provide Commonwealth funds to three classes of institutions that are known as "state-owned," "state-related," and private "state-aided." From total higher education appropriations of $261 million in 1970-71, the fourteen "state-owned" colleges have been financed by the state in the amount of $73 million. A larger segment of the state funds for higher education has been selectively distributed—some would say scattered—among the "state-related" institutions ($148 million) and the "state-aided" institutions ($23 million). The Roose-Andersen data in an aggregated form offer a means of commenting on this practice of distributing support among a group of quasi-public and semi-public institutions.

Another set of more general comparisons is also reported in this study. The rankings which originate with professorial judgments are correlated with other institutional attributes to see whether there are any marked associations between the gross

[15] R. Smith and F. E. Fiedler, *The Measurement of Scholarly Work in Academic Institutions:* Technical Report No. 70-2 (Seattle, Washington: University of Washington, February 1970).

features of an institution—total enrollment and graduate enrollment, for example—and the collective score or rankings.

Roose has recently studied the characteristics of the 50 top-rated institutions, drawn from the 130 whose programs were rated in 1969. He feels that analysis of the top 50 is especially critical in a period characterized by budgetary restraint and limited expansion. For this reason, the present study considers characteristics of the top 50 as well as of the selected states. In all comparisons, each institution is described in terms of the following characteristics:

1. Rank-order of institution by composite score.
2. Ewell composite score.
3. Number of fields rated.
4. Total enrollment.
5. Graduate enrollment.
6. Percent of total enrollment accounted for by graduate enrollment.
7. Type of control, public or private.

Results

Preliminary Comments

Three qualifications need to be stated at the outset of this presentation. First, the present study is essentially a descriptive one. It simply introduces a comparison of relationships that were not included in the original Roose-Andersen analysis but which may show interesting relationships. The features portrayed are characteristics of the educational landscape rather than origins of institutional excellence. Second, the effect of a top-rated department on the judgments given other departments within that institution cannot be accurately gauged.[16] However, it would seem reasonable to hypothesize that a university is more than the sum of its parts and thus the effect of a top department would be more than merely additive. That is, if the present study errs slightly in measuring overall institutional rating, it does so on the side of underplaying the total quality of individual institutions.

[16]Smith and Fiedler, *Measurements of Scholarly Work*.

Third, it should be kept firmly in mind that the ratings are of *graduate* programs. What direct and indirect effects such quality has on the undergraduate education, research, and service activities of particular institutions is not only difficult to measure but highly idiosyncratic to the local campus setting. Spin-offs from graduate quality are, no doubt, plentiful. They are not, however, within the scope of this paper.

The Top Fifty

Table 1 above displays the institutions whose composite scores place them in the top fifty in the nation. The table also indicates number of fields rated, the various indexes of enrollments, and type of control for each institution. This particular collection of data allows us to examine the relationship between a ranking based upon peer judgment and several attributes of an institution. Product moment correlations were computed by Pearson's method for the intercorrelation of all variables. For convenience, a level of probability of $\leq .05$ is taken as significant.

We turn first to the relationship between composite score and the number of fields rated. Considering the fact that there is a prescreening which determines whether a field at a given institution is even included in the evaluation survey, one might hypothesize that the more fields an institution has rated, the better its position might be. This supposition is supported by the possibility that excellence in one field, mathematics for example, might have a "halo" effect upon judgments made of other disciplines; physics, astronomy, and engineering, for example. A significant relationship of $r = .72$ was found between the composite score and the number of fields rated. This suggests that an institution striving to improve its position in these national rankings might be wiser to consider a strategy for general improvement in a number of fields rather than a concentration upon one or two "star" departments.

It might also be hypothesized that the ratings might be improved by having more students enrolled since alumni might then constitute a greater share of the professionals making the judgment. When total enrollment of the institution was compared with the composite score, a correlation of .26 was generated. This degree of association does not support the hypothesized notion,

TABLE 1
TOP 50 INSTITUTIONS; RANKED BY COMPOSITE SCORE

Institution	Rank	Composite Score	Fields Rated	Total Enroll.	Graduate Enroll.	% Total in Graduate Enroll.	Control Pub = P Priv = I	Doctorates Awarded 1946-66
U.C.–Berkeley	1	1156	35	28863	9144	31.7	P	3238
Harvard	2	1095	34	19136	6268	46.1	I	2433
Michigan	3	964	36	37283	10328	27.7	P	2603
Stanford	4	945	32	11556	5326	46.1	I	1935
Yale	5	919	34	8665	3035	35.0	I	1800
Wisconsin	6	912	36	32000	8782	26.6	P	2730
Chicago	7	853	31	10464	6041	57.7	I	2079
Princeton	8	844	32	4756	1478	31.1	I	1721
Illinois	9	819	36	44806	9387	21.0	P	3933
Cornell	10	790	33	14102	3870	27.4	I	2007
U.C.L.A.	11	788	34	29070	8759	30.1	P	1005
Columbia	12	734	34	17459	6528	37.3	I	2501
U of Washington	13	662	34	30357	6560	21.6	P	909
U of Penn	14	642	32	19417	6606	34.0	I	1044
M I T	15	642	20	7730	3390	43.9	I	4354
Minnesota	16	611	33	58304	8457	14.5	P	1470
Johns Hopkins	17	605	26	11278	3072	27.2	I	1385
Indiana	18	579	32	47806	11009	23.0	P	675
Texas	19	576	32	30628	5538	18.0	P	1229
Cal Tech	20	513	16	1520	774	50.9	I	1714
Northwestern	21	510	32	17239	4084	23.7	I	1123
Brown	22	399	24	5042	1528	30.3	I	675
Duke	23	398	23	7552	1622	21.5	I	481
Purdue	24	397	21	34263	5201	15.2	P	2197
North Carolina	25	390	25	15601	3483	22.3	P	592
Michigan State	26	389	30	38758	10439	26.9	P	617
N Y U	27	363	29	34582	14602	42.2	I	1324
Ohio State	28	352	32	38834	7602	19.[illegible]	P	2215

TABLE 1 (cont.)

Institution	Rank	Composite Score	Fields Rated	Total Enroll.	Graduate Enroll.	% Total in Graduate Enroll.	Control Pub = P Priv = I	Doctorates Awarded 1946-66
Washington U	29	344	25	11908	2548	21.4	I	454
U of Rochester	30	330	24	8423	2043	24.3	I	548
Iowa	31	300	29	18659	4777	25.6	P	1061
Rockefeller U	32	295	10	138	128	92.8	I	4
Brandeis	33	294	15	2707	744	27.5	I	71
Case Western Res	34	291	21	10927	3606	33.0	I	792
Penn State	35	288	28	33742	5009	14.9	P	1379
Oregon	36	282	24	13980	3530	25.3	P	149
U.C.—Davis	37	281	16	10161	2367	23.3	P	100
Colorado	38	259	28	18280	4195	23.0	P	589
U of Pittsburgh	39	238	26	22067	7665	34.7	P	819
U.C.—San Diego	40	236	10	3070	1148	37.4	P	no data
SUNY Buffalo	41	230	24	19113	4781	25.0	P	176
Kansas	42	223	26	15791	3198	20.3	P	538
Iowa State	43	209	18	16925	2696	15.9	P	1498
Rice	44	209	19	2830	816	28.8	I	437
Southern Cal	45	206	23	18692	6223	33.3	I	261
Syracuse U	46	192	26	20254	4382	21.6	I	401
Rutgers	47	187	21	15142	5767	38.1	P	459
Vanderbilt	48	186	21	5558	1198	21.6	I	226
Virginia	49	185	18	18379	6861	37.3	P	538
Carnegie Mellon	50	168	9	5228	1406	26.9	I	974

SOURCES: Rank, Composite Score (Johnston)
Number of Fields Rated (Roose-Andersen)
Control, Enrollment—as of 1968-69—(National Center for Educational Statistics)
Doctorates Awarded—(Doctorate Recipients from U.S.—N.A.S.)

but perhaps only the graduate students should be counted, since the rating deals with graduate activity. When graduate enrollment was compared with composite score, a slightly increased correlation coefficient was generated (r = .34), but it is much too low to support any idea about a significant influence of one factor upon the other. Viewed through the eyes of an institution that aspires to improve its ranking, these data suggest that merely undertaking a program for growth in the number of graduate students will not materially aid quality.

Enrollment figures, however, are momentary and may or may not accurately reflect a university's production of scholars over an extended period of time. When we consider the number of doctorates which each institution has awarded in the twenty-year period ending in 1966, it is found that this figure correlates significantly with composite score (r = .72).

A larger number of professionals having graduated from a particular institution would appear to have a favorable effect on ratings in at least two ways. First, a greater number of raters will have experienced a direct exposure to the institution's programs. Second, more raters will have indirect knowledge of the institution's program through contact and interaction with colleagues who have attended that institution.

In terms of relative quality as reflected in the composite scores of the top fifty there is little difference between the public and private groups. Private institutions show a slightly higher mean score (510 vs. 470), but this is not significant. When each of the groups is examined by correlating scores with enrollment, some interesting distinctions appear. The public institutions tend to have significantly larger enrollments, as one might expect, with graduate students constituting about 25 percent of the total. Private institutions with smaller average enrollments have a larger share of their students (35 percent) in graduate study. Among the public institutions there is a significant correlation between total enrollment and composite score (r = .55), and a similar relationship between graduate enrollment and composite score (r = .68). This condition does not appear among the private institutions.

TABLE 2
BASIC DATA FOR SELECTED INSTITUTIONS IN SEVEN STATES

Table 2A

Pennsylvania

A Institution	B Rank	C Composite Score	D Fields Rated	E Total Enroll.	F Graduate Enroll.	F/E % Total in Grad. Enroll.	G Control
U of Penn	14	642	32	19417	6606	34.0	PVT*
Penn State	35	288	28	33742	5009	14.9	PUB≠
U of Pitt	39	238	26	22067	7665	34.7	PUB≠
Carnegie-Mellon	50	168	9	5228	1406	26.9	PVT
Bryn Mawr	62	101	10	1152	585	50.8	PVT
Lehigh	87	49	3	4982	1830	36.7	PVT
Temple	109	15	3	33284	6197	18.6	PUB
TOTALS		1501	111	119872	29298	= (24.4)	
MEANS			15	17124	4185		

*State-Aided
≠State-Related

Focusing on Pennsylvania

The next phase of comparison considers the Pennsylvania institutions which fall into the total group of rated institutions consisting of 130 universities nationwide. Because our concern is for the Commonwealth as a whole, all data for institutions in the Commonwealth has been grouped. Three Pennsylvania institutions fall outside the top 50, but within the total 130 (Bryn Mawr, Lehigh, and Temple), while four (Penn, Penn State, Pitt, and Carnegie-Mellon) are within the upper group.

Pennsylvania vs. the Top Fifty. A first step is to compare collected information on Pennsylvania institutions with the aggregate data for the top fifty institutions. On several characteristics there is no real difference. Mean total enrollments are about the same and graduate enrollments are also very similar. In the number of fields rated, however, there is a rather surprising difference. For the top fifty universities the mean number of fields rated is twenty-six, while for Pennsylvania the mean is only fifteen.

This condition reflects more specialization within institutions of this state than one finds in the group of top institutions nationally. It suggests that the Commonwealth, to improve the general quality of its graduate education, might examine the variety of graduate offerings at principal institutions to insure a full meausre of opportunity for its most able citizens.

Pennsylvania vs. Selected States. A second step involves the comparison of Pennsylvania data with collected information of other states. Information on Pennsylvania institutions is contained in the table above. The states in the present sample accounted for twenty-eight of the top fifty institutions (56 percent). By individual states we find the following distribution of those in the top fifty versus those in the total sample: Pennsylvania—4:7, Ohio—2:4, Michigan—2:3, New York—7:12, Massachusetts—3:6, Illinois—3:6, and California—7:10. Detailed information for other selected states is provided in the series of tables which follows.

We have already noted that the policy by which institutions of higher learning receive funds in Pennsylvania is unique. There are "state-owned" institutions—the fourteen state colleges, a group of three "state-related" Commonwealth universities, and three major

TABLE 2
BASIC DATA FOR SELECTED INSTITUTIONS IN SEVEN STATES

Table 2B

Ohio

A Institution	B Rank	C Composite Score	D Fields Rated	E Total Enroll.	F Graduate Enroll.	F/E % Total in Grad. Enroll.	G Control
Ohio State	28	352	32	33834	7602	19.6	PUB
Case Western Reserve	34	291	21	10927	3606	33.0	PVT
Cincinnati	71	78	11	26627	3804	14.3	PUB
Ohio U	113	5	1	16287	1898	11.7	PUB
TOTALS		726	65	92675	16910	= (18.3)	
MEANS			16	23168	4227		

TABLE 2 (cont.)

Table 2C

Michigan

A Institution	B Rank	C Composite Score	D Fields Rated	E Total Enroll.	F Graduate Enroll.	F/E % Total in Grad. Enroll.	G Control
Michigan	3	964	36	37283	10328	27.7	PUB
Michigan State	26	389	30	38758	10439	26.9	PUB
Wayne State	84	50	9	32370	6939	21.4	PUB
TOTALS		1403	75	108411	27706 =	(26.0)	
MEANS			25	36137	9235		

TABLE 2 (cont.)

Table 2D

New York

A Institution	B Rank	C Composite Score	D Fields Rated	E Total Enroll.	F Graduate Enroll.	F/E % Total in Grad. Enroll.	G Control
Cornell	10	790	33	14102	3870	27.4	PVT
Columbia	12	734	34	17459	6528	37.3	PVT
N Y U	27	363	28	34582	14602	42.2	PVT
U of Rochester	30	330	24	8423	2043	24.3	PVT
Rockefeller U	32	295	10	138	128	92.8	PVT
SUNY Buffalo	41	230	24	19113	4781	25.0	PUB
Syracuse U	46	192	26	20254	4382	21.6	PVT
Yeshiva U	53	145	8	5528	1513	27.4	PVT
Brooklyn Poly	68	81	8	5715	2995	52.4	PVT
Rensselaer	77	60	8	5144	1355	26.3	PVT
Fordham	99	20	4	10542	1897	18.0	PVT
New School	99	20	4	2609	2125	81.5	PVT
TOTALS		3260	209	143609	46219	= (32.2)	
MEANS			17	11967	3851		

TABLE 2 (cont.)

Table 2E

Massachusetts

A Institution	B Rank	C Composite Score	D Fields Rated	E Total Enroll.	F Graduate Enroll.	F/E % Total in Grad. Enroll.	G Control
Harvard	2	1095	34	19136	6268	32.8	PVT
M I T	14	642	20	7730	3390	43.9	PVT
Brandeis	33	294	15	2707	744	27.5	PVT
U of Mass	54	134	17	15202	3467	22.8	PUB
Boston U	88	45	9	23011	5134	22.3	PVT
Tufts	93	35	6	5048	825	16.3	PVT
TOTALS		2245	101	72834	19828	= (27.2)	
MEANS			16	12139	3304		

TABLE 2 (cont.)

Table 2F

Illinois

A Institution	B Rank	C Composite Score	D Fields Rated	E Total Enroll.	F Graduate Enroll.	F/E % Total in Grad. Enroll.	G Control
Chicago	7	853	31	10464	6041	57.7	PVT
Illinois	9	819	36	44806	9387	21.0	PUB
Northwestern	21	510	32	17239	4084	23.7	PVT
Illinois Tech	84	50	7	8471	2023	23.9	PVT
Southern Ill	97	25	4	19260	3736	19.4	PUB
Loyloa (Chicago)	109	10	2	12651	3133	24.8	PVT
TOTALS		2267	112	112891	28404	= (25.2)	
MEANS			20	18815	4734		

TABLE 2 (cont.)

Table 2G

California

A Institution	B Rank	C Composite Score	D Fields Rated	E Total Enroll.	F Graduate Enroll.	F/E % Total in Grad. Enroll.	G Control
U.C.–Berkeley	1	1156	35	28863	9144	31.7	PUB
Stanford	4	945	32	11556	5326	46.1	PVT
U.C.L.A.	11	788	34	29070	8759	30.1	PUB
Cal Tech	20	513	16	1520	774	50.9	PVT
U.C.–Davis	37	281	16	10161	2367	23.3	PUB
U.C.–San Diego	40	236	10	3070	1148	37.4	PUB
Southern Cal	45	206	23	18692	6223	33.3	PVT
U.C.–Riverside	57	122	13	4183	1121	26.8	PUB
Claremont Grad School	75	64	7	968	939	97.0	PVT
U.C.–San Fran Med	76	662	4	2338	394	16.6	PUB
TOTALS		4373	190	110421	36195	= (32.8)	
MEANS			19	11042	3620		

"state-aided" private institutions. In effect, the resources of the state are distributed rather than concentrated in a smaller group of wholly public institutions. New York is the only counterpart in this tradition, although that state has undertaken major change toward the development of strong public institutions over the last decade.

The two states are quite similar in average number of fields rated. This appears to confirm the idea noted above that when state support is extended to more institutions, more specialization in graduate programs develops. On the matter of average total enrollment there is less similarity, with New York institutions showing a mean of 11,967 and Pennsylvania–17,124. The share of the enrollment in graduate programs is quite different, 32 percent in New York and only 24 percent in Pennsylvania. Pennsylvania may have good reason to expand its graduate opportunity, as well as the number of programs offered.

However, the particular policy of state funding for private institutions may or may not bear any relationship to the actual existence of quality graduate level institutions in the state. For example, Massachusetts is very heavily represented by the private sector, yet the state allocates absolutely no funds for the direct operating costs of private institutions. Clearly then, we need to examine the broader question of the rated quality of public and private institutions in the selected states irrespective of state policy.

Table 3 shows a summary of rated quality in the seven selected states aggregated by control. From this information the differences between the states can be seen most vividly. Not merely state policy but historical development is reflected in the particular divisions between public and private. On one polar extreme are New York and Massachusetts, which up until very recently have both placed the burden for graduate level work on the private institutions of the state. At the other extreme is Michigan which gains all of its composite strength from public institutions. Pennsylvania occupies middle ground, splitting seven institutions about as evenly as one can mathematically, with "three and one-half" institutions in each category. Ohio and Illinois fall on either side of Pennsylvania, with Ohio leaning toward the New York-Massachusetts policy and Illinois tending toward Michigan's. California shows a rather balanced posture and great strength, with somewhat more power in the public sector.

TABLE 3
NUMBER OF INSTITUTIONS AND SUMMED COMPOSITE SCORES FOR SELECTED STATES AND BY CONTROL WITHIN STATES

	All Institutions			Public Institutions		Private Institutions	
State	Number of Institutions Represented	Sum of Composite Scores	Average Score per Institution	No. of Public Institutions Represented	Sum of Public Composite Scores	No. of Private Institutions Represented	Sum of Private Composite Scores
Pennsylvania	7	1501	214	3†	541	4*	960
Ohio	4	726	182	3	435	1	291
Michigan	3	1403	468	3	1403	0	0
New York	12	3260	272	1	230	11	3030
Massachusetts	6	2245	374	1	134	5	2111
Illinois	6	2267	378	2	844	4	1423
California	10	4373	437	6	2645	4	1728

†Includes two "state-related" institutions.
*Includes one "state-aided" institution.

The mean scores for the rated institutions in each state may be taken as a rough indication of what that particular state is getting as a return on its total investment, public and private, in graduate education. Pennsylvania is clearly better off than Ohio but substantially below all the others. However desirable it might be, one can say little more on this matter because a number of the institutions are really national or international in the scope of their clientele, thus encompassing more than state interests.

One can also see quite clearly from this table that the states vary in regard to their relative concentration or dispersion of quality graduate programs among institutions. Regarding the subject of dispersion, one can quickly see from Table 3 that Pennsylvania amasses a composite score very near Michigan's, but does so through seven institutions in contrast to Michigan's three. California reflects a higher composite score than New York with fewer institutions, while Massachusetts and Illinois have comparable scores with a like number of institutions for each.

Another way to compare Pennsylvania with other states is through an analysis of states with roughly equivalent populations as seen in Table 4. Ohio and Illinois come closest to Pennsylvania, and one might expect them to show roughly equivalent quality levels. The three, however, show very different total composite scores of quality. Pennsylvania's score is more than double that of Ohio, and Illinois' is half again higher than Pennsylvania's. The table presents a ratio of judged quality per state to population. While this measure is meant to assess general accessibility to quality graduate programs for residents of a state, it does not reflect two other important attributes of actual access–degree of selectivity and amount of student cost.[17] If one takes the ratio of scores to population, it is clear that Pennsylvania extends to its citizens a rather limited opportunity for graduate study of high quality.

Table 5 shows another aspect of general accessibility. The population under scrutiny here, however, is college students who are residents of the selected states. The first comparison relates total score to the number of residents who are students at some college in the United States. The second comparison is of quality scores to the

[17] W. Willingham, *Free-Access Higher Education* (New York: College Entrance Examination Board, 1970).

TABLE 4

SUMMED COMPOSITE SCORES IN SELECTED STATES AS A FUNCTION OF POPULATION IN STATE

A State	B Sum of Composite Scores	C Population of State* (in thousands)	B/C Score Points Per Capita	Rank
Pennsylvania	1501	11,750	.128	6
Ohio	726	10,610	.068	7
Michigan	1403	8,673	.162	5
New York	3260	18,186	.179	4
Massachusetts	2245	5,438	.413	1
Illinois	2267	10,958	.207	3
California	4373	19,179	.228	2

*As of July 1, 1968

SOURCE: Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1970.*

number of residents who attend college in their home state. Table 5 may be taken as an indication of the quality level a state offers, first, to all its students, and second, to those who choose to remain in the state. Pennsylvania retains its relatively low position in terms of the whole student group, but it is quite similar to New York. We notice, however, that Pennsylvania has the smallest share of students remaining at home. The ratio of quality to students, Column B/E, looks good—comparable to Michigan, New York, and even California—until we remind ourselves that this is achieved by having more than a fifth of the student population go elsewhere.

Because the composite scores reflect the quality of graduate programs only, there is reason for looking only at the graduate student population. Table 6 makes the same comparisons as Table 5 considering only graduate students. A quick comparison of the percentage remaining in the home state as reflected in Table 5 and Table 6 reveals a little more mobility for the graduate students. Californians still find their opportunity at home as do the young people of Michigan. New York appears to have better holding power for its graduate students than for the whole range of student population. Pennsyl-

TABLE 5

SUMMED COMPOSITE SCORES IN SELECTED STATES AS A FUNCTION OF NUMBER OF STUDENTS

	All College and University Students			Students Attending in Home State		
A State	B Sum of Composite Scores	C No. of Student Residents of State*	B/C Ratio of Sum of Composite Scores to No. of SRoS	D % Residents in Home State	E No. of Students Remaining** in Home State	B/E Ratio of Sum of Composite Scores to SRe
Pennsylvania	1501	350,287	.0043	78	272,846	.0055
Ohio	726	310,621	.0023	84	259,604	.0028
Michigan	1403	277,135	.0051	92	255,563	.0055
New York	3260	742,182	.0044	81	604,532	.0054
Massachusetts	2245	203,212	.0111	79	160,281	.0140
Illinois	2267	385,221	.0059	79	304,182	.0075
California	4373	810,208	.0054	94	762,198	.0057

*Student Residents defined as "The residents of a State who are enrolled as students in their own State or any other part of the aggregate United States. Foreign students are not included (page x)."

**Those residents attending college in their home state.

SOURCE: National Center for Educational Statistics, *Residence and Migration of College Students, Fall, 1968.*

TABLE 6

SUMMED COMPOSITE SCORES IN SELECTED STATES AS A FUNCTION OF NUMBER OF GRADUATE STUDENTS

	All College and Univeristy Students			Students Attending in Home State		
A State	B Sum of Composite Scores	C No. of Student Residents of State*	B/C Ratio of Sum of Composite Scores to No. of SRoS	D % Residents in Home State	E No. of Students Remaining** in Home State	B/E Ratio of Sum of Composite Scores to SRe
Pennsylvania	1501	46,857	.0320	77	35,972	.0417
Ohio	726	30,056	.0242	76	22,807	.0318
Michigan	1403	32,851	.0427	88	28,857	.0486
New York	3260	123,133	.0265	85	104,319	.0313
Massachusetts	2245	27,006	.0831	78	21,109	.1063
Illinois	2267	42,090	.0539	77	32,552	.0696
California	4373	91,544	.0478	90	82,256	.0531

*Parallels definition in Table 5; considers graduate students only

**Parallels definition in Table 5; considers graduate students only

SOURCE: National Center for Educational Statistics, *Residence and Migration of College Students, Fall, 1968.*

vania still sends a sizeable 23 percent elsewhere and offers those who stay a graduate education of moderate quality. By and large the relationships remain the same among our seven sample states.

Looking into relationships in the Roose-Andersen report leads one to the question of how stable the results might appear in light of the earlier data of the Cartter report. To round out this obvious dimension of inquiry a set of composite scores for the 1964 report was calculated and the basic comparisons made. The comparison of composite scores for those in the top fifty in 1964 with those in the same group for 1969 showed a very high similarity (r = .98). Among the main subgroups reported in the paragraphs above—public vs. private, selected states vs. top fifty—no significant differences appeared. One interesting piece of additional information did emerge when the top fifty for each of the two years was split in half. The top twenty-five in the two reports showed a correlation of .95 by Pearson's method while the low twenty-five gave a value of .77. The locus of change is clearly at the lower end of the scale. The strategy for institutional improvement when confronted with this type of rating system is confirmed: attempt to bring many programs up to a good level and hold them there. While there is little likelihood of a new institution reaching the top twenty-five, the second twenty-five is still quite acceptable company. The major similarities we have noted suggest that a complete replication of this study using 1964 data would give rather similar results. The zone of change is the second quartile, as Table 7 shows.

Conclusions

By using the composite scores derived from the Roose-Andersen study as a reflection of the quality of graduate offerings in institutions, we have been able to generate some information and some indications that cannot be constructed easily by any other means.

First, the composite scores for institutions were tested for relationship with several other attributes: number of fields rated, total enrollment, and graduate enrollment.

1. There is a strong relationship between the number of fields rated and the composite score (r = .72). This suggests that the avenue of institutional improvement lies in

TABLE 7

CORRELATION BETWEEN 1969 AND 1964 COMPOSITE SCORES (PEARSON'S METHOD)

Top 50–All Institutions	.98*
Top 50–	
Upper 25 Only	.95*
Lower 25 Only	.77*
Top 50–	
Private Only	.98*
Public Only	.98*
Top 50–	
Selected States Only	.98*
Pennsylvania–All Rated Institutions	.99*

*Significant at $p \leq .05$.

increasing the number of good departments in the graduate school rather than in creating one or two "star" departments.

2. In general, the size of the enrollment, either total or only graduate, is not significantly correlated with quality as measured by composite score. In the group of public institutions, however, there is an indication that larger numbers of graduate students do relate favorably to higher quality.
3. Institutions which have over an extended period of time awarded a large number of doctorates tend to be rated highly. This is attested to by the high correlation between number of doctorates awarded in the last twenty years and composite score. Greater doctoral production allows greater familiarity with an institution's programs.

Second, the composite scores for institutions were aggregated for the top fifty schools on the list and for seven representative states to give a measure of centrality. The collected score for Pennsylvania's institutions was compared to those of the other states. Each of the six companion states held one or more points of similarity or contrast with Pennsylvania on population, policy, or tradition.

4. In comparison with the top fifty institutions, Pennsylvania showed fewer fields rated per institution, fifteen vs. twenty-six. In view of finding #1, above, and in the light of what is known about the beneficial cross-fertilization among departments, Pennsylvania might well encourage the development of a larger number of graduate programs in its better institutions.
5. In comparison with the seven selected states, Pennsylvania has a relatively low proportion of its total student enrollment in graduate work, 24 percent. Only Ohio is smaller. This reinforces the idea that graduate opportunity for citizens of the Commonwealth should be expanded.
6. When the scores of all institutions in a state are summed, we have an approximation of the quality level of graduate education, public and private, available to the people. The Pennsylvania institutions gathered a total of 1501 score points, placing the state fifth among the seven sample states.
7. When this total score is related in a simple ratio to the factors used in our study, the position of Pennsylvania slips back to sixth place. For example, the ratio of quality points per institution puts the state in the sixth position. The ratio of quality score points to population gives a per capita value which also places the state sixth (Table 4). A similar rank appears when the ratio of quality score points per student is calculated (Table 5), but here the unfavorable position is further intensified by the fact that a sizeable share of the students, 22-23 percent, leave the state to study.
8. A general conclusion is rather clear. Pennsylvania's unique policy of diversified support for higher education does not, in and of itself, appear to be either favorable or unfavorable to the growth of quality in graduate study. To serve her citizens, Pennsylvania needs more graduate programs of good quality in its major institutions. Whether the current policy can encourage the kind of development needed to bring the Commonwealth up to the level of what might be called her "peer

states" is the real question. And, in the light of the data presented here, the emphasis on more high quality graduate programs is no mere cry for expansion. It is the simple recognition of the need for an investment that has been too long postponed.

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EXCEPTIONAL GRADUATE ADMISSIONS AT THE PENNSYLVANIA STATE UNIVERSITY*

Manuel G. Gunne and Larry L. Leslie

Until quite recently the admissions criteria for graduate schools conformed closely to that of the undergraduate patterns established earlier. The determinants of selection were past academic performance and achievement scores on entrance examinations. The rationale behind these two criteria was that they were predictive of future academic success and that applicants with the greatest chance for success should be admitted.

There is some basis for the first assumption, although in general the evidence is meager. High school rank has been shown to be the best single predictor of success in college; however, substantial research relating high school performance and test achievement scores to college success indicates that in absolute terms these criteria by no means insure impressive results.

Such practices have contributed to a situation wherein approximately 40 percent of all college freshmen never receive a baccalaureate degree,[1] and as many as 50 percent of the graduate students in all but the top-ranked universities never complete their doctoral programs.[2] Admissions practices at both levels of higher education were severely criticized by Campbell[3] and Marston[4] in two articles in a recent issue of the *American Psychologist.* A national study of attrition of doctoral candidates showed that even among

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[1]Robert E. Iffert, *Retention and Withdrawal of College Students,* Bulletin 1 (Washington, D.C.: U.S. Office of Education, 1958).

[2]Ann M. Heiss, *Challenges to Graduate Schools* (San Francisco: Jossey-Bass, 1970), p. 102.

[3]David C. Campbell, "Admissions Policies: Side Effects and Their Implications," *American Psychologist* 26 (1971): 636-48.

[4]Albert R. Marston, "It Is Time to Reconsider the Graduate Record Examination," *American Psychologist* 26 (1971): 653-6.

graduate students with a master's degree, almost 33 percent never attain the doctorate.[5] In fact, in a study of educational research training programs at the graduate level, Fleury and Cappolluzzo reported that entrance requirement variables effectively predicted success only 15 percent of the time, leaving 85 percent still unaccounted for.[6] These circumstances suggest that if the prediction of success is indeed possible at all, other criteria may be more promising.[7]

At many institutions and in various ways, graduate admissions procedures have changed, partially in recognition of the poor predictive powers of the traditional criteria, and even more vitally in an attempt to remedy social injustices. Clearly, institutions have begun to move away from traditional admissions practices, at least for some students in some institutions. The beneficiaries have often been disadvantaged students, especially balcks,[8] who have been welcomed by institutions intent upon altering their elitist images.

Whether as a result of an effort to correct a social and moral injustice, to ease campus unrest and rebellion, to erect a facade of concern, or to try to be "where it's at," many colleges and universities have begun to admit disadvantaged students in increasing numbers to their graduate programs, under other than traditional criteria. The prospects for success (degree attainment) for many of these students who are exceptions to the traditional may be considered highly limited, but many institutions are taking the risks, with little evidence of adverse effects.[9]

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[5] Allen Tucker, David Gottlieb, and John Pease, *Attrition of Graduate Students at the Ph.D. Level*, Publication 7 (Michigan State University: Office of Research & Development and the Graduate School, 1964).

[6] Bernard J. Fleury and Emma M. Cappolluzzo, *Educational Research Training Programs: Requirements for Admission* (University of Massachusetts: Massachusetts School of Education, 1969).

[7] Marston, "Graduate Record Examination," p. 654.

[8] Lawrence C. Howard, *Graduate Education for the Disadvantaged and Black-Oriented University Graduates* (Washington, D.C.: Council of Graduate Schools in the United States, 1968).

[9] Council of Graduate Schools in the United States, *Programs for Disadvantaged Students in Graduate Schools* (Princeton, N.J.: Educational Testing Service, 1970), p. 3.

These institutions are forming policy in light of the realization that there is no such thing as a culture-free test and that nontraditional, even unconventional, criteria may be more desirable. The American College Testing Program has responded by seeking to design criteria batteries that include evidence of leadership ability, indications of latent motivation and learning capabilities, and most importantly the opinions of knowledgeable instructors and advisors.

The Council of Graduate Schools has surveyed the extent and nature of institutional adjustment to new criteria and has noted that of its 287 member colleges and universities, at least 150, or approximately 59 percent of the respondents to its survey, reported making some provision for exceptional admissions. The Council reports this to be a national upsurge in exceptional admissions to American graduate schools.

The Council study, which is the most comprehensive to date, reports the following pertinent findings:

> Many graduate schools report ten or fewer disadvantaged students enrolled. The number of such students has increased substantially in recent years.
>
> Most of the special procedures and programs were established in 1967 or later. Few changes have been made or are planned.
>
> Substantial numbers of graduate schools waive or liberalize the admissions requirements of previous scholastic records and test scores. Letters of recommendation are the most frequently used additional criteria for evaluating the applicants.
>
> Most of the graduate schools reporting special procedures or programs feel that it is too early to evaluate their effectiveness. Others reported that student achievement has been good or excellent and that the rate of attrition has been low.[10]

Selected Efforts

Particular efforts by individual institutions are worthy of special mention. The University of California at Los Angeles, for example, purposely seeks out high-risk applicants who clearly do not meet traditional requirements and selects its disadvantaged students

[10]Ibid.

under a set of admissions criteria obviously quite different from those normally employed.[11] Harvard, Yale, and Columbia run a coordinated intensive summer studies program for similarly disadvantaged but potentially able applicants. These students are selected partially on the basis of a formal application and a transcript of college work, but more consideration is given to a statement of educational aims, a writing sample, an interview, and especially to three faculty recommendations. Motivation and desire are prominent factors considered in these acceptance decisions.[12]

Wisconsin utilizes a multidisciplinary program approach for high-risk unadmissibles who have been accepted to its graduate school with credentials well below those usually prescribed. After admission, certain helpful steps are taken to improve the student's chances of success.

> Ordinarily a specific faculty member should agree to counsel each student and the department should be prepared to offer a reduced course load, pass-fail grading in some subjects, tutoring, and other special procedures which insure that deficiencies in undergraduate preparation do not prevent the student from progressing toward his degree.[13]

In an attempt to find criteria more appropriate to the culturally and socially different minorities, Oberlin interviews black applicants who are chosen for graduate admissions only after rating them on their "hipness," a composite of competitiveness, high motivation, and self-reliance.[14]

The University of Cincinnati is admittedly unimpressed with undergraduate grade point averages, and looks primarily at the latter part of a student's undergraduate experiences for evidence of prob-

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[11] Howard, *Graduate Education.*

[12] Harold M. Stahmer, *The Disadvantaged Student in Graduate School,* The Harvard-Yale-Columbia Intensive Summer Studies Programs (Washington, D.C.: Council of Graduate Schools, 1968).

[13] Donald Carlisle, *The Disadvantaged Student in Graduate School Master's and Doctoral Degree Programs in Predominantly Non-Negro Universities* (Los Angeles: University of California, 1968), p. 11.

[14] William G. Davis and Gordon A. Welty, *The Old System and the New College Students* (Oberlin, Ohio: American College Personnel Association, 1970).

lem-solving ability.[15] The students selected are requested to attend a summer institute, not unlike the Harvard-Yale-Columbia program, at which many services similar to those of the Wisconsin program (tutoring, reduced load, and pass-fail) are made available. In reference to problem-solving ability, Cincinnati reports that students who asked for the most help turned out to be the most successful in the program, low gpa's notwithstanding.

The Penn State Case

Like so many other concerned institutions, The Pennsylvania State University has changed its procedures for admitting applicants to its graduate programs. Prior to 1970, all applications were controlled centrally by the graduate school. Graduation from an accredited baccalaureate-granting institution and at least a 2.5 junior-senior grade point average were the minimum requirements for all applicants. Ordinarily, the graduate school automatically rejected any applications which did not meet these two basic requirements. All minimally acceptable applications were then forwarded to the appropriate departments where, subject to facility limitations, decisions were made according to the criteria developed by each department as its own prerogative.

In the "other-than-ordinary" cases, a department would take the initiative in admitting a student who was known to possess some compensating features or interests. In these cases, the department would ask the graduate school office to forward a particular application in spite of its obvious disqualifying grade point average. Such procedures were not common, however.

In an attempt to decentralize admissions decisions and to make some provision for disadvantaged applicants, the Graduate Admissions Committee formulated a policy, late in 1969, under which all applications would be forwarded directly to the various departments without the graduate school exercising any judgment other than that of determining whether an applicant had attended an accredited institution. No minimum grade point average would be necessary and departments were openly urged to admit some disadvantaged students who ordinarily would have been rejected under

[15] Howard, *Graduate Education.*

the traditional criteria. Departments were further encouraged to make a special effort to locate potentially able disadvantaged students whose records might initially reflect apparent weaknesses in their backgrounds.

In this same report the Graduate Admissions Committee made the following charge to the Dean of the Graduate School:

> For evaluation of the policy for exceptional admissions, the Graduate School shall maintain an annual survey of the effects of exceptional admissions, drawing data from official transcripts and from members of the graduate faculty with the use of the Recommendation Report form appended in this Committee report. Comparisons will be made and reported of students admitted in exception to normal criteria and comparable students who did meet those criteria.[16]

The Effects of Changed Criteria or Standards

Such a charge is not unusual. Institutions nationwide have sought to determine whether the quality of their programs has suffered as a result of exceptional admissions. There is no published evidence that program quality has diminished noticeably. The Council of Graduate Schools' report supports this point. Although most institutions consider that "it is too early to evaluate their [exceptional admissions programs] effectiveness, others report that student achievement has been good—even excellent—and that the rate of attrition has been low."[17] Appraisals of individual programs have yet to reach the journals in large numbers; however, a few such reports have been forthcoming.

Selected Efforts

In the special University of California at Los Angeles program, only 25 percent of the exceptionally admitted students failed to successfully complete their work. (Recall that the national study by

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[16] "Graduate School Bulletin" (University Park, Pennsylvania: The Pennsylvania State University, May 2, 1969), pp. 5-6.

[17] Council of Graduate Schools in the United States, *Programs for Disadvantaged.*

Heiss revealed a comparable 50 percent figure for regular admits.)[18] A comparison of the students who persisted revealed that the entering grade point average requirement appeared rather insignificant when other factors and attributes were taken into account.[19] An almost random relationship was reported to exist between entering gpa and later academic achievement. Those who failed the program did not necessarily have low gpa's at the time of admission.

The notably intensive Harvard-Yale-Columbia summer program showed especially encouraging results in its first two years. As many as 59 percent of the 1966 group continued their graduate work and 71 percent of the 1967 applicants were progressing satisfactorily in that program.[20]

Perhaps no institution surpasses Oberlin in its efforts to devise nonstandard criteria for admission to graduate school. As intimated earlier, the Oberlin research compared three groups of students who differed on the basis of traditional criteria (including gpa) and a concept of "hipness" (competitiveness, high motivation, and self-reliance). Students in the first group met the traditional criteria but they were not hip. The second group of students met the traditional criteria while also being hip. Students in the third group did not meet the traditional criteria, but they were, by definition, hip. Oberlin researchers reported that, "At the end of the first semester, there was no appreciable difference in the distinction of grade point average among the three groups."[21]

The Penn State Case

The discussion thus far has described the results of efforts nationally to evaluate innovative programs for disadvantaged students in graduate schools. The Pennsylvania State University has not sought to rival Oberlin's admissions criteria in originality. That aspect of the issue is left to each department. The University no longer has one all-pervading admissions policy; it is now the complete prerogative of each department to establish its own criteria for exceptional as well as regular admissions. The focus of this study, however, is not on the

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[18] Heiss, *Challenges to Graduate Schools.*
[19] Carlisle, *The Disadvantaged Student*, p. 19.
[20] Stahmer, *The Disadvantaged Student.*
[21] Davis and Welty, *The Old System.*

admissions criteria, but on the comparative success of those students admitted under any exceptional admissions guidelines.

Method of the Study

For the purposes of this study the exceptionally admitted students were separated into two subgroups. First, there were those who were exceptional in the traditional sense, since they did not meet the previous university-wide minimum upper-division undergraduate grade point average of 2.5. Second were those who possessed a grade point average above 2.5, but who were still below the required minimum for the department to which they had applied. This group also included those exceptionally admitted students who failed to meet other particular department criteria, e.g., course prerequisites, special entrance tests, etc.

These two subgroups of exceptionally admitted students were compared to a group of randomly selected traditionally admitted students in line with six hypotheses. These hypotheses, stated here in the null convention for the sake of convenience, were tested to ascertain whether any difference existed between these two subgroups of exceptionally admitted students and a group of traditionally admitted (control) students. The six hypotheses were:

1. There are no differences in student performance between students who are admitted to graduate programs with less than a 2.5 grade point average in their junior-senior undergraduate years and those who are admitted with greater than a 2.5 grade point average.
2. There are no differences within departments in student performance between students who are admitted to graduate programs with less than 2.5 grade point averages in their junior-senior years and those who are admitted with greater than 2.5 grade point averages.
3. There are no differences within colleges in student performance between students who are admitted to graduate programs with less than 2.5 grade point averages in their junior-senior years and those who are admitted with greater than 2.5 grade point averages.
4. There are no differences in student performance between students who are admitted to graduate programs

on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.*

5. There are no differences within departments in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.*
6. There are no differences within colleges in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.*

Procedure

Using rosters of new graduate students at The Pennsylvania State University for the summer and fall terms of 1970—terms when most new students are admitted—the evaluators identified students who could be considered exceptional admits since they failed to meet the old university-wide requirement of a 2.5 minimum gpa or the particular acceptance criteria of the various departments of the University. Department admissions requirements vary considerably and may include varying combinations of special tests, standardized tests, course or degree specifications, letters of recommendation, and prescribed grade point average requirements ranging from the old university-wide minimum 2.5 to a high of 3.0.

An examination of the summer and fall 1970 rosters of new graduate students disclosed 110 students who were admitted under exceptional circumstances, i.e., either their undergraduate junior-senior grade point average was less than 2.5 or it was below the grade point average required by the department to which they were applying. Although most current research on exceptional admissions focuses on blacks or other minority groups, the subjects for this study were not selected on the basis of race, religion, or national

*Since all departments maintained a gpa standard of at least 2.5, the "below 2.5 groups" of the first three hypotheses are included in the "below departmental standards groups" of the latter three hypotheses.

origin, although foreign students were omitted. Adequate records were available for only 99 of these students who were split into the two subgroups.* The first subgroup contained those students admitted with a grade point average below 2.5, while the second subgroup included those students whose grade point averages were below individual department standards (which were never below a 2.5 gpa; thus the second subgroup contains the first subgroup).

The total group of students was also subdivided into college and department categories for hypothesis testing. However, since only six colleges had admitted fifteen or more exceptional students and only five departments had admitted five or more exceptional students, only colleges and departments which had at least these numbers were compared.

Stratified random samples by college and department were then drawn of those new admits, appearing on the same summer and fall rosters, whose upper division grade point averages were above all department admissions criteria. These students comprised the control group. A sample of 115 such control students who met their department requirements were randomly drawn. The sampling plan was to include enough students within each college and department for meaningful comparisons. With the 99 "experimental" students, the total number of subjects originally identified for the study was 214.

Instrumentation

The instrument was an investigator-designed questionnaire, modified from the Graduate School's Recommendation Report on the "Applicant for Admission" form (see Appendix A). It included the student's name, a section for the faculty member to indicate his degree of familiarity with the student to be evaluated, and eleven items relating to the student's personality and performance as a graduate student. (A twelfth item asked whether, in the opinion of the faculty member, the University had erred in admitting the student identified on the questionnaire.)

*There were eleven students who applied for exceptional admission, were accepted, but did not appear to begin their graduate work.

The eleven items concerned such areas as the student's knowledge of and ability to use the basic research techniques in his field, his self-reliance and independenec in scholarly work, his motivation toward scholarly work, his emotional stability and maturity, and his skill in expressing himself—both in speech and writing.

Faculty members were asked to rank the students in comparison to other recent graduate students, at the same stage in their programs, who had worked on equivalent degrees in that department. A brief item-statement, e.g., "mastery of the fundamental knowledge in his major field," was presented and then followed by a nine-interval percentile scale. The scale ranged from the bottom tenth percentile to the top tenth percentile with a twenty percentile (41-60) midpoint. Based upon his familiarity with the student, the faculty member was asked to check a percentile for each item which, in his judgment, best described that student.

The questionnaire required only a few minutes to fill out and most returns were complete. In all, 428 copies of the instrument (2 for each of the 214 students) were circulated to selected faculty members who were most familiar with the students in the study. The faculty members were considered "most familiar" if they had been advisors to the students and/or had instructed them in one or more classes. Faculty members were not told the specific purpose of the study or which students had been exceptionally admitted.

Utilizing data collection techniques designed by Leslie,[22] 395 questionnaires (92 percent) were returned. Of these, 346 (81 percent) contained usable data. For most students there were two usable responses, but for the others only one questionnaire was returned. At this point data were available for 74 experimental subjects (below department requirements) and 111 control subjects (above all requirements)—185 subjects in all. The data were then compared according to the six hypotheses.

The plan for data analysis was designed to provide the graduate school and appropriate faculty committee with the information necessary for evaluation and decision making. Implicit in the charge

[22]Larry L. Leslie, "Obtaining Response Rates to Long Questionnaires," *Journal of Educational Research* (1970): 345-50.

to the graduate dean was the assumption that students admitted as exceptions in any given year would not differ markedly from those of subsequent years; thus, the true population sampled extended beyond the 1970 summer and fall terms. Therefore, the use of inferential statistics was deemed appropriate--the inference being applied to future exceptionally admitted students. At the same time the most noteworthy findings are the simple comparisons of raw data in the forms of means and standard deviations. This is so because the magnitude of differences between regular students and exceptionally admitted students is far more important than whether or not some difference exists.

Results

When the mean scores for the below 2.5 exceptional admissions students were compared with those of the traditional admits, the traditionals had higher scores on ten of the eleven items (see pages 2 and 3 of Appendix A). The differences ranged from .03 to .60 (with an average of .28). The exceptionally admitted students' single higher mean score was higher by a difference of .16 on Item 8.

As a total group, the mean scores for the exceptional admissions students were not lower than those of the traditional admits by more than .30 on eight of the eleven items—a small difference on a one-to-ten scale. As a matter of fact, on two of the eleven items (nos. 8 and 9) the mean scores for the exceptional admits were higher than those of the traditionally admitted students (see Table 1). On the single item (#2) which had a difference greater than .30, the variance was only .52. Since standard deviations were of the order of 2.0, these differences were small indeed.

The differences within departments varied more than those between the two major groups taken totally. Departments I and V contributed no subjects (missing returns) for the comparison of below 2.5 experimental students with the control group. Department II favored the regularly admitted students on seven items with mean score differences ranging from .43 to 2.18. The four items favoring the experimentals had differences ranging from .03 to .53. Departments III and IV had an insufficient number of observations for valid calculations. However, in department VI, the combined "all other departments" category, the exceptionally admitted students

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR THE ELEVEN ITEMS BY THE EXPERIMENTAL SUB-GROUP AND THE CONTROL GROUP (HYPOTHESES 1 and 4)

	(Below 2.5) X_1 N = 90		(Below dept. standards) X_2 N = 148		(Regular admits) Control N = 222	
Items*	Means	SD	Means	SD	Means	SD
1	5.95	2.04	6.04	2.11	6.34	1.92
2	5.44	1.99	5.52	2.16	6.04	1.94
3	5.88	2.18	6.02	2.27	6.22	2.00
4	6.37	2.21	6.35	2.24	6.60	1.98
5	6.47	2.04	6.41	2.14	6.66	1.97
6	6.74	1.72	6.65	1.93	6.84	1.90
7	5.95	2.05	6.07	2.04	6.35	2.01
8	6.82	1.93	6.90	1.81	6.66	1.96
9	6.52	1.79	6.59	1.75	6.55	2.00
10	6.22	2.07	6.27	2.03	6.29	2.02
11	6.22	2.25	6.37	2.25	6.63	2.13

*Items are identified in Appendix A.

were favored on seven of the eleven items with a range of .03 to .36. The four items favoring the control group ranged from .01 to .30. These are extremely small differences.

When the two subgroups of experimentals were combined for a within-department comparison, the results were generally the same as those found when the below 2.5s were taken separately. The controls were favored somewhat in most distinct departments while the experimentals predominated in the combined "other departments" category. Both differences spanned a small range somewhat like the university-wide comparison. Department IV, however, showed a dramatic switch when the total group of experimentals (as opposed to the below 2.5s only) were compared with the controls. In the former instance there was a 9:2 ratio favoring the controls, while in the latter case an 8:3 ratio favored the experimentals although with a much smaller range of differences (see Table 2).

The within-college differences between the below 2.5 experimentals and the controls disclose some interesting findings. Colleges III (10:1 ratio) and VI (8:3) decisively favored the controls. Colleges IV (11:0) and V (9:2) favored the experimentals. And Colleges I (6:5) and II (7:4), although favoring the controls, were more equally balanced. The number of subjects for the experimental group was too small to consider for college VII, the "other departments" category. Taking the eleven items for the six colleges for a total of sixty-six comparisons, interestingly enough, resulted in thirty-three favoring the controls and thirty-three favoring the experimentals.

When the two subgroups of experimentals were combined for a within-college comparison, five of the colleges remained essentially the same. Only college I changed from a 6:5 ratio favoring the controls to a 11:0 ratio in the same direction (see Table 3).

Summary

Essentially there were few differences between the groups when compared on a university-wide basis. Some small differences favored the controls within colleges, while a greater number of differences with a wider range of variance favored the controls within departments. In light of these findings the remainder of the analysis is expected to add very little. Exceptionally admitted students do not appear to differ importantly from traditional students in the perceptions of faculty members who know them best. In order to determine whether these differences in the mean scores are greater than could be expected by chance, the data were subjected to t-tests under the six hypotheses.

The t-Tests

As expected when appraising mean scores, the t-tests of the six hypotheses on the eleven items of the instrument resulted in few significant differences between the experimental students (divided into the two subgroups of those admitted below the previous university-wide minimum of a 2.5 gpa in the junior-senior years of undergraduate education and those admitted who were below particular department requirements) and the controls (those admitted above the 2.5 average and all other particular minimum department criteria).

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR THE ELEVEN ITEMS BY THE EXPERIMENTAL SUBGROUPS AND THE CONTROL GROUP (HYPOTHESES 2 and 5)

	DEPARTMENT II**				DEPARTMENT VI**				DEPARTMENT II***			
	X_1	N = 12	C	N = 38	X_1	N = 74	C	N = 108	X_2	N = 12	C	N = 38
Items*	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1	5.00	2.30	5.97	2.48	6.16	1.97	6.12	2.01	5.00	2.30	5.97	2.48
2	3.50	1.85	5.41	2.41	5.67	1.95	5.97	2.04	3.50	1.85	5.41	2.41
3	3.75	2.12	5.93	2.38	6.08	2.10	6.00	2.02	3.75	2.12	5.93	2.38
4	5.50	2.50	6.22	2.40	6.53	2.20	6.41	2.04	5.50	2.50	6.22	2.40
5	6.00	1.76	6.43	2.35	6.57	2.11	6.59	2.07	6.00	1.76	6.43	2.35
6	6.50	1.83	6.47	2.10	6.83	1.73	6.84	2.05	6.50	1.83	6.47	2.10
7	4.90	2.13	5.81	2.57	6.12	2.06	6.13	2.09	4.90	2.13	5.81	2.57
8	6.14	2.91	5.79	2.73	6.97	1.84	6.61	1.84	6.14	2.91	5.79	2.73
9	6.45	1.86	6.05	2.63	6.60	1.81	6.35	2.02	6.45	1.86	6.05	2.63
10	6.10	2.13	5.57	2.42	6.26	2.12	6.23	2.07	6.10	2.13	5.57	2.42
11	5.30	2.66	6.08	2.36	6.39	2.22	6.36	2.32	5.30	2.66	6.08	2.36

TABLE 2 (cont.)

	DEPARTMENT III***				DEPARTMENT V***				DEPARTMENT VI***			
	X_2	N = 12	C	N = 18	X_2	N = 10	C	N = 18	X_2	N = 102	C	N = 108
Items	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1	5.91	1.24	6.29	0.98	5.80	2.29	6.88	1.27	6.18	2.16	6.12	2.01
2	5.18	1.07	5.41	0.87	2.83	1.16	5.86	1.45	5.76	2.14	5.97	2.04
3	5.66	1.82	5.31	0.94	6.20	2.39	6.27	1.31	6.11	2.26	6.00	2.02
4	5.54	1.69	6.05	1.39	6.10	2.23	7.00	1.41	6.52	2.27	6.41	2.04
5	5.41	1.67	6.11	1.49	6.77	1.64	6.61	1.50	6.44	2.27	6.53	2.07
6	5.09	1.13	6.05	1.56	6.70	1.49	7.16	1.38	6.81	1.99	6.84	2.05
7	5.16	1.26	6.17	1.01	6.00	2.16	7.00	1.00	6.23	2.08	6.13	2.09
8	5.80	1.68	5.58	1.66	6.90	1.91	7.12	1.02	7.05	1.75	6.61	1.84
9	5.16	1.03	5.88	1.36	6.40	2.06	7.16	0.92	6.76	1.74	6.35	2.02
10	5.81	1.66	6.00	1.19	6.80	1.61	6.76	1.30	6.19	2.14	6.23	2.07
11	5.72	1.61	6.18	1.51	5.77	2.29	7.82	1.01	6.53	2.25	6.36	2.32

*Items are listed in Appendix A.

**Departments I & V had no observations for the experimental subgroup. Departments III and IV had insufficient observations for the experimental subgroup of Hypothesis II.

***Departments I and IV had insufficient observations for the experimental subgroup of Hypothesis V.

TABLE 3

MEANS AND STANDARD DEVIATIONS ON THE ELEVEN ITEMS FOR EXPERIMENTAL SUBGROUPS AND THE CONTROL GROUP BY COLLEGES: (HYPOTHESES 3 and 4*)

	COLLEGE I						COLLEGE II						COLLEGE III					
	X_1	N = 4	X_2	N = 12	C	N = 34	X_1	N = 12	X_2	N = 12	C	N = 38	X_1	N = 16	X_2	N = 40	C	N = 36
Items	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1	7.75	0.50	6.75	1.65	7.05	1.55	5.00	2.30	5.00	2.30	5.97	2.48	6.18	1.16	6.10	1.69	6.72	1.34
2	6.00	3.46	6.00	2.32	7.17	1.54	3.50	1.85	3.50	1.85	5.41	2.41	5.56	1.20	5.25	1.82	5.91	1.41
3	7.75	0.95	6.25	2.17	7.26	1.54	3.75	3.13	3.75	2.12	5.93	2.38	5.87	1.20	6.12	1.78	6.00	1.44
4	6.00	2.64	5.63	2.24	7.26	1.69	5.50	3.50	5.50	2.50	6.22	2.40	6.43	1.59	6.30	1.88	6.67	1.41
5	5.33	3.05	5.27	2.05	7.23	1.67	6.00	1.76	6.00	1.76	6.43	2.35	6.43	1.75	6.43	1.77	6.72	1.58
6	7.50	1.29	6.83	1.69	7.41	1.49	6.50	1.83	6.50	1.83	6.47	2.10	6.75	1.48	6.48	1.68	7.03	1.53
7	6.50	1.73	6.08	1.88	7.17	1.52	4.90	2.13	4.90	2.13	5.81	2.57	5.87	1.50	5.97	1.76	6.75	1.31
8	8.00	1.41	7.10	1.19	7.15	1.62	6.14	2.91	6.14	2.91	5.79	2.73	7.12	1.20	6.86	1.56	6.73	1.65
9	7.50	1.29	7.00	1.70	7.26	1.74	6.45	1.86	6.45	1.86	5.05	2.63	6.62	1.40	6.40	1.70	6.76	1.36
10	4.00	0.00	6.28	1.70	7.00	1.35	6.10	2.13	6.10	2.13	5.57	2.42	6.37	1.36	6.48	1.51	6.51	1.27
11	7.00	1.41	6.66	1.96	7.10	1.60	5.30	2.66	5.30	2.66	6.08	2.36	6.43	1.50	6.34	1.84	7.15	1.44

TABLE 3 (cont.)

	COLLEGE IV						COLLEGE V						COLLEGE VI					
	X_1	N = 10	X_2	N = 10	C	N = 30	X_1	N = 14	X_2	N = 30	C	N = 36	X_1	N = 14	X_2	N = 20	C	N = 26
Items	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1	6.30	2.40	6.30	2.40	5.80	2.09	6.14	2.31	6.63	2.15	6.06	1.91	6.07	1.77	5.45	2.50	6.07	2.03
2	6.30	1.82	6.30	1.82	5.70	2.18	6.21	2.11	6.50	2.17	6.08	1.86	5.78	1.76	5.20	2.39	5.95	2.10
3	6.50	2.50	6.50	2.50	5.41	2.39	6.64	2.02	7.06	1.76	6.44	2.07	5.58	2.10	5.00	2.65	6.23	2.07
4	7.50	1.50	7.50	1.50	5.75	2.48	6.92	1.94	7.06	1.96	6.86	1.82	6.58	2.31	5.88	2.75	6.66	2.11
5	7.10	2.28	7.10	2.28	5.71	2.47	7.00	1.22	7.14	1.86	6.77	1.89	6.25	2.37	5.55	2.89	6.94	1.80
6	6.60	1.57	6.60	1.57	6.34	2.45	7.38	1.19	7.32	1.63	6.91	1.78	7.00	2.00	6.00	2.82	6.61	2.30
7	6.10	2.28	6.10	2.28	5.31	2.45	6.71	1.93	6.86	1.85	6.41	1.90	6.07	1.77	6.00	2.05	6.34	2.03
8	6.50	2.50	6.50	2.50	6.24	2.11	6.92	1.63	7.30	1.51	7.36	1.38	7.33	1.77	6.94	1.83	6.21	2.04
9	6.20	2.25	6.20	2.25	5.86	2.08	6.78	1.80	7.06	1.52	6.58	1.96	7.00	1.46	6.95	1.53	6.62	2.20
10	6.60	2.54	6.60	2.54	5.51	2.73	6.76	1.78	6.76	1.66	6.53	2.09	6.08	2.46	5.50	2.83	6.72	1.87
11	6.20	2.82	6.20	2.82	5.60	2.69	6.61	2.06	7.03	1.97	6.82	2.09	6.28	2.19	5.89	2.66	7.25	1.99

*College VII had insufficient observations for the control group.

Though a few differences were found, the number of these was not much more than that expected by probability. Also, recall that even where differences were significant, the magnitude of those differences was small. (See Appendix B for a discussion of t-test findings.) The differences for the subgroup of below 2.5 students and the regular students were also small (see Table 1).

Factor Analysis

The next step in analyzing the data was to perform a factor analysis on the responses to the eleven items in order to increase interpretability of the instrument. The factor analysis revealed that all eleven items were measuring essentially the same thing and therefore that the instrument was unidimensional.* Hence, comparison of groups on the single factor greatly simplifies interpretation of the findings with little apparent loss of sensitivity.

Standardized group mean scores on the composite factor were compared using t-tests according to the six hypotheses. No significant differences were found. Detailed findings are presented in Appendix C.

The most informative results revealed that exceptionally admitted students were perceived by knowledgeable faculty to be approximately equal in ability and achievement to regularly admitted students. Raw mean scores on each of the eleven items of the rating instrument, statistical tests of the means of the eleven items, and statistical tests of standardized group mean factor scores indicated near-equal appraisals of both kinds of students. This was true for the University as a whole and for individual colleges and departments considered separately.

Conclusions

On the basis of this study the changes in graduate admissions policies at The Pennsylvania State University do not appear to ad-

*A single factor, with an eigenvalue of 8.97 and factor loadings all above .83, explained 81.55 percent of the total variance. A second factor explained only an additional 5.53 percent of the variance with an eigenvalue well below 1.0-.61. (See Table 6, Appendix B.)

versely affect the quality of graduate programs. Since the new procedures specify the departments as the admitting units and the differences between the experimentals and controls were indeed small, it would suggest that the departments are capable of selecting students who, though failing to meet certain department standards, nonetheless perform acceptably in the programs. Even where there is some evidence that exceptionally admitted students are perceived less favorably by faculty members, the differences are so small that they are almost negligible. Therefore, the evidence suggests continuation of the new policy.

To be sure, faculty perceptions are but one criterion for assessing graduate students' capabilities and achievements. Nevertheless, since it is ultimately the faculty who largely determine the success or failure of graduate students—and usually by some equally subjective judgments—faculty perceptions are valid measures. As time passes and other criteria become available, more complete appraisals of the change in graduate admissions procedures at The Pennsylvania State University will become possible. For example, grades earned in courses, success in comprehensive examinations, and success in completing degree programs will be valuable indexes of success. Follow-up studies of graduates could yield even more valid evaluations. For the time being, however, faculty views suffice.

Perhaps, if the results of this study were internally conflicting or were at odds with published accounts of similar investigations, the single criterion of faculty appraisal would arouse more skepticism. However, both the internal consistency of the findings and the consistency with previous research are clearly compatible. From this and previous research, success in graduate study does not appear to be predictable from undergraduate grade point averages, nor does it appear to be predictable on the basis of other standard criteria used by the respective departments of the University. Even when differences do favor the regularly admitted student over the exceptionally admitted, the size of the advantage is exceedingly small.

Traditional graduate admissions policies do not appear to serve their ostensible purposes. They do not seem to afford substantial efficiencies to society by restricting graduate education to those most likely to benefit. Perhaps they do, or at least historically did, however, restrict persons from certain social, racial, or economic

backgrounds. It would appear that institutions of higher education are coming to that conclusion. In the absence of some otherwise compelling evidence, equal consideration of all applicants would seem to be a wise policy.

APPENDIX A:

Questionnaire Letter and Questionnaire

THE PENNSYLVANIA STATE UNIVERSITY
CENTER FOR THE STUDY OF HIGHER EDUCATION
101 RACKLEY BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

Area Code 814
865-6346

January 11, 1971

Dear Faculty Member:

We need your help in fulfilling a charge given to the Graduate School by the Graduate Admissions Committee. Our concern has to do with the relative success that certain student typologies encounter as graduate students as Penn State.

Would you, therefore, please complete the enclosed form(s) for the student(s) indicated at the top of the form? No more than five minutes should be necessary to complete each instrument.

Thank you.

James B. Bartoo
Dean of the Graduate School

Larry L. Leslie
R Research Associate
Center for the Study of
Higher Education

JBB/LLL/fz
Enclosure

138/139

STUDENT EVALUATION FORM

1.-3. Students. Name _____

7. How familiar are you with this student's academic performance (as a graduate student at Penn State) or other characteristics that you believe are important to his status as a graduate student?

1. Almost totally unfamiliar _____
2. Vaguely familiar _____
3. Modestly familiar _____
4. Quite familiar _____
5. Very familiar _____

INSTRUCTIONS: Rank this student in comparison to other recent graduate students (at the same stage in the program) who have worked on equivalent degrees in your department. Rank him by checking the percentile within which he falls.

	Bottom 10%	11th-20th %ile	21st-30th %ile	31st-40th %ile	41st-60th %ile	61st-70th %ile	71st-80th %ile	81st-90th %ile	Top 10%
11. Mastery of the fundamental knowledge in his major field.	1	2	3	4	5	6	7	8	9
12. Knowledge of and ability to use the basic research techniques in his field.	1	2	3	4	5	6	7	8	9
13. A fertile imagination and originality in his field.	1	2	3	4	5	6	7	8	9
14. Self-reliance and independence in scholarly work.	1	2	3	4	5	6	7	8	9
15. Motivation toward productive scholarly work.	1	2	3	4	5	6	7	8	9
16. Emotional stability and maturity.	1	2	3	4	5	6	7	8	9
17. How do you rate him in General All-around Scholarly Ability.	1	2	3	4	5	6	7	8	9
18. How well he interacts with his fellow students.	1	2	3	4	5	6	7	8	9
19. Skill in expressing himself in speech and writing.	1	2	3	4	5	6	7	8	9
20. Development since you have known him.	1	2	3	4	5	6	7	8	9
21. Performance in your class.	1	2	3	4	5	6	7	8	9
22. Did we err in admitting him.	Yes	No							

COMMENTS: _____

_____

_____

_____

Your Signature _____

APPENDIX B:

Discussion of t-test Findings

The investigators hesitate to present these t-test findings for fear that they will be misinterpreted. The reader is advised to remember that although some significant differences were found for the two general groups, the magnitude of the differences was very small—exceeding .30 on a 1.0 to 10.0 scale on only one of eleven items. The large number of subjects caused findings to be statistically significant even though differences were small. The reader is asked to keep these points in mind.

For hypothesis 1, calling for a comparison of the below 2.5 experimental subjects with the traditional control subjects, significant differences ($.010 < P < .025$) were found on only one item, "knowledge of and ability to use the basic research techniques in his field." The mean score for the regular students was higher.

Hypothesis 2 compared the below 2.5 subjects with the control subjects after both groups had been categorized by department. With minor exceptions, the differences within departments between these two groups were not found to be significant. The differences between the below 2.5 gpa students and the traditionally admitted students by department revealed that "a knowledge of and ability to use basic research techniques in his field" ($.025 < P < .050$) and "imagination and originality in his field" ($.010 < P < .025$) were the only two items on which significant differences were found—and these in only one department. Another three departments showed no significant differences on any of the items, while the two other departments did not contain adequate numbers of subjects for testing.

When categorized by colleges to test hypothesis 3 (the below 2.5 experimentals with the controls), only college II had items (two) on which group differences were significant. Mean scores again favored the regular students. These items were the same two, "knowledge of and ability to use basic research techniques in his field" ($.025 < P < .050$) and "imagination and originality in his field" ($.010 < P < .025$). Differences significantly favored regular students on the item, "All-around scholastic ability" ($.025 < P < .050$) in college III. On "self-reliance and independence in scholarly work" mean scores favored the exceptionally admitted students ($.025 < P < .050$) in college IV. Colleges V and VI revealed no significant differences between groups, and college VII had inadequate numbers for testing (see Table 4). The sum of significant t-values approximated that

TABLE 4

SIGNIFICANT AND NONSIGNIFICANT t VALUES FOR THE ELEVEN ITEMS BY EXPERIMENTAL AND CONTROL GROUPS ON THE SIX HYPOTHESES

Items	Hypothesis 1 University Wide	Hypothesis 2 Department I	II	III	IV	V	VI	Hypothesis 3 College I	II	III	IV	V	VI	VII
1	NON	N/T	NON	NON	SIG	N/T	NON	N/T	NON	NON	NON	NON	NON	N/T
2	SIG	N/T	SIG	NON	NON	N/T	NON	N/T	SIG	NON	NON	NON	NON	N/T
3	NON	N/T	SIG	NON	NON	N/T	NON	N/T	SIG	NON	NON	NON	NON	N/T
4	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	NON	SIG	NON	NON	N/T
5	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	NON	NON	NON	NON	N/T
6	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	NON	NON	NON	NON	N/T
7	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	SIG	NON	NON	NON	N/T
8	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	NON	NON	NON	NON	N/T
9	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	NON	NON	NON	NON	N/T
10	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	NON	NON	NON	NON	N/T
11	NON	N/T	NON	NON	NON	N/T	NON	N/T	NON	NON	NON	NON	NON	N/T

Items	Hypothesis 4 University Wide	Hypothesis 5 Department I	II	III	IV	V	VI	Hypothesis 6 College I	II	III	IV	V	VI	VII
1	NON	N/T	NON	NON	N/T	NON	NON	NON	NON	SIG	NON	NON	NON	N/T
2	SIG	N/T	SIG	NON	N/T	SIG	NON	NON	SIG	NON	NON	NON	NON	N/T
3	NON	N/T	SIG	NON	N/T	NON	NON	NON	SIG	NON	NON	NON	NON	N/T
4	NON	N/T	NON	NON	N/T	NON	NON	SIG	NON	NON	SIG	NON	NON	N/T

TABLE 4 (cont.)

Item	Hypothesis 4 University Wide	Hypothesis 5 Department I	II	III	IV	V	VI	Hypothesis 6 College I	II	III	IV	V	VI	VII
5	NON	N/T	NON	NON	N/T	NON	NON	SIG	NON	NON	NON	NON	NON	N/T
6	NON	N/T	NON	NON	N/T	NON	NON	NON	NON	NON	NON	NON	NON	N/T
7	NON	N/T	NON	SIG	N/T	NON	NON	NON	NON	SIG	NON	NON	NON	N/T
8	NON	N/T	NON	NON	N/T	NON	NON	NON	NON	NON	NON	NON	NON	N/T
9	NON	N/T	NON	NON	N/T	NON	NON	NON	NON	NON	NON	NON	NON	N/T
10	NON	N/T	NON	NON	N/T	NON	NON	NON	NON	NON	NON	NON	NON	N/T
11	NON	N/T	NON	NON	N/T	SIG	NON	NON	NON	SIG	NON	NON	NON	N/T

HYPOTHESES:

1. There are no differences in student performance between students who are admitted to graduate programs with less than a 2.5 gpa in their junior-senior undergraduate years and those who are admitted with greater than a 2.5 gpa.
2. There are no differences within departments in student performance between students who are admitted to graduate programs with less than 2.5 gpa's in their junior-senior years and those who are admitted with greater than 2.5 gpa's.
3. There are no differences within colleges in student performance between students who are admitted to graduate programs with less than 2.5 gpa's in their junior-senior years and those who are admitted with greater than 2.5 gpa's.
4. There are no differences in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.
5. There are no differences within departments in student performance between students who are admitted to graduate programs on the basis of special exceptions to department admissions standards and those who are not special exceptions to department standards.
6. There are no differences within colleges in student performance between students who are admitted to graduate programs on the basis of special exceptions to department standards.

SIG = Significant at $p \leq .05$ N/T = Not Tested: Insufficient Number of Observations
NON = Not Significant *See Appendix A, pp. 2 & 3.

which could be expected by probability for this number of t-tests performed at this level of significance.

The next three hypotheses compared the entire group of experimental subjects (both below 2.5 gpa's and above 2.5 but below particular department criteria) with the control subjects (above all particular department requirements). Hypothesis 4 compared the experimentals and controls as complete groups again as in hypothesis 1. In this instance only one item, "a knowledge of and ability to use the basic research techniques in his field," revealed significant differences ($.010 < P < .025$) between the groups. The direction of the difference favored the control subjects.

Hypothesis 5 tested the same experimental and control groups categorized by departments. Two departments showed significant group differences on two of the eleven items and two other departments disclosed one statistically significant item. Differences favored the control group in all four cases. "A knowledge of and ability to use the basic research techniques in his field" ($.025 < P < .050$) and a "fertile imagination and originality in his field" ($.010 < P < .025$) were the significant items for department II. "General all-around scholarly ability" ($.010 < P < .025$) was the only item yielding significant differences for the groups within department III. The experimental and control groups differed significantly on "basic research techniques" ($.001 < P < .010$) and "class performance" ($.001 < P < .010$) in department V.

The t-tests of hypothesis 6, measuring the differences within colleges between the two subgroups of the experimental group taken together and the total control group, revealed three items on which the groups were significantly different in college III: "mastery of fundamental knowledge" ($.025 < P < .050$), "general all-around scholarly ability" ($.010 < P < .025$), and "class performance" ($.010 < P < .025$). Two different items revealed differences in colleges I and II. In college I group differences were significant on "self-reliance and independence in scholarly work" ($.010 < P < .025$) and "motivation toward productive scholarly work" ($.001 < P < .010$). In college II "basic research techniques" ($.025 < P < .050$) and "imagination and originality in his field" ($.010 < P < .025$) were the items of significance. The results of the t-tests for college IV revealed significant differences for only one item, i.e., "self-reliance and independence in scholarly work" ($.025 < P < .050$). In only this last case did the

experimental group have a higher score. In colleges V and VI group differences were not significant on any items, and the differences within college VII were not compared because of inadequate numbers of subjects for testing.

For the most part, then, an analysis of the raw data resulted in relatively few significant differences in the performances of the two groups of students as rated by faculty—regardless of how the experimental students were grouped. However, even the differences that do exist are for the most part inconsequential, due to their small magnitude.

APPENDIX C:

Discussion of Factor Analysis

A factor analysis "summarizes" data. It collapses responses to the items of an instrument or those of several instruments. This can result in the need to consider only a few findings rather than many, possibly contradictory findings (as found above). These "summarized" results follow.

Hypothesis 1 tested the differences between the experimental subjects with less than a 2.5 grade point average against the control subjects, who were all above 2.5 and any other particular department requirements. The t value was 0.720 and was not significant.

The second hypothesis compared the same groups (experimental subjects below 2.5 with control subjects above all particular requirements) categorizing them by departments. However, due to the small numbers of experimental subjects, the t-tests were not computed for five departments. Therefore, only their means and standard errors are reported in Table 5. The sixth category, "all other departments combined," had adequate numbers of subjects and was tested, resulting in a t value of −0.674, which was not significant.

For hypothesis 3, measuring the below 2.5 experimental subjects against the entire control group by colleges, the differences within colleges were tested. Five of the seven college categories contained adequate numbers for testing. (See Table 5 for means and standard errors of the other two colleges.) The t value for college II was 1.310, which was not statistically significant. The t value for college III was 1.021 and was not significant. College IV revealed a t of −.0986, which was not significant. The t value for college V was found to be −0.182, not significant; and the t value for college VI was −0.083 and was also not significant.

Without any subdivision, hypothesis 4 compared the experimentals and controls with each other as complete groups. The t value was 1.028; it was not significant.

For hypothesis 5, the two major groups were again categorized by departments, and, where the number of subjects was adequate, t-tests were performed. Four of the six departments were so tested. (See Table 5 for the means and standard errors of the other two departments whose numbers were inadequate.) The t value for department II was 1.310, which was not significant. For department

TABLE 5

COMPOSITE FACTOR MEANS AND STANDARD ERRORS SQUARED FOR ALL GROUPS

	University Wide			Departments I			II			III		
	$X_1N = 82$	$X_2N = 140$	C N = 198	$X_1N = 3$	$X_2N = 6$	C N = 20	$X_1N = 9$	$X_2N = 9$	C N = 37	$X_1N = 2$	$X_2N = 11$	C N = 16
Mean	–0.52	–0.73	0.36	0.00	–0.16	0.63	–0.70	–0.70	–0.21	–0.61	–0.50	–0.19
Standard Error Squared	0.10	0.69	0.45	0.00	0.15	0.16	0.97	0.97	0.40	0.13	0.40	0.11

	Departments IV			V			VI		
	$X_1N = 2$	$X_2N = 6$	C N = 18	$X_1N = 3$	$X_2N = 10$	C N = 18	$X_1N = 69$	$X_2N = 98$	C N = 89
Mean	–0.22	0.58	0.30	0.00	–0.16	0.25	0.53	0.72	–0.49
Standard Error Squared	0.92	0.80	0.36	0.00	0.90	0.15	0.12	0.10	0.10

	Colleges I			II			III			IV		
	$X_1N = 3$	$X_2N = 11$	C N = 34	$X_1N = 9$	$X_2N = 9$	C N = 37	$X_1N = 16$	$X_2N = 39$	C N = 54	$X_1N = 10$	$X_1N = 10$	C N = 29
Mean	0.12	–0.67	0.41	–0.70	–0.70	–0.21	–0.37	–0.86	0.15	0.68	0.68	–0.35
Standard Error Squared	0.25	0.62	0.14	0.97	0.97	0.40	0.27	0.16	0.66	0.14	0.14	0.47

TABLE 5 (cont.)

	Colleges								
	V			VI			VII		
	$X_1N = 14$	$X_2N = 29$	C N = 28	$X_1N = 12$	$X_2N = 18$	C N = 14	$X_1N = 18$	$X_2N = 24$	C N = 2
Mean	0.17	0.29	0.12	0.34	–0.26	0.23	–0.76	–0.17	–0.66
Standard Error Squared	0.51	0.25	0.31	0.92	0.83	0.61	0.58	0.54	0.00

TABLE 6

ITEM FACTOR LOADINGS
(EIGENVALUE 8.97040)

Item	Factor Loading
1	0.89655
2	0.90892
3	0.91736
4	0.92905
5	0.87848
6	0.88771
7	0.94491
8	0.83299
9	0.85615
10	0.93629
11	0.93791

II was 1.310, which was not significant. For department III it was 1.375 and was nonsignificant. Department V showed a t value of 1.295 and was not significant, while department VI disclosed a t value of -0.390, also not significant.

Hypothesis 6 compared the two complete groups categorized by colleges. Only one of the seven colleges did not provide enough data for testing. Means and standard errors are reported in Table 6. The t value for college I was 1.740 and was not significant. For college II it was a nonsignificant value of 1.310. College III reported a 1.555 t, not significant. College IV's results were a t value of −0.986 which was not significant. The difference for college V was not significant with a t value of -0.703; and differences within college VI, with a t value of 0.712, were likewise nonsignificant. Overall, there appeared to be no marked differences on any of the six hypotheses using either raw data or the composite factor.

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THE RATIONALE FOR VARIOUS PLANS FOR FUNDING AMERICAN HIGHER EDUCATION*

Larry L. Leslie

I understand my assignment to be to discuss with you the question of access to higher education, with regard to the rationale for various plans for financing students in higher education and the rationale for various plans for financing higher education institutions themselves. Obviously, these topics are related. My approach will be to focus on finance, using this as the primary medium, but I will draw the implications to access as I move along. This approach seems to make sense because access issues are tied very closely to finance. Indeed, the access question is clearly at the root of the present debate over how higher education should gain its fiscal support. To illustrate, it has been argued that if we should decide to opt for the student voucher system, many problems of equal access would be automatically resolved.

Background

I will begin by briefly setting the stage. Here I will provide the background for the current and future task of financing higher education, including [illegible] the present higher education bill is being paid. Second—and this will be the heart of my statement—I will discuss the various current plans for funding higher education, including the rationale for these plans. Obviously, the access question will surface in this second section. Third, although this is not part of my charge and therefore I may be foolish to attempt it, I shall try to make some conclusions.

"Setting the stage" seems to be absolutely essential to this discussion. One can hardly talk about plans for changing the present system of financing higher education without first talking about what is. Thus, this first part of my statement deals with the present and

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projected costs of higher education, which of course must consider enrollment patterns and projections. Surely it must also include the magnitude of the present financial crisis—if indeed there is such a crisis. And it must include how the *present* bill is being paid. Although this last inclusion might appear gratuitous, a considerable number of proposals appear to be ignorant about who is presently underwriting the higher education system.

First, then, how much are we now spending? In 1970-71, total expenditures for higher education were $24.2 billion. This year we will spend almost 10 percent more, or $26.5 billion. The National Center for Educational Statistics tells us that by the 1980-81 academic year, we will be spending $43.8 billion. These are the latest figures and they are considered to be quite reliable.

During the past two years, state expenditures for public higher education have increased at the rate of 26 percent—a rather healthy increase, at least so it would appear on the surface. Twenty-six percent for two years or a 13 percent increase for each of the past two years would *seem* to be wholly adequate. And yet the present state of American Higher Education has been described as one of crisis. How can this be? A Brookings Institution study for the Carnegie Commission showed that per student costs necessarily increase 3 percent per year plus inflation—or, about a minimum of 6.4 percent per year per student at the present rate of inflation. The National Association of State Universities and Land-Grant Colleges puts the comparable figure at 10 percent per year. Note that this is to maintain a standstill status. Also note that these figures were increases *per student*. During the past 2 years, when the 26 percent expenditure increase was occurring, student enrollments were up 17 percent. Therefore, simple arithmetic reveals that the 26 percent "increase" represents, in fact, roughly a 2 or 3 percent decrease in terms of dollars per student needed in order to maintain a standstill status. Further, some types of institutions fared considerably better than others, thus inflating the figures for the less fortunate. State universities, and to a lesser extent, state colleges were among the less fortunate. Only community colleges generally appear to have fared well.

All this is by way of pointing out the absolute necessity of assessing our financial condition in light of enrollment increases. There is no way to completely "hold the line" in the financing of

higher education. Any state legislature which "holds the line" is in fact significantly cutting the budget in terms of present dollars. This is true even if enrollments were to stay the same–something that is not likely to happen in any state.

What, then, *does* the future hold regarding enrollment patterns? The 1970 enrollments were 7.9 million. Freshmen enrollments last fall were up 12 percent over the levels of the fall of 1969. They have risen commensurately for ten years. Whether this trend will continue is another question. The business of making enrollment projections is a sticky business indeed. The Census Bureau for example estimates that college enrollments by the year 2000 will be between 9.3 million and 19 million–an error term of over 100 percent. The wide range is attributed to such factors as: changing societal attitudes toward education, the amount of financial support that will be available to students, the growth of community colleges, changes in admissions practices, and perhaps most important of all, changing fertility rates. The lower projection of 9.3 million is based upon the October 1970 percentage of the population between the ages of five and thirty-four attending some educational institution, while the higher figure is an extrapolation of the same percentage increases that occurred between 1950 and 1970.

Obviously, the 9.3 million to 19 million range is too wide to be of much use. Therefore, *considering all factors, the National Center for Educational Statistics predicts college enrollments of 13.3 million by 1980.* The Center predicts a 70 percent enrollment increase in the public sector and an 8 percent increase in the private sector. Thus, in 1980, there would be 11 million students in public higher education and 2.3 million in private higher education. Again, the 1970 enrollments were 7.9 million. In short, most everyone agrees that enrollments will go up; the only question is by how much.

This brings us back to whether indeed there is or at least, will be, a financial crisis in higher education. My mere presence on this platform indicates that there is at least a perception of such a crisis in the minds of some.

I should at least mention, however, that the majority of the economists who are studying higher education do not perceive any crisis at all. It is interesting, although not very informative, to listen to the bantering going on between the two groups of economists.

There is little doubt in my mind that the dialogue is really about little more than terminology.

Both groups agree that there are indeed widespread, serious, immediate, and long-range financial difficulties in store for our colleges and universities. Allow me to cite some of the evidence. Earle Cheit's Carnegie Commission Study on the financial status of forty-one colleges and universities, chosen as representative of the major types of higher education institutions, provides perhaps the most broadly based data. Utilizing as the criterion whether an institution's current financial condition forced upon it a loss of quality or a loss of services, eleven institutions were found to be "in difficulty," eighteen were designated as "headed for trouble," and twelve were classified as "not in trouble." No class of institutions was found to be free from financial difficulty, although financial trouble was more likely to be found in private institutions, urban institutions, regional universities, and those having high student aid and high faculty salary costs. Based upon this study, the Carnegie Commission estimates that roughly 1,000 institutions, enrolling 4 million students (56 percent of the total) could be considered "headed for trouble."

William Jellema's excellent study of the financial status of the members of the Association of American Colleges—which includes almost all private institutions in this country—paints at least an equally pessimistic picture. The AAC found that "average" institutions enjoyed a net surplus in 1968, but experienced net deficits in 1969. By 1970, the average deficit per year was $131,000, or five times what it had been only a year earlier. According to Jellema, the full significance of these figures can only be appreciated in light of the fact that these greatly increased deficits occurred during a period when operations were being curtailed faculty members were being discharged or were simply not being replaced, and academic programs were being reduced. Between 40 and 60 percent of all private institutions are now running deficits with the situation being from serious to critical. One-fourth of all deficits are in excess of 7 percent. For this group, the range of deficits is from 7.4 percent to 29.1 percent of the current fund budget. In the conclusions to a follow-up survey, Jellema estimated that 107 of the colleges which responded would have totally depleted their liquid assets in 1970-71, if deficits remained at the reported 1968-69 levels. On the basis of the revised 1970-71 budget estimates, 122 institutions will have now depleted

their liquid assets and at the moment, may reasonably be called "broke." At this rate an estimated 365 of the nation's 762 private, accredited, four-year institutions will have no liquid assets within ten years.

A 1971 report of the National Association of State Universities and Land-Grant Colleges showed deficits also to be emerging in public colleges and universities, where the enrollment pressures are greatest and where there is strong competition for the tax dollar. Alabama A & M, Florida State, Oklahoma State, Rutgers, Houston, Michigan, Maine, Alaska, and Vermont Universities all reported deficits for 1970-71. Furthermore, the total may almost double this year with an additional sixty institutions kept solvent only by the severest economic measures.

A crisis? Perhaps not. Shall we call it, instead, a severe economic depression? But what does the future promise? On this point, the economists and the educators are in general agreement. The proportion of state budgets allocated to higher education will probably remain stable in the decade of the seventies. There are high priorities facing the states, including health services, the environment, and mass transportation. Thus, significant additional funds for higher education will very likely result only if the size of the total resource pool is also enlarged. In all likelihood, institutions will look more and more to the federal government and to higher tuitions to meet the increasing costs.

The last part of this background information section deals with how the present bill is being paid. It is necessary to know who is now paying the bill before talking about how much more each segment *should* pay. The first requirement is to listen very carefully to what is being said. For example, if only tuition and fees are considered, currently about 16 percent of all public and 40 percent of all private institutional expenditures for "educational and general" purposes come from this source. However, if tuition and fee income is applied, as it more commonly is, to the more narrowly defined "instruction and departmental research" categories, it accounts for about one-third and four-fifths of the expenditures of public and private institutions, respectively. In addition, as any student and any parent knows, there are other costs to be borne. And this is where the careful listening is required. When room and board costs and the

costs of travel and books, etc., are added, students and their families will have borne nearly $22 billion of the cost of higher education during the coming academic year. This will be approximately 75 percent of the total costs of higher education listed by the Carnegie Commission. But there is more. This figure does not include non-degree or part-time students, which would substantially raise the percentage figures. Even more important from the cost side, it does not include student foregone income. Foregone income is a cost the economists tell us must be charged to higher education. It is the amount that would have been earned by students if they had joined the work force instead of going to college. Today, this concept, which first entered the literature in 1960, is almost universally accepted. When foregone earnings are added to the total costs of higher education, estimates are that the true portion of the total higher education cost that is borne by the student and his family cannot possibly be less than two-thirds and is probably closer to seven-eights. Three-fourths or 75 percent seems to be the most commonly accepted figure among economists.

Let me now briefly summarize this background information.

1. The total dollars spent (not including dollars foregone) on higher education this academic year are $26.5 billion, approximately three-fourths of which is borne by students and their families.[1] By the 1980 academic year, the costs will be $43.8 billion.
2. The relative amount of financial support will probably not increase at the state level. Increases will occur only if the total pool of resources is enlarged. Thus, the federal government and/or the student and his family will be asked to share more of the burden.
3. The present financial condition of higher education, although perhaps not absolutely desperate, is indeed bleak, which means that new funding strategies must be examined.

[1] It is not clear from Commission reports just what is included in the $26.5 billion figure. When all amounts are considered, three-fourths is probably quite accurate.

Consideration of the Various Plans

On then to the second part of this discussion—what are the various plans for financing higher education, what are the rationales for these various plans, and what are their implications for access? There are, of course, more plans for the financing of higher education than reasonably can be discussed here. Fortunately, almost all plans have certain common threads or "strategies" which *can* be described and examined.

The basic argument concerning funding, among concerned observers, is whether higher education should be financed through students or through institutions directly. Necessary to the analysis is an understanding of the philosophy or theory behind each viewpoint. Underlying the differences of opinion about how higher education should be financed is the basic question: "Who benefits from higher education?" For it is argued that he who benefits should pay; at least, so goes the rhetoric.

Again, there is a dichotomy. Some argue that it is the individual who benefits. Others argue that it is society. Let us examine these two viewpoints. Exponents of the individual benefits theory list as evidence: significantly greater lifetime income, greater productivity and thus attractiveness to employers, and the improved lifestyle of college graduates as opposed to nongraduates. For these reasons, it is argued, the individual should pay for his education through full cost tuition and fees. If the student lacks the necessary resources, loans should be made available. This philosophy is sometimes used to argue for grants to low-income youth.

The second viewpoint is that society is the real beneficiary of higher education because college educated persons are more open-minded, critical, and socially responsive. Therefore, society, through the local, state, and federal governments, should provide the major support for higher education. There are differences within this second viewpoint as to whether societal support should be given *directly* to the institutions or *indirectly* to institutions through students. I shall generally use the term *student vouchers* in speaking of this latter mode.

The Individual Benefits Theory

Having stated the general viewpoints, the soundness of the evidence will now be examined. First, the individual benefits theory: Probably the major evidence supporting this argument is that college graduates on the average earn approximately $200,000 more in their lifetimes than do those who are not college graduates—clearly a significant sum if indeed it can be ascribed to the college diploma. In actuality, the economists tell us the figure is probably much too high. Lee Hansen, of the University of Wisconsin, estimates that 25 percent of the difference in lifetime earnings between the two groups can be attributed to ability and motivation. In other words, the two groups are not really comparable. College graduates are more likely to earn higher incomes simply because they are better motivated and better endowed for economic success in our society. Their persistence in college is *prima facie* evidence of this. Further confounding the picture is the fact that present income is worth a good deal more than future income. Therefore, income foregone due to college attendance, is especially costly. Also, taxes must eventually be paid on that greater, anticipated income. Thus, Hansen and Weisbrod estimate that the true dollar income to be eventually earned is not $200,000 but is $89,000; and, furthermore, when corrections are made for the present-day value of future earnings, *the actual lifetime earnings of the college graduate over the non-college graduate is $20,900.* For women it is even less. To quote Hansen and Weisbrod, "Viewed in this light—the light in which, incidentally, an ordinary investment is viewed in business capital markets—higher education is a good deal less valuable than is commonly believed."[2]

Holding the counter-arguments for just a moment, let us take a quick look at graduate education. Using the same techniques, Hansen and Weisbrod find that an average male can expect about $27,000 of additional lifetime income, having a present value of $5,800 as a result of his investment in graduate education. At the master's level the return is very small indeed, whereas it is somewhat larger for the Ph.D.

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[2]W. Lee Hansen and Burton A. Weisbrod. *Benefits, Costs, and Finance of Public Higher Education* (Chicago: Markham Publishing Company, 1969), pp. 26-27.

If this is so, why is higher education so attractive to so many? Some of the reason is undoubtedly tied up in the phenomenon of our credentialing society. The economists apparently fail to consider that ability and motivation are not sufficient to obtain credentials; academic degrees are needed for this. Thus, adjustments lowering the economic value of the B.A. may not be entirely valid. Attempts to adjust for the incomparability of college and noncollege graduates would appear to be, at the very least, moot.

But even more significant in assessing the individual benefits of higher education is what was referred to earlier as the improved life style with a college degree. The term often used by economists is *psychic income*. Psychic income is really foregone income, but is income foregone forever. It is the amount of earnings which were foregone in favor of some preference in life style. To illustrate, each of you has probably rejected some offer of increased income because you were not prepared to pay the particular "costs" of accepting that income. For example, undoubtedly, some of you have declined an offer of a higher salary from a large urban college or university for "personal" reasons. The professor who declined vastly improved earnings through industrial employment in favor of "the good life of academe" may be a creature of the past, but he does demonstrate my point. In these cases real income was foregone in favor of psychic income.

In some cases psychic income may be purely the value attached to status. How else can we explain the ever-increasing college enrollments, even among prospective teachers, in the face of the higher earnings of the members of certain lesser status occupational groups, such as plumbers, auto mechanics, policemen, and firemen. The difference can no longer be ascribed to the security resulting from the college degree. The prospectus for gaining employment as a teacher, for example, is considerably less than for many jobs which do not require the baccalaureate. Perhaps another part of the answer is in the greater potential for higher earnings even though these earnings may never materialize. But this too must be considered psychic income, if it is, in fact, ever gained. When Clark Kerr writes of the very real possibility that we may need to pay more—not less—for those persons who hold the less desirable jobs, he is talking about psychic income.

If I may continue on this tangent for just a bit longer, the Carnegie Commission and the United States Office of Education estimate that until 1980, at least, only 20 percent of all jobs reasonably will require the holder to possess a B.A. Yet we are currently admitting nationally 50 percent of all high school graduates, and the figure is about 70 percent in California. Although dropout rates are considerable and these data are contentious, clearly there is some point at which our society *may* become overeducated. It *can* happen. About two months ago, it was reported that unemployment rates among college graduates in Sweden ran as high as 50 to 75 percent. The reasons are an exacerbation of the same conditions which appear to be developing in this country—near universal higher education supported by considerable government subsidies. Admittedly, there are other purposes of higher education besides preparation for work. However, anyone who has spoken to an unemployed or underemployed teacher, aerospace engineer, or college professor, knows this to be a real rather than an imagined issue.

Does this have any implications? At this point no one can say. Logically, one might predict fewer financial incentives for enrolling in higher education, although because this would probably work against equal educational opportunity, such a development is doubtful at present. More likely is the eventual possibility of a kind of penalty in the form of higher tuition.

The Societal Benefits Theory

Now to the societal benefits theory. Proponents of this philosophy point out that the individual's economic productivity is shared by society in the form of taxes. They also point out that the college educated occupy fewer jail cells, have fewer auto accidents, are healthier, and have lower absentee rates from their jobs. In comparison to nongraduates, college graduates less frequently receive welfare and unemployment compensation, thus reducing the total transfer payments required of society. In a report to the Committee for Economic Development, Edward Denison showed that the education of the labor force accounted for 23 percent and the advancement of knowledge accounted for 20 percent of the growth in the gross national product between 1929 and 1957. These figures have dropped only modestly since 1959. Further, in this country education is still considered the primary route to social mobility. Many of those who

maintain that only the individual benefits from higher education, also argue for subsidization of the higher education of the poor. By so doing, they necessarily acknowledge that an important social benefit of higher education is the equalization of opportunity. Thus, it seems to me, they defeat their own argument.

All this is not to say that the individual fails to benefit from higher education, because obviously he does benefit. What the analysis does show is that the individual probably benefits a good deal more in a psychic than in a monetary form. In conclusion to this question, there is little to suggest that one side—society or the individual—benefits significantly more than the other. Clearly those who argue that there are very little if any returns to either side cannot, from my analysis, be taken very seriously.

Discussion

Now then, where do each of these theories lead? The individual benefits position argues for full cost tuition. The societal benefits position argues for tax support of either institutions of individuals. Under the individual benefits theory, if the individual needs government aid, government loans should be available. In the case of low income students, some proponents of this position argue for grants rather than loans. Many, however, recognize the inconsistency between the individual benefits theory and any support to individuals—that would be a societal benefits doctrine. Arguing for grants would clearly seem to be an admission of the social benefits of higher education *vis-à-vis* equality of economic opportunity.

There *are*, nevertheless, those who use the individual benefits theory to argue for full-cost tuition and educational grants to the poor. Interestingly, these persons are often the more liberal economists and educational spokesmen, persons who would ordinarily be expected to be on the social benefits side of most such questions. In this case, they find themselves closely allied with Milton Freedman, the leading spokesman of free-market economic theory.

Now let me review where we are up to this point. First, we have shown that the individual benefits theory argues for very high or full-cost tuition. It argues for student loans to the nonaffluent, although we have not yet discussed the nature of those loans. We have

also seen that some spokesmen invoke the individual benefits theory to justify grants to low-income youth as the best means to equalize educational opportunity. Second, we have seen that under the societal benefits theory there are two major funding modes: students and institutions.

Individual Benefits Plans

Now let's move on to some variations in loan forms, and some variations in forms of student grants or supplements and in institutional grants. The rationale for each is our major concern here.

Loans come under the individual benefits theory. Loans are already a major source of financing higher education. Students borrowed $1.5 billion this year; in fact, 28 percent of all student assistance was in the form of loans. Forty-three percent of all private, four-year college sophomores and 33 percent of public, four-year college sophomores borrowed to support their higher education this academic year.

Loan proposals generally take one of two forms: conventional, that is, a fixed schedule loan, and the income contingency loan. In a conventional loan the borrower knows in advance the rate of interest and the period of the loan. He can only guess at what his problems will be in repaying the loan. On the other hand, under the income contingency loan the borrower knows the repayment rate but only as a percent of unknown future income. He knows what the maximum repayment period will be and he knows the upper limit of the amount he will have to repay. This limit may be some maximum loan rate, such as 7 percent, or some multiple of the original debt, such as 150 percent. Simply stated, the advantages of the income contingency plan are seen as two. First, the amount of repayment is a function of later earnings. Second, and because of the first reason, contingency loans have an equalizing effect; that is, those who earn more will subsidize the education of those who earn less.[3]

Income contingency loans would seem to have considerable promise in rapidly, if not immediately, increasing the total financial

[3]D. Bruce Johnstone, "Income Contingent Loans: What Role in the Financing of Higher Education?" The Ford Foundation, December 1971.

resources presently available to higher education. As a rationale, it has been suggested that the contingency loan plan would free colleges to set their own priorities while increasing the number of low-income students, but in such a way as to cause these students to invest in their own education. This is, in my view, an important point and one which is not usually a part of the rationale of other funding modes. It has also been suggested that this kind of loan would ultimately enhance the financial conditions of private colleges and universities by eliminating the church-state problem, while at the same time allowing students to *afford* private schooling. Further, it is maintained that contingency loans would match low- and middle-income students with institutions having vacant student stations. Finally, the income contingent loan plan would reduce disparities in educational expenditures among rich and poor states, thus again tending to equalize educational opportunity.

In opposition, others point out that society, not the individual, is the major beneficiary and thus society should carry most of the financial load. These persons insist that the present policy of low tuition in public institutions is a better way to insure equal educational opportunity, because most low income students would be reluctant to obligate themselves for a long period of financial repayment. They also point out that there are at least serious technical problems with the plan. First, they fear that legislatures would use contingency loans as an excuse for decreasing total support; and second, they point out that no college or private agency has resources sufficient to operationalize such a system. Indeed, the Ford Foundation recently decided not to finance income contingency loans for precisely this reason.

Howard R. Bowen, who is in my view the most thoughtful and perceptive of the higher education economists—which I suppose means he agrees with me, or rather I with him—has pointed out two additional problems. First, says Bowen, the plan is highly inequitable between high- and low-income students. The student from a high-income family ends up his college career with little or no debt, while the student from the low-income family might owe $5,000 to $20,000 depending on the length and nature of his program. Second, and I quote from Bowen, "From the social point of view the use of loans does not achieve one of its avowed objectives, namely,

to place the cost of higher education upon the students. The true economic cost of higher education consists of the use of resources *at the time* the education occurs. If these costs are financed by loans, the true economic cost is borne *at that time* by the ultimate lenders, whether they be private savers or taxpayers. They are the ones who give up the needed resources. Later, when the interest and the principal are repaid, no economic resources are used and no social cost is involved. Repayment is then merely a transfer payment from debtors to creditors."[4] Bowen tells us that we might more clearly understand this fact by recognizing the futility of trying to transfer the costs of war to future generations. Clearly the costs of war are borne, at that time, by those making the financial sacrifices.

So much for loan plans. But before leaving the discussion under the individual benefits theory, a few things must be said about full cost tuition. If such a plan were to become a reality, an assessment of the true costs of services would seem essential. Students and their families could and would properly demand that they be assessed no more than the *true* full costs. Clearly, the true costs of higher education vary by field and by level. Although there is considerable disagreement about specific relative amounts, the ratio of costs for lower-division, upper-division, and graduate education are roughly estimated to be approximately 1 to 2 to 6. In other words, lower division is clearly the least costly, with upper division costing about twice as much, and graduate education about six times as much. To further complicate the issue, there are wide variations according to discipline, with lesser costs being incurred in the social sciences and humanities, and the greatest costs being incurred in the physical sciences. It seems clear that what the economists call "market imperfections" are so severe according to level and field, that government subsidy of certain levels and fields would absolutely be required. With this would go the philosophical justification which was behind full cost tuition in the first place--i.e., the individual benefits view. Perhaps the clearest illustration of the dilemma can be brought to mind by recalling the relatively small returns to the individual of graduate education. Yet, graduate education would cost approximately four

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[4]Howard R. Bowen, "Who Pays the Higher Education Bill?" *Financing Higher Education: Alternatives for the Federal Government.* M. D. Orwig, ed. (Iowa City, Iowa: The American College Testing Program, 1971), pp. 281-98.

times more than undergraduate education. Therefore, subsidies would probably be mandatory.

Another problem with full-cost tuition when tied to grants for the poor is that, in any plan to subsidize some at the expense of others, there is always some new group that is denied educational opportunity. This group is that which is just rich enough *not* to obtain a subsidy and yet too poor to pay the increased costs necessary to provide subsidization for others. The significance of this problem has been demonstrated over the past decade in private institutions where each tuition increase—increases that were required for more than any other reason to provide scholarships for disadvantaged students—eliminated a new group of prospective tuition payers.

A final proposed plan falling under the individual benefits theory, is the tax credit plan. Under this arrangement, taxpayers would be permitted to deduct from their federal income taxes an amount related to the tuition and fees paid by the taxpayers and their dependents. The rationale for this plan is that those who pay most of the taxes ought to enjoy most of the benefits. It is further argued that educational expenditures lead to a higher future tax capacity which is a good national investment. Further, tax relief to parents removes the threat of federal interference with campus autonomy.

Critics of the plan, however, point out that such a system would be regressive; lower-income groups would not benefit. They believe that private institutions would raise their tuitions, and that Congress would be satisfied that it had served the need, and that no additional legislation would be required. Presently, this plan appears unlikely to be adopted.

Societal Benefits Plans

Let us move now to plans which fall under the societal benefits umbrella. Under the societal benefits rubric, there are two major approaches to meeting the costs of higher education. Again, the arguments are vigorous. One side argues that funds should be given directly to the institution, thus allowing financial certainty, thoughtful long-range planning, and the protection of institutional integrity. The other side holds that funds should be given to the student, who would in turn direct the money to the institution of his choice.

The justification for this latter position is that by channeling funds through students, freedom of student choice would be maximized, equal educational opportunity would be insured, institutions would be required to be more responsive to the consumer (society), and tuition differentials between public and private institutions would be minimized, as would the direct influence of the government in institutional affairs. Supporters further list as rationale, that the voucher would:

1. Encourage the fullest use of available facilities both public and private.
2. Make possible continued and effective competition between public and private higher education.
3. Encourage diversity at the undergraduate level.

The primary fear regarding the student funding mode among public institution spokesmen is the belief that many students would select private institutions, thus drawing support away from the public sector. Other arguments are that the student voucher funding pattern would promote religion and segregation (raising constitutional questions) and would lower "quality" because colleges would offer curriculum with "sales appeal" rather than programs that are necessary and sound. Further, opponents argue that vouchers:

1. Would give students more influence and would encourage them to seek more power.
2. Would require the institutions to get financial relief through students when they should get it directly as a matter of right.
3. Would be used by legislatures to save money.

At the root of the voucher notion is the question of access. Presently, most governmental aid to students does *not* go to low-income youth. This is especially true at the federal level where the majority of student aid is in the form of grants through such instruments as social security programs and the GI bill. In addition, there are indirect subsidies in the form of tax free grants and fellowships and special dependency regulations of the internal revenue service.

Such conditions are only part of the reasons why lower-income youth attend college in smaller proportions than do higher income youth. Because I am sure you are all aware of the overwhelming evidence in support of this statement, I shall only remind you that at

all ability levels, the percentage of higher SES students is two or three times greater than the percentage of lowest SES students in college. It is for this reason, more than any other, that proponents of new funding forms are seeking to target societal support on low-income youth.

Thus, for example, the Carnegie Commission has advocated a "national entitlement" to increase equality of opportunity. Both the Carnegie Commission and the present Senate version of the national higher education legislation favor institutional aid *only* to support equality of opportunity. The Carnegie Commission favors grants to low-income students with full-cost tuition going to the institution enrolling these students. The Commission believes that through this means the basic responsibility for financing higher education would remain with the states, that institutional autonomy would be preserved, that there would be no constitutional problems, and that this form of federal support would not encourage a reduction in state support. The now-famous Newman report generally supports the Carnegie and Senate approaches and argues further that financing higher education through students would allow greater flexibility in where, how, and when students chose their higher education.

There are certain general arguments, both pro and con, for providing general, direct support to institutions. Those who argue in favor of general, direct supports point out that this approach fosters the integrity of the institution; it allows the college to set its own priorities and spend its own money as it sees fit; it *assures* financial aid to institutions; and it has the support of most of the higher education professional societies. It also appeals to every college, and thus is politically popular in every congressional district.

The problems with general direct aid to institutions are:

1. It is difficult for the federal government to select or reject institutions.
2. Some money would go to institutions of very low quality, to others that really do not need it, and still to others that serve very little social purpose.
3. The money will often not be spent wisely.
4. Institutions agree that there ought to be support, but they clearly cannot agree on the formula for distribution.

5. Institutional support will lead to institutional control by state and federal government.[5]

I will mention only a few other suggested forms of institutional support. None of these will be revelations to you. The various pros and cons, however, might be of interest.

A more specialized form of institutional support is the categorical grant. In this case funding is based on certain criteria, or on the performance of certain tasks, or for the development of certain programs. The rationale for such programs is that they are responsive to national needs; they allow flexibility in adjusting to massive changes either abroad or at home; they supplement state and private support for higher education rather than replacing it. And, they can also aid in the establishment of new enterprises.

On the debit side, categorical grants allow the government, rather than the institution, to establish priorities. By so doing, institutional autonomy is jeopardized, the delicate internal balance of higher education is upset, and the temporary nature of categorical grants provokes instability in personal careers and institutional income.[6] Perhaps most important of all, higher education's role as social critic is less likely to be served.

The final plan which I will mention appears at present to be no more likely to be realized than the tax credit plan. This final plan would involve revenue sharing with the states. Proponents of this plan point out that it would strengthen the states and thus bolster the intent of the constitution. It would cause income redistribution because progressive income tax funds would be shared. And it would draw political support from state governors and legislatures. Critics fear the chaos that would occur as a result of fifty different higher education policies, many of which would be unenlightened. Critics also fear greater state control of institutions, and they fear that the states would withdraw their own support of higher education.

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[5]Clark Kerr, "New Challenges to the College and University," *Agenda for the Nation* (Washington, D.C.: The Brookings Institution, 1968).

[6]Ibid.

Conclusions

Let me see now if I can summarize where we are at this point. We have talked about individual and societal benefits of higher education. We have pointed out that the individual benefits theory suggests full-cost tuition and student loans. We have observed that some proponents of the student voucher mode believe their plan to be dependent upon acceptance of the individual benefits theory. I believe we have shown that this thinking is not sound. We have seen that under the social benefits theory it is possible to argue for either the student funding mode or the institutional funding mode. And, finally, we have talked about the rationale and the counter arguments for each funding mode. Now let me see if I can make some conclusions.

I think it is first crucial to realize that equal access is the overriding value behind the best articulated and the most-likely-to-occur forms of funding. This is clear in the case of the recommendations of the Carnegie Commission, the Ford Foundation, and the Newman Task Force. It is also the gist of the Senate version of the higher education bill.

A second conclusion deals with the matter of individual versus social benefits. First, it seems clear that both society and the individual do gain from higher education. The exact division of these benefits is unclear; however, it is doubtful that either society or the individual benefits far in excess of the other. Thus, because the individual and his family are now absorbing no less than two-thirds and perhaps as much as seven-eights of all higher education costs, there does not appear to be justification *on these grounds* for raising the student's share even higher. If we deem it appropriate, *on some other grounds*, to assess middle- and upper-income groups the full cost of higher education, so be it. But let us not pretend there are no social benefits from higher education. Let us also be aware that we are imbibing in a form of double taxation. And let us be aware that if we do not readjust the full tuition costs on the basis of level and field we will be perpetrating triple taxation as a minimum.

It would seem at least more equitable, to argue for very low or no tuition, with the primary funding of higher education being the progressive income tax. Such a plan would necessarily include

special subsidies for low-income youth and some significant form of subsidy to private higher education.

The problem of financing private higher education is perhaps the most difficult of all to resolve. A redressing of the current competitive imbalance between private and public institutions demands immediate attention. The financial condition of private colleges is such that unless this imbalance is alleviated, they cannot survive. To this much I agree. However, I believe the oft-suggested solution that public institution tuition be raised would not be in the best interest of either the private institutions or of the whole of higher education. Higher tuitions would have the effects of protective tariffs, which always seem to lead eventually to more severe problems. Higher tuitions would add prohibitively to the cost of higher education for the great mass of students from middle income families. Further, it is doubtful whether such measures would alleviate the financial difficulties of the greatest number of troubled private institutions—those which are experiencing the greatest enrollment difficulties. I am speaking of the small, rural, religious, single-sex, and "local" colleges. I doubt that protective tariffs would significantly alter the diminishing number of students selecting these kinds of institutions.

Further, protection of the diversity within higher education, represented by private institutions, and the autonomy of private colleges is probably contingent upon the nature of the financial relief finally obtained. For these and the aforementioned reasons, contracts between the states and private institutions to educate students would appear to make good sense. Contracts would encourage diversity and decrease the negative effects of tuition imbalances, while at the same time protecting institutional autonomies. The Carnegie proposal involving grants to accompany low-income students, on the other hand, would probably work to the detriment of private institutions because of the greatly increased student services and expanded curriculum demanded by low-income groups, especially those of minority races. A contractual arrangement would seem far superior.

Implications for Access

Now what does all this mean in terms of access? The implicit theme of this paper is that access policies are primarily matters of

finance. To consider access questions, without talking about plans for funding, would be folly. It would be to raise hopes without providing the means for realizing goals related to equal access.

What I am saying is *that the course we choose regarding funding will dictate how we react to the problems of access.* There is no consideration more basic to the several alternative plans for funding than access. The Carnegie and Senate plans would go a long way in equalizing access, but only at considerable costs to institutional autonomy, especially in the area of goal setting. Frankly, I do not think it wise for most if not all private colleges to get into the business of educating minority groups. There is simply not enough faculty talent and not enough fiscal resources to develop the special programs demanded. Rather, certain institutions should be designated to meet this need—among other needs—and contracts awarded. Some public and some private institutions are doing yeoman service in this area now. The colleges originally founded to serve blacks are one group—but only one—of such colleges.

High- or full-cost tuition plans would also improve access for some but would tend to deny access to others. Grants directly to institutions might improve access, but we cannot be very sure about this. Contracts to institutions for the education of students, on the other hand, if coupled with low tuition in public colleges, would greatly improve access, at little cost to institutional autonomy, while going a considerable distance toward solving some of the financial problems of private schools.

Future Financing of Higher Education

As the last item—What does the future promise for the financing of higher education? It seems clear that several of the newer funding forms will come to pass, although it is doubtful that any mode will or should predominate. Federal and state grants to students, probably with full tuition grants to institutions, are one such likely form. General institutional grants and categorical grants will continue although perhaps at a slightly to moderately reduced rate. There will also be some redressing of the competitive balance between private and public colleges, although the public institutions will maintain a competitive edge. One vehicle will be some sort of public subsidy of certain students who attend private colleges. Loans, especially those

of the contingency variety, will also increase as tuition continues to rise nationally only slightly more slowly than in the past decade. As indicated earlier, total governmental support of higher education will not increase substantially on a relative basis. If significant new income sources are to be found, they will most likely occur through productivity gains within institutions. However invidious to faculty, there appears to be no real alternative, over the long run, to greater "output" through increased student-faculty ratios in the form of larger class sizes and/or increased teaching loads. With academic instruction consuming 50 percent of the budget in all kinds of institutions of all sizes, there seems to be no escaping this conclusion. We will almost certainly have to look to the largest budget area for savings.

Finally, and I will close with this: Although these projections seem defensible under present conditions, any one of a number of possibilities, if not likelihoods, could upset the delicate balance. Two such likelihoods relate to the eighteen-year-old vote. If, as now appears very likely, the courts should continue to support the elimination of nonresident tuition, or if the courts should rule eighteen-year-olds to be adults and thus legally independent of family income for purposes of receiving loans and grants, we would have a whole new ball game on our hands.

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