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Higher Education and Social Change: Some Comparative Perspectives

Seemingly self-evident, the relationship between higher education and social change has proven elusive. Social scientists have tended to focus on the practical reform of both according to some normative conception, often oblivious to the disappointments of the past. Historians who dared address that numinous monstrosity called "modernization" have usually ignored education or treated it as a dependent variable despite the insistence of many 19th century observers that it was a significant promoter of change.¹ Those who have taken a closer look have been disappointed in their effort to determine the general contribution of schooling to industrial development, unless they have focused more specifically on technical training. Others who have pondered the transmission of values have stressed the "actively incongruent" role of higher learning in social upheavals based upon the largely traditional content of the curriculum.² Part of this confusion results from an excessively narrow view of social change, limited by and large to industrialization. From a broader Weberian perspective, which includes rationalization, bureaucratization and professionalization as key processes, the role of education in the transformation of traditional society looms much larger. Instead of a simplistic alternative which defines schooling as either the passive product of society or the active motor of progress, the relationship between higher education and social change is circular and interdependent with both transforming each other. Not a deductive theoretical approach (be it functionalist or Marxist), but an inductive empirical study of one phase of their interaction is therefore likely to yield clearer insights, as long as it is sufficiently systematic and general.³

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1. R. G. Paulston, "Social and Educational Change: Conceptual Frameworks," *Comparative Education Review*, 21 (1977), 370-395; H. U. Wehler, *Modernisierungstheorie und Geschichte* (Göttingen, 1975); P. N. Stearns, *European Society in Upheaval* (New York, 1975), 2nd ed.
 2. P. Lundgreen, *Bildung und Wirtschaftswachstum im Industrialisierungsprozeß des 19. Jahrhunderts* (Berlin, 1973); F. K. Ringer, *Education and Society in Modern Europe* (Bloomington, 1979).
 3. P. V. Meyers, *The Modernization of Education in 19th Century Europe* (St. Louis, 1977) is but a brief sketch; H. U. Wehler, "Vorüberlegungen zu einer modernen deutschen Gesellschaftsgeschichte," in *Industrielle Gesellschaft und politisches System* (Bonn, 1978), for M. Weber's

One such "seismic shift" is the emergence of "modern" higher education between the middle of the 19th and the first third of the 20th centuries. During the development of a mature industrial society, a small, homogenous, elite and pre-professional university turned into a large, diversified, middle-class and professional system of higher learning. While its antecedents in the late 18th century involve practical enlightenment as well as idealist neohumanist reforms, the major alterations in size, institutional structure, social composition and career pattern of graduates took place after initial industrialization before they were interrupted by the Great Depression and the Second World War. But from the perspective of mass higher education during the middle of the 20th century, these changes in higher learning were still limited by institutional tradition and social constraints.⁴ Because the sequence, intensity and manner of this central transformation differed in various highly industrial countries of the West, a comparison can help isolate the relative importance of various causes. The British experience of industrialization preceding educational mobilization contrasts sharply with the German pattern of higher learning before economic growth, with the Russian sequence of both developments imported in the Central European mold and with the American way of both coinciding in time. Despite considerable differences in cultural style, institutional tradition and educational policies, certain developments, such as increases in size and complexity of institutions, cut across national frontiers and modernized higher learning in all countries of the West. Hence it is imperative to distinguish the common pattern from national peculiarities and vice versa.⁵

In order to gain greater explanatory depth, such an analysis has to be limited in several respects. The focus on higher education, defined loosely as post-secondary schooling beginning at age 18, provides a distinctive subject matter with clear boundaries. The common social approach to scientific research, liberal education or training contributes greater cohesion, even if the methods vary from intellectual to quantitative history. Interdisciplinary perspective produces a methodological tension between historicist attention to the particular and social scientist penchant for generalization or modeling.⁶ Among the variety of issues, four themes seem to represent cru-

view of modernization; H. Gerth and C. W. Mills, *From Max Weber: Essays on Sociology* (New York, 1958).

4. L. Stone, "Introduction," in his *The University in Society* (Princeton, 1974) 2 vols. and the successor collection on *Schooling and Society* (Baltimore, 1976); for a similar periodization Stearns, *European Society*, 179ff; Ringer, *Education*, 52ff. The mid-19th century offers a convenient starting point also because statistics become more available and reliable while the Second World War disrupted time series or changed their units drastically.
5. France was excluded for reasons of space and dissimilarity of institutions (i. e., no universities until the late 19th century), A. Prost, *Histoire de l'enseignement en France 1800-1967* (Paris, 1969). For similar comparative attempts, P. Flora, *Quantitative Historical Sociology* (The Hague, 1977); H. Kaelble, *Historische Mobilitätsforschung* (Darmstadt, 1978); Ringer, *Education and Society*, passim.
6. For the social history of education, E. Rury, "Elements of a 'New' Comparative History of Education," *Comparative Education Review*, 21 (1977), 342-51; H. Graff, "'The New Math,' Quantification the 'New' History and the History of Education," *Urban Education*, 11 (1977), 403-40 and the discussion at the History of Education Society Meeting at Washington in November 1979.

cial aspects of the transformation. First, the absolute and relative expansion of enrollments provides a basic numerical indicator of the spread of higher learning and of the growth of its social importance. Second, institutional diversification approaches the internal differentiation of universities in terms of teaching subjects and research institutes as well as the proliferation of institutions in the technical and commercial fields. Third, the opening of recruitment raises the question of educational elitism or mobility during the second half of the 19th century and examines the university in terms of its societal clientele. Finally, the process of professionalization analyzes the relationship between institutionalized learning and the spread of the professions in terms of their scientific bases, practical training or state credentialing. While any number of other problems, such as scientific progress, educational finances or university governance, could also have been discussed, these four dynamic processes emphasize change and facilitate comparison.⁷

Although American academics are sometimes defensive and hesitate to investigate their own institutions, their continental colleagues at the turn of the century were convinced of their own importance:

The greatly admired level of civilization in Germany is living proof of the immeasurable value of the universities. Did not the culture which has now spread through every stratum of society issue chiefly from this primary and most copious source? More importantly this is where the great discoveries in the natural sciences were made, to whose practical application communication and commerce owe their progress. Here the principles of the rule of law were developed and taught. Here the moving ideas of economic progress were conceived, which public life struggles to implement. Here the spirits have matured who have succeeded in grasping the great truths of present and past reality and by teaching have made them the intellectual property of the people. Did not the universities nurture the spark of patriotism and of political honor in the darkest hours? Did not the salvation of the fatherland proceed from the universities in the hour of greatest need?

Somewhat exaggerating the active impact of higher education on society, contemporary self-consciousness demonstrates that for professors and students alike higher learning involved the spread of civilization, the advancement of science and the propagation of modern nationalism.⁸ Seen in a broader context, the history of higher education is too important to be left to the vagaries of anniversary tributes to yet another illustrious alma mater. Instead it needs to be firmly integrated into the general discussion of social change in order to determine the university's contribution to "modernization" as well as to the perpetuation of traditional elites, values and styles.⁹ Although the "most important questions" concerning not only arrangements

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7. The topics emerged out of K. H. Jarausch, "The Social Transformation of the University: The Case of Prussia, 1865-1914," *Journal of Social History*, 12 (1979), 609-636; "Frequenz und Struktur. Zur Sozialgeschichte der Studenten im Kaiserreich," in P. Baumgart, ed., *Bildungspolitik in Preußen zur Zeit des Kaiserreichs* (Stuttgart, 1980), 119-149.
 8. A. Langguth, "Bilanz der akademischen Bildung," *Burschenschaftliche Bücherei* (Berlin, 1901), 1, 303-64; C. E. McClelland, *State, Society and University in Germany, 1700-1914* (Cambridge, 1980).
 9. M. Steinmetz, "Laufende Arbeiten zur Geschichte der Universitäten und Hochschulen auf dem Territorium der DDR," paper delivered at the meeting of the International Commission on the History of Universities at the XV. International Congress of Historical Sciences in Bucharest, August 11-12, 1980; for the disparate state of the field see the 19 resumes of the

but also purposes deal mostly with intangibles, a comparative framework for the study of higher learning requires, whenever possible, quantitative answers, marrying social, as it were, to intellectual history.¹⁰

The Dynamics of Expansion:

A basic index of the internal structure and external influence of a system of higher education is its enrollment. "Major changes in the size of the student body are the structural pivots around which the history of the university has to be built," since large scale swings of attendance "not only have obvious and far-reaching effects on the economics, the architecture and the teaching arrangements of the university, they also have profound repercussions on its intellectual life." Because institutional figures and government statistics are often inflated, a first task is the reconstruction of the pattern of expansion in each of the four countries concerned. Previous attempts to measure absolute or relative growth have encountered three particular difficulties: Comparisons based on highly aggregated figures tend to be unreliable, if not misleading, because of varying degrees of inaccuracy and incompleteness of the numbers on which they are based. More sophisticated efforts have been frustrated by the unit of measurement problem of which institutions (and consequently students) should or should not be included in "higher education." Finally, cross-national comparisons built on age-cohort representation indices have found it difficult to focus on comparable spans of years among the population as base.¹¹ Fortunately these obstacles can be partially overcome by reaggregating data in individual settings from below, by defining higher learning not only legally (according to government practice) but also functionally (as post-secondary) and temporarily (18-year-olds and above) and by calculating the index of inclusiveness on the basis of empirically determined average length of study which is then compared to the relevant age group. The fragmentary evidence suggests three overriding questions: What was the absolute growth in student numbers? Which types of institutions contributed to it? How did the expansion of higher learning relate to population increase?

communications by the participants at the congress, printed in *Rapports* (Bucharest, 1980), 3: 323-360.

10. K. H. Jarausch, ed., *Quantifizierung in der Geschichtswissenschaft. Probleme und Möglichkeiten* (Düsseldorf, 1976); M. Kaplan, "The Most Important Questions," *Oxford Review of Education*, 3 (1977), 87-94; G. Iggers, *New Directions in European Historiography* (Middleton, 1975); J. Kocka, *Sozialgeschichte* (Göttingen, 1977); J. Henretta, "Social History as Lived and Written," *American Historical Review*, 84 (1979), 1293-1333.
11. Stone, "The Size and Composition of the Oxford Student Body 1580-1909," *University in Society*, 1: 22 ff; C. E. McClelland, "A Step Forward in the Study of Universities," *Minerva*, 14 (1976), 150-161; F. K. Ringer, "Problems in the History of Higher Education," *Comparative Studies in Society and History*, 19 (1977), 239 ff; Flora, *Quantitative Historical Sociology*, 56 ff; Ringer, *Education and Society*, passim; H. Kaelble, "Educational Opportunities and Government Policies: Postprimary European Education before 1914," in P. Flora and A. J. Heidenheimer, eds., *The Development of the Welfare State in Europe* (New Brunswick, 1981).

In all four countries student numbers rose so dramatically during the three-quarter century that higher learning multiplied at an average of ten times (Table 1).¹² The

Table 1: Absolute University Enrollment

country: year:	Britain		Germany		Russia		United States	
	stud.	univ.	stud.	univ.	stud.	univ.	stud.	univ./col.
1860/1	3,385	5	12,188	20	5,000	9	22,464	
1870/1	5,560		13,206		6,538		31,900	560
1880/1	10,560		21,209		8,045		49,300	
1890/1	16,013		28,621		13,169		72,250	
1900/1	17,839		33,739		16,357		100,000	
1910/1	26,414		53,364		37,901		144,800	
1920/1	34,591		86,367		109,200		251,750	
1930/1	37,255	16	97,692	23	43,600	21	489,500	1,400
growth:	11 times		8 times		9-22 times		22 times	

Note: British figures include both Old Universities and New Provincial Universities. German figures are for the Empire (less Strassburg after World War One) and include only universities. Russian figures include Warsaw and Dorpat until World War One. Because there is no precise American equivalent to the European university sector, an approximate estimate of U.S. dynamics was based on one half of the enrollment in colleges and universities together with the entire enrollment in the professional schools, since these were clearly of university-like status and function. The U.S. figures were computed from informed estimates of the college/university, professional school, and normal school/teacher's college enrollment, provided by C. B. Burke. Since they were for males in 1860 and for both males and females thereafter, they somewhat overstate expansion.

most rapid decades of growth were the 1870s and 1880s as well as the last pre-war years and once again the 1920s. While the German universities, with the highest level of initial attendance, expanded more slowly, Russian and British institutions grew strongly, and American colleges increased astoundingly since their students were younger and academic standards were less rigorous. Despite this considerable increase in the traditional university sector, the newer forms of higher education mushroomed even more quickly, 13-17 times in relatively restrictive Britain and Ger-

12. Tables 1 to 3 are based on the essays of R. Lowe, H. Titze, P. Alston and C. Burke as well as on Ringer and Kaelble, cited in N. 11; the German figures are from R. Riese, *Die Hochschule auf dem Wege zum wissenschaftlichen Großbetrieb* (Stuttgart, 1977), 339ff; C. Quetsch, *The Numerical Record of University Attendance in Germany in the Last Fifty Years* (Berlin, 1961), 51; K. H. Manegold, *Universität, Technische Hochschule und Industrie* (Berlin, 1970), 320f; W. Hoffmann, *Das Wachstum der deutschen Wirtschaft* (Berlin, 1965), 172ff.

many, and 36–66 times in the more inclusive American and Russian systems (Table 2). Much of this dynamism was due to the explosion of higher technical education and to the expansion of teacher training, which slowly reached equality with older disciplines and institutions. Even relative to the population (which doubled in this period) the expansion was still so substantial that one is tempted to call it an educational mobilization, since it not only reflects demographic growth but goes considerably beyond it (Table 3). The century-long contraction of higher education was arrested in the first decades of the 19th century; but only after 1850 did this reversal turn into sustained educational growth. Not surprisingly the most limited system was the British with only about 1.9% of the 20- to 24-year-old cohort enrolled in higher education. By 1930 the Germans were still somewhat more inclusive at 2.61% of the same age span, while the Russian spurt after the 1905 revolution and then again in the early and late 1920s raised the levels of inclusiveness to 4.3% of the age group in 1939. With the most open and varied structure, the United States was clearly ahead of all other developed nations with 11.25% of a 5-year age cohort going to college, graduate or professional school. Hence the German and British rates of increase were the lowest (five to six times), the American, starting at a higher level, somewhere in the middle (6.5) and the Soviet, calculated in terms of proportion among 10,000 of the population, the most dramatic (14), since they had the furthest to go. This substantial, but still limited, expansion beyond population growth made higher education accessible to a considerably larger segment of the relevant age group.¹³

Contemporaries already speculated about the causes of “this rapid increase in the number of our students.” While academic boosters invoked “progress” or “democratization,” statisticians offered “the high social esteem” of college graduates, “the universal spread of classical culture” and the “commercial depression” as reasons.¹⁴ Although their relative weight differed according to context, about a handful of direct and indirect factors seems to have been involved. (1) While in Germany growth mainly occurred in already existing institutions, in Britain (trebling), Russia (doubling) and the United States (more than doubling) a considerable part of the expansion was due to the foundation of new colleges and universities. (2) Especially important for the increase beyond population growth was the lowering of admissions barriers which allowed women (from 1/5 to 1/2 of the system by 1930), graduates of

13. Since the British indices of Kaelble and Lowe dovetail, they seem credible (except for Kaelble's sudden jump between 1910 and 1920, which is likely to be based on a difference in inclusion of institutions). Ringer's, Kaelble's and Jarausch's German figures roughly coincide (when one makes allowance for the differential age-spans), but Jarausch's emphasize greater dynamism. Although there are no comparable figures for Russia from other authors, the index compiled by P. Alston rests on a comparison of students with 20–24 year olds. While widely used, the proportion of students per 10,000 of population tends to be misleading, since the composition of various populations is likely to differ in age and therefore the comparable cohort is not always the same size. The trend direction of all U.S. figures is similar; Burke's are the most inclusive, consistent over time, self-compiled and also reliable.

14. H. von Petersdorff, “Der Zudrang zu den Deutschen Hochschulen,” *Akademische Blätter*, 4 (1888/9), 3f; J. Conrad, *German Universities during the Last Fifty Years* (Glasgow, 1885), 19ff; F. Eulenburg, *Die Frequenz der deutschen Universitäten von ihrer Gründung bis zur Gegenwart* (Leipzig, 1906), 250ff.

Table 2: Non-University Higher Education Enrollment

country/ year	Britain		Germany		Russia		United States	
	Tech.	Tot.	Tech.	Tot.	Tech.	Tot.	Coll/Un.	Teach. Tot.
1860/1	2,129		2,187 (3,610)		(3,750 est.)		8,300	2,000 10,300
1870/1	2,527		3,957 (5,008)				20,000	9,900 29,900
1880/1	3,002		4,822 (9,892)		7,120		27,000	41,000 68,000
1890/1	3,126		6,594 (10,553)				39,750	45,500 85,250
1900/1	6,951		13,970 (11,648)		9,538		52,000	76,000 128,000
1910/1	3,024 12,257		14,884 (17,854)		30,990		78,800	131,300 210,100
1920/1	5,434 21,882		23,089 (9,039)	40,433	180,800		184,750	161,500 364,250
1930/1	8,030 20,924	28,954	22,890 3,200	37,199	247,300	247,300	391,300	293,600 684,900

13 times

17 times

66 times

66 times

Note: British figures include technical training in day institutes which eventually turned into colleges and teacher education. German figures are based mainly on technical colleges but include all other *Hochschulen* officially recognized as such, while the teacher number is for pedagogical academies and the 1930/1 total also includes art and music schools. Figures in parentheses, compiled by H. Titze, include students in primary teacher training seminars in Prussia which achieved recognition as higher education only in 1925. The Russian figure is for institutes, i.e. higher technical training, with the 1860 number estimated according to the 10% of schools classified as higher and the 1920 and 1930 numbers estimated by subtracting university enrollment from total higher education enrollment. The United States figures are for one half of the college and university students as well as all of the students in normal schools and teacher's colleges, on the assumption that roughly half of the college/university curriculum was equivalent to non-university instruction (such as in engineering and nursing) in Europe and that normal schools and teacher's colleges were definitely part of the non-university sector in Europe.

Table 3: Relative Enrollment in Higher Education

country/ year	Britain		Germany		Russia		United States				
	R	K	L	R	A	J	R	K	B		
1860/1			.30		.14	.50			3.1		
1870/1			.40	.6	.63				2.3		
1880/1			.58		.77		1-2.0		3.4		
1890/1		.41	.73	1.0	.67	.93		1.5-2.5	1.79	3.5	
1900/1	1.2	.41	.79	1.2	.94	1.12	.20		1.5-3.5	2.29	5.0
1910/1	1.2	.58	1.31	1.5	1.26	1.63	.80		2.0-4.0	2.89	5.6
1920/1	2.7	1.60	1.96	2.7	1.97	2.47	1.20		2.5-5.0	4.66	9.0
1930/1	2.7	1.60	1.89	2.7	1.98	2.61	4.30		6.0-7.5	7.20	15.0
per five year age cohort:			1.89		2.61		4.30				11.25

Note: R=Ringer, K=Kaelble, L=Lowe, J=Jarusch, A=Alston, B=Burke. Ringer's British figures include all postsecondary education, while Kaelble's numbers are related to 20- to 24-year-olds. Lowe's more precise figures comprise universities, teacher training and technical education in colleges. Ringer's German figures include universities and technical colleges but exclude teacher training and are based on the 20-23 year cohort in contrast to Kaelble who uses the above sources but compares to 20- to 24-year olds. Jarusch employs rather the 19- to 23-year-olds and includes teacher training in his student numbers for the 1910s to 1930s. Alston's column, for which there are no comparable figures, rests on calculations of students compared to 20- or 24-year-olds. Ringer's U.S. figures register the range of college graduates. Kaelble's U.S. data are based on the same age span as before, clearly inappropriate for U.S. students. Burke's figures compare rather to 18- to 21-year-olds (a shorter span) and are self-aggregated. His 1860 figure is only for males, while the 1870ff index is based both on males and females.

modern high schools (such as the *Realgymnasien* and *Oberrealschulen* in Germany after 1900), minorities (like the Jews in Russia after 1905) and foreigners access to higher learning which had previously been denied. (3) Moreover, this emergence of a "compensatory" sector of higher education of lower prestige and also lower prerequisites in applied technology (the Russian special institutes) and teacher education (the normal schools etc.) provided "soft" options unavailable before. (4) Similarly, the cooptation of new curricula into extant institutions (such as commercial training in Germany or home economics in the United States) made their offerings more attractive and vocationally relevant than the older prestige professions. (5) Finally, once begun, rapid expansion fed upon itself, since higher education, acting as lead sector, absorbed the majority of its own graduates to sustain the growth in secondary schools, universities and non-university institutions.¹⁵

Among the broader, indirect reasons, increasing demand appears to have been as important as rising supply. (1) Although often invoked, population growth seems at best to have been a necessary but not sufficient precondition, since it did not always translate directly into expansion of higher learning (as in the second half of the 18th century), unless first channeled through a secondary education system. (2) Despite occasional short-range negative correlations with the business cycle, economic growth seems to have been imperative as an underlying condition both as a consumption good (more affordable with the spread of prosperity) and as an increasingly necessary job prerequisite because of the academization of business and the standardization of careers. Though difficult to measure, rising demand for educated manpower (apparent as favorable career prospects for academic professions) exerted a powerful attraction for secondary school graduates. (3) The pull of social prestige operated somewhat more nebulously since many scholars presuppose a desire for upward mobility without explaining how it comes about. Higher education became a coveted avenue of social mobility when status was no longer ascribed (as in an estate society) but attained by individual effort (as in a liberal class system). (4) Although educational policies tried to foster economic growth, the state, in Russia and Germany suspicious of oversupply, often affected the labor market more by expanding the higher civil service. Only after World War One did conscious attempts to create equality of educational opportunity begin to have an impact on enrollments (as in Russia in the 1920s). (5) Finally, the reversal of cultural attitudes after the enlightenment in favor of neohumanism and scientific research seems to have translated only hesitantly into greater student numbers although it no doubt contributed in the long run to the vitality of the arts and sciences (in the U.S., Britain and Germany). A comparison of causes of enrollment expansion therefore does not suggest a tight model, but rather a diffuse set of internal and external factors, generally related to modernization, which need to be proven more explicitly.¹⁶

15. R. A. Lowe, *The English School: Its Architecture and Organization* (Birmingham, 1977); H. Titze, *Die Politisierung der Erziehung. Untersuchungen über die soziale und die politische Funktion der Erziehung von der Aufklärung bis zum Hochkapitalismus* (Frankfurt, 1973); P. L. Alston, *Education and the State in Tsarist Russia* (Stanford, 1969); C. B. Burke, *American Collegiate Populations* (New York, 1982).

16. For a somewhat more ambitious approach see J. E. Craig and N. Spear, "The Dynamics of Educational Expansion: A Methodological and Conceptual Framework," paper presented

Often treated only in passing, the implications of the enrollment expansion for the emergence of the modern system were considerable. When it was allowed to operate unchecked (unlike in Russia where it was bureaucratically controlled to eliminate dissent), the dynamism of attendance resulted in liberal-capitalist market cycles of varying length. In each major field or faculty, growth would produce "an excess of educated men" in a career which would discourage students and eventually make numbers decline absolutely or relatively until the demand for graduates was restored, when the whole cycle (with some delay) would be set into motion again. For instance, in Germany this mechanism produced academic unemployment crises in the 1790s, 1830s, 1890s and 1920s. The consequences of expansion for institutional structure, social access and professional training, therefore, need further consideration. Not only in the U.S. did self-sustained system's growth create the first mass universities and a near chaos of hierarchically ranked, but competing, centers of higher learning. The persistence of inequality of educational opportunity which both helped and hindered the enrollment expansion also requires more debate. Whereas aspirations for mobility pulled many lower middle class youths into higher education during favorable prospects, oversupply crises discouraged lower class pupils from continuing their education while only deflecting privileged sons from one attractive career to another. Nevertheless the overall growth in student numbers eventually produced more graduate professionals which furthered the academization of government and business. Educational expansion should, therefore, not be taken for granted, since its pattern, causes and consequences pose a number of unresolved questions, such as the continued growth in liberal education in the U.S.¹⁷

The Diversification of Institutions:

A second major aspect of the transformation of higher learning is the process of institutional diversification. Around the turn of this century academic observers began to discuss the emergence of *Großwissenschaft* or of the *Großbetrieb der Wissenschaft* as scientific "counterpart to large scale industrial enterprise" and to big government.¹⁸ In contrast to the small, intimate, semi-monastic institutions of earlier times, the large, impersonal scholarly factories were animated by a new spirit and developed novel complex structures. For instance, the universities of Berlin and Moscow enrolled about 10,000 students on the eve of the war. Although one dimension of this

at the Comparative and International Education Society Conference (Vancouver, 1980); C. A. Anderson and M. J. Bowman, "Education and Economic Modernization in Perspective," in L. Stone, *Schooling and Society* (Baltimore, 1976), 3-19.

17. D. K. Müller, *Sozialstruktur und Schulsystem. Aspekte zum Strukturwandel des Schulwesens im 19. Jahrhundert* (Göttingen, 1977) and "Modellentwicklung zur Analyse von Krisenphasen im Verhältnis von Schulsystem und staatlichem Beschäftigungssystem," *Zeitschrift für Pädagogik*, 14. Beiheft (Weinheim, 1977), 37-77; U. Hermann and G. Friedrich, "Qualifikationskrise und Schulreform. Berechtigungswesen, Überfüllungsdiskussion und Lehrerschwemme," *ibid.*, 13 (1977), 309-325.
18. T. Mommsen, "Antwort an Harnack, den 3. Juli, 1890," *Reden und Aufsätze* (Berlin, 1905), 209f; A. Wagner, *Die Entwicklung der Universität Berlin, 1810-1896* (Berlin, 1896); A. Harnack, "Vom Großbetrieb der Wissenschaft," *Preußische Jahrbücher*, 119 (1905), 193-201.

growing diversity is the proliferation of research disciplines investigated by J. Ben-David, the process is broader and more encompassing, since it also includes the emergence of new types of higher learning, which differ in prestige, and the establishment of new teaching specialties, which only sometimes coincide with fields of knowledge and include higher and lower training levels. A broader taxonomy suggested by B. R. Clark defines "differentiation" as occurring *among* institutions in horizontal (various sectors) or vertical (hierarchical) directions or as taking place *within* institutions along horizontal (scholarly sections) or vertical (tiers of training) lines. In this framework the central comparative questions become: How much differentiation did the expansion of institutional size produce in contrast to earlier decades? Along which of the four axes did the transformation diversify the character of higher learning most dynamically? Did differentiation operate unchecked or was there not also a countervailing tendency towards institutional convergence on the pure research model? Because national, cultural and administrative peculiarities render quantitative comparisons difficult, the discussion of differentiation remains somewhat impressionistic, although within individual countries it can and must be based on hard numerical evidence.¹⁹

Because "differentiation is then in part an accumulation of historical deposits," its elusive processes can be most easily identified on the external level between institutions. The fundamental mechanisms in all four countries appear to be the adding-on of new types, the upgrading of existing secondary institutions and the transformation of their function towards the traditional university ideal. Since cloning of universities themselves was relatively slow and their size could not be stretched indefinitely, the simplest response to growth pressures was the addition of new sectors such as the commercial colleges and administrative or pedagogical academies in Germany after the turn of the century (Table 4). Rarely, if ever, were they completely new, but rather built like the *Technische Hochschulen* on older secondary polytechnics, which were raised to tertiary rank in 1875, and after a protracted struggle received formal equality in 1900 so that they are today known as technical universities. However the price of legal and social recognition was often the adoption of the traditional university ethos or governance and the transformation of the curriculum towards pure rather than applied research and towards the humanities. Some institutions, like the British redbricks, altered their entire mission from higher technical training towards the traditional university function. This horizontal differentiation was accompanied by vertical diversification as well, since relatively homogenous systems developed an elaborate set of formal and informal hierarchies. Even after the achievement of legal parity, the older core universities such as Oxbridge continued to overshadow the new civic universities, who in turn lorded it over the teacher's colleges and technical colleges. Only in Russia did the technological institutes triumph completely over university *nauka*. But everywhere the applied institutions of higher learning began to threaten the numerical predominance of their elder scientific sisters. In the United States this vertical differentiation led to the establishment of recognized successive

19. J. Ben-David, *The Scientist's Role in Society: A Comparative Study* (Engelwood Cliffs, 1971); B. R. Clark, "Academic Differentiation in National Systems of Higher Education," *Comparative Education Review*, 22 (1978), 242-258; introductory comments by J. Herbst on diversification at the "Education and Social Change" conference, March 1980.

Table 4: The Non-University Share of Higher Education

	England	Germany	Russia	United States
1860	38.6	<u>15.2</u>		<u>32.4</u>
1870	31.2	23.0		48.4
1880	22.1	18.5	<u>20.0</u>	58.0
1890	<u>16.3</u>	18.7		54.0
1900	28.0	29.3	26.0	53.8
1910	36.6	21.8	36.0	59.2
1920	<u>44.1</u>	<u>31.9</u>	24.0	<u>60.9</u>
1930	43.7	27.6	<u>73.0</u>	58.3

Note: These percentages for non-university enrollments were calculated for Britain and Germany by dividing the figures in Table 2 by those in Table 1. The Russian figures are taken from Table 3 of J. McClelland, "Diversification in Russian-Soviet Education." Although there is no clearly definable university sector in America, the non-university share for the U.S. was estimated by taking one half of the college and university enrollment together with the normal school and teachers college figures from C. B. Burke. The high point of university dominance in each country is indicated by a _____, whereas the zenith of non-university enrollment is marked by a

tiers of higher education, with high school diplomas becoming a college entrance requirement and undergraduate preparing for professional and graduate study.²⁰ By the first third of the present century the institutional matrix had diversified to an extent that, except for Germany, higher education was hardly any longer synonymous with the university.

Since the internal differentiation within institutions of higher learning is less clearly understood, it might help to conceptualize developments as suggested by the German evidence.²¹ First, the personnel structure of universities appears to have

20. Clark, "Academic Differentiation," 250ff; S. Rothblatt, *The Revolution of the Dons: Cambridge and Society in Victorian England* (New York, 1968); P. Lundgreen, *Techniker in Preußen während der frühen Industrialisierung. Ausbildung und Berufsfeld einer entstehenden sozialen Gruppe* (Berlin, 1975); J. A. McClelland, *Autocrats and Academics: Education, Culture and Society in Tsarist Russia* (Chicago, 1979); J. A. McLachlan, "The American College in the Nineteenth Century: Toward a Reappraisal," *Teacher's College Record*, 80 (1978), 287-306.

21. R. Riese, *Die Hochschule auf dem Wege zum wissenschaftlichen Großbetrieb*, 94ff; K. D. Bock, *Strukturgeschichte der Assistentur. Personalgefüge, Wert- und Zielvorstellungen in der deutschen Universität des 19. und 20. Jahrhunderts* (Düsseldorf, 1972); R. Rürup, ed., *Wissenschaft und Gesellschaft: Beiträge zur Geschichte der Technischen Universität Berlin* (Berlin, 1979).

shifted from full professors (over half in Berlin 1810) towards assistant professors (51% by 1909). Senior scholars had less and less student contact (the ratio deteriorated from 21 to 64 students per professor) so that three quarters of all courses were taught by untenured faculty. Below them a whole new category of *Assistenten* (research and teaching assistants, often with a Ph.D.) emerged to staff proseminars and laboratories, whose labor was often exploited and who were denied participation in academic self-government. Second, the number of teaching fields and subfields continued to multiply, since the same course was not simply subdivided into sections, but rather new variants of basic lectures were developed together with novel subspecialties (which sometimes proved ephemeral). While the total number of offerings tripled in Berlin from 571 in 1860 to 1677 in 1909, modern history, which had been taught by the legendary L. von Ranke in 1871, fragmented into five courses (by Sternfeld, Breysig, Schmitt, Schieman and Hintze) in 1914, a specialization which was even more thorough in the technical subjects. Not only did earlier innovations spread through the entire national system, but the center of instruction shifted from lectures to seminars (their ratio changed 6.1 to 1 towards 2.9 to 1 at Berlin). Third, in research, the seminar and the institute proliferated as the focus of activity, especially in the humanities, sciences, medicine and even more so in technology. In Heidelberg the three original seminars were joined by 23 others before World War One and the natural science institutes doubled in number and expanded in size so that research shifted out of the individual scholarly study or home laboratory into a large, well financed facility. Although this proliferation of junior faculty, teaching specialties and research disciplines continued the impetus of the early 19th century, its intensification and spread to lesser institutions created the modern diversified university.

Only a tentative list of factors commonly advanced as explanations can be offered at this point. (1) While the explosion of student numbers in some areas justified diversification (like in the humanities), it failed to produce this effect in others (such as law, which handled them with only a few faculty members). (2) Although the professional research imperative created numerous subfields within established disciplines such as medicine, it had apparently somewhat less effect on the natural sciences and can therefore not simply be used as general cause without further qualification. (3) Undoubtedly the academic labor market influenced the differential rates of diversification of faculties or institutions, but demand for graduates was often fickle and unpredictable. While established professions (such as medical doctors) could manipulate it, "scientification" was less successful in the natural sciences where professionals (industrial chemists) were weaker. (4) Donors and philanthropists, as in the celebrated case of the Cavendish laboratory, facilitated the establishment of new institutions (University of Chicago, Stanford) or institutes. But their impact was heaviest in capital intensive fields (such as technology) and in countries with private higher education (such as in the United States and Russia). (5) Similarly academic, professional, business or political groups might speed the foundation of a new chair or the granting of parity for the technical colleges (like the German VdI, association of engineers), but as often as not they failed to convince the public and the government to grant university admission as to the Prussian primary schools teachers (DLV). (6) Obviously government policy, whether as general willingness to fund (as Prussia under Friedrich Althoff) or in specific targeting of growth (as Russia in the non-subversive institutes) played an enormous role. But students were not always willing to follow so

that some heavily supported sectors like engineering and agriculture in the U.S. differentiated professionally without adequate audience among academic youth. (7) Finally, the structure of the scientific community seems to have been important in slowing down fragmentation in older, more theoretical disciplines and allowing greater latitude in newer, largely applied fields of uncertain cognitive boundaries. These ambiguities and ironies indicate that causes of differentiation should be less confidently postulated than cautiously documented in each particular instance.²²

The dynamics of diversification also had some important consequences. Internal institutional differentiation furthered the emergence of the academic career as a sequential profession with restricted room at the top, which on the continent created the *Ordinarienuniversität*, controlled and run for the chairholders. Moreover disciplinary specialization led to the loss of philosophical unity and the increasing erosion of "liberal education" in favor of research training or professional preparation. At the same time the traditional fusion of *Forschung und Lehre* began to break down, since the gap between teaching and research widened to such an extent that much scientific innovation was carried on in semi-autonomous institutes, supported by foundations like the Kaiser Wilhelm Gesellschaft. External differentiation between institutions began to threaten the autonomy of higher education, since the necessary increase of state funding allowed the educational bureaucracy to exert greater policy control even in those countries like England and the U.S. where formal governmental interference was minimal. Moreover, the establishment of scientific institutes and more so independent technological institutions linked higher learning more closely to the mature industrial economy. In some sectors, like electronics, chemicals or machine building, industry began to rely not only on basic but also applied research at the *Technische Hochschulen* or Russian institutes. Finally the emergence of competing centers of higher learning with somewhat different educational missions created a status hierarchy of institutional types, which offered compensatory social access but also condemned the more "modern" sectors to continuing inferiority unless they conformed to the older neo-classical mold. As a counterpoint these centrifugal forces created centripetal trends like informal research networks, formal scholarly associations (American Historical Association) and regional accrediting associations (North Central) which unified specialities, disciplines and institutions in an academic community. Ironically the dialectical result of this double differentiation was therefore a growing convergence on the new type of a modernized, diversified higher education conglomerate.²³

22. The generational element, mentioned by Sheldon Rothblatt, also comes into play, but in itself is rarely enough to explain the process, since age tension may lead to conformity as well as to innovation. Cf. A. Spitzer, "The Historical Problem of Generations," *American Historical Review*, 78 (1973), 1353-85.

23. S. Rothblatt, *Tradition and Change in English Liberal Education* (London, 1976); F. Pfetsch, *Zur Entwicklung der Wissenschaftspolitik in Deutschland* (Berlin, 1974); R. R. Locke, "The End of Practical Man: Higher Education and the Institutionalization of Entrepreneurial Performance in France, Germany and Great Britain, 1880-1940" (MS Hawaii, 1981); J. A. McClelland, "The Mystique of *Nauka*: Science and Scholarship in the Service of the People," appearing in a volume edited by T. G. Stavrou (1981).

The Opening of Recruitment:

Another important dimension of the transformation of higher learning was the broadening of social recruitment of students and, thereby ultimately, also of professors. While turn-of-the-century apologists of the university claimed that "the possessors of academic culture ... come from all classes of society", critics charged that "higher education is a right, reserved for the rich, but inaccessible for the great mass of the people". Statistically documenting the existence of such inequality, some well-known social scientists as R. Dahrendorf, P. Bourdieu and Ch. Jencks have debated the reasons for discrimination and argued vigorously for compensatory policies, favoring working class children, religious minorities, rural youths, women and blacks.²⁴ Since in the 19th century the liberal principle of equality of opportunity became generally accepted, the discussion largely revolves around evaluative perspectives of time and place. Viewed against the backdrop of earlier elitism, almost any broadening of access seems progressive; seen in terms of more recent egalitarian advances, earlier openings appear insignificant. Part of the difficulty also lies in the problem of measuring the relative "social openness" of higher learning in contrast to other time periods and countries. While published government figures are often designed to cover up important analytical distinctions, social classification schemes are largely incompatible, especially when applied across boundaries or temporal eras. In order to compare at all the historian is forced to run the double risk of employing categories whose internal meaning changes over time and varies in different countries, consoling himself with the notion of functional equivalence. Fortunately the procedures of measurement, such as indices of representation, are less controversial and can be refined by focusing on the youth-population at risk.²⁵ Therefore questions about the recruitment of higher education abound: Did educational opportunities increase or decrease with industrialization? What were the national or continental patterns of access? What were the causes and consequences of the partial social opening?

The fragmentary comparative evidence from 1860 to 1930 suggests that the social recruitment of higher learning altered significantly in all four countries (Table 5).²⁶

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24. F. Paulsen, *The German Universities: Their Character and Historical Development* (New York, 1895), 110ff; the Socialist deputies Strobel and Liebknecht in the Prussian Landtag on April 25, 27 and June 13, 1910, *Stenographische Berichte des Abgeordnetenhauses*, vol. 544; R. Dahrendorf, *Society and Democracy in Germany* (Garden City, 1967); P. Bourdieu and J. C. Passeron, *Les Héritiers. Les étudiants et la culture* (Paris, 1966); Ch. Jencks, *Inequality: A Reassessment of the Effect of Family and Schooling in America* (New York, 1972).
 25. Ringer, *Education and Society*, 22ff; H. Kaelble, "Educational Opportunities and Government Policies," *passim*; R. Boudon, *Education, Opportunity and Social Inequality* (New York, 1975); C. A. Anderson, "The Social Status of University Students in Relation to the Type of Economy," *Transactions of the Third World Congress of Sociology*, 5 (1956), 51-63.
 26. For the sources of Table 5 see L. Stone, "The Size and Composition of the Oxford Student Body," 103; J. Floud, "The Educational Experience of the Adult Population in England," in: D. Glass, ed., *Social Mobility in Britain* (London, 1954), 137f; K. H. Jarausch, "The Social Transformation of the University," 625; H. Kaelble, *Historische Mobilitätsforschung*, 102; A. Rashin, "Gramatnost' i narodnoe obresovanie v Rossii," *Istoricheskie zapiski*, 37 (1951), 78; V. R. Leikina-Svirskaja, *Intelligentsia v Rossii* (Moscow, 1971), 62-4; J. McClell-

Table 5: The Social Origin of Students in Percent

	1870			1890			1910			1930		
	Brit.	Germ.	Russ.	U.S.	Brit.	Germ.	Russ.	U.S.	Brit.	Germ.	Russ.	U.S.
upper class	40	?	60	9.7	21	?	23	8.5	15	?	8	3.8
upper middle	49	41.7	17	27.5	54	31.1	43	22.1	48	22	29.3	20.1
profess:	7	22.9	4	27.5	19	38.0	9	22.1	21	17	10.3	47.0
business:												
lower middle	2	35.1	5	7.3	6	30.0	11	3.1	7	28	24.3	3.4
old:	0			12.8	2			12.5	2	27		15.9
new:												
lower class:	0	.3	3	12.8	0	.1	3	5.1	1	3	14.5	8.9
unknown	2			29.8	1			49.5	5	2	4	47.7

Note: The classification scheme is based on Jarausch, "Occupation and Social Structure in Modern Central Europe," *Historical Social Research*, 11 (1979), 10-19. The "upper class" includes the nobility, the landed gentry and the urban patriciate. The "upper middle class" is divided into professionals (with higher learning) and businessmen (entrepreneurs, bankers, etc.). The "lower middle class" distinguishes the older (artisan, shopkeeper, peasant) from the newer (white collar employee, teacher, government official) elements. The "lower class" is a catchall for the proletariat and the lower layers of society. Since it generally received some form of higher education, the clergy was grouped with the academic professions (even in England and Russia where it is usually listed separately). On the assumption that peasants' sons were not from the landless laborer families but from prosperous households, farmers' children appear under "old middle class," except for Russia where they were the estate from which sprang the industrial proletariat, separated out in the 1930 figure. The British figures for 1870 to 1910 are based on Oxford and the 1930 numbers on a random sample of British adults born before that year. The German figures for 1870 and 1890 are based on Berlin, Leipzig, Wurttemberg and Bonn and the 1910 and 1930 numbers pertain to the country as a whole. The Russian 1870 (1865), 1890 (1880) and 1910 (1914) figures include all universities, while the 1930 (1927/8) number refers to all of higher education. The U.S. figures between 1870 and 1910 (1873-1898) are based on the University of Pennsylvania, while the 1930 (1925) number includes a sample of 55 colleges and universities.

Although partly a definitional artifact (landed elites are no longer identifiable in the 20th century), the nobility and the traditional agrarian upper class all but disappeared from higher education, both relatively and somewhat less so absolutely. Similarly the educated professionals, half of which had, in the middle of the 19th century, recruited themselves, declined in importance to about 1/5 of the student body. Their place was taken in the 1890s by the new commercial and entrepreneurial elite (with between 1/5 and 2/5 of all students) as logical alternative stratum with sufficient means to afford post-secondary training. After the turn of the century, the entire upper middle class was outstripped by students from lower-middle-class homes, who, with the spread of prosperity, began to supply about half of the students. Although in the mid-19th century the traditional callings of artisan, shopkeeper and peasant had made up the bulk of petit bourgeois representation, by the 1930s the newer service pursuits such as white collar employees, middling and lower officials, schoolteachers, etc. overshadowed them (in Germany by 2-to-1). Initially almost totally excluded, the working class breached the educational barrier after the First World War, especially in Russia, but also to some extent in Britain and in non-elite U.S. institutions like Temple. While the German pattern reveals this sequence first, the English figures follow it (especially when one assumes a less elitist cast for the redbricks) and exceed it in terms of working class access by 1930. In the Russian case an educated middle class first had to be created out of the nobility before the lower middle class could emerge as the strongest parent stratum, and the astounding 38.4 lower class proportion in 1927/28 is a result of the conscious proletarianization policy of the Bolsheviks. While the Penn figures for the U.S. demonstrate both the breakthrough of "ordinary" sons after 1890 and the tenacity of the elite after 1910, the multi-college 1925 sample shows a preponderance of business (50%) over professional or service (ca. 42%) clientele and a respectable but restricted working class representation. Finally, institutional differentiation also produced a remarkable pattern of access differences. Within universities some units (such as catholic theology) tended to be more accessible than others (such as law); some tiers, such as undergraduate instruction, were more open than others, such as professional schools (medical). Among institutions the applied (vocational) training centers were likely to be more lower middle class than the theoretical research combines, thereby creating a prestige hierarchy which was justified by claimed functional differences. But despite variations over time, nationality and institution, the basic thrust of expansion and differentiation led to the emergence of the middle class university.²⁷

land, "Proletarianizing the Student Body: The Soviet Experience," *Past and Present*, 80 (1978), 134-5; R. Angelo, "The Students at the University of Pennsylvania and the Temple College of Philadelphia," *History of Education Quarterly*, 19 (1979), 186; E. O. Reynolds, *The Social and Economic Status of Students* (New York, 1927).

27. H. Perkin, *Key Profession: The History of the Association of University Teachers* (London, 1969) and *The Origins of Modern English Society* (London, 1969); J. E. Craig, *Scholarship and Nation-Building: The Universities of Strasbourg and Alsatian Society, 1870-1914* (Chicago, 1983); D. R. Brower, *Training the Nihilists: Education and Radicalism in Tsarist Russia* (Ithaca, 1975); R. Angelo, "The Students at the University of Pennsylvania," 179-205. Cf. also B. R. Clark, "Problems of Access in the Context of Academic Structures," *Yale Higher Education Working Paper*, 16 (New Haven, 1977).

The causes of the broadening of access to higher learning are as vigorously disputed as its extent. (1) The economic discussion revolves largely around the emergence of a mature industrial economy which augments certain strata (like plutocratic entrepreneurs) and diminishes others (like the landed gentry and, because of agricultural rents in Britain, also the clergy). Moreover it involves the spread of prosperity which made education available as a consumption good to larger groups. Similarly, it focuses on the growth of science based and technological industries like electronics and chemicals, which created a demand for trained manpower such as engineers, chemists and the like. Finally, it also touches on the rise of big business which required a new layer of salaried and college educated employees to administer its far-flung concerns. (2) While conceding the significance of academic self-recruitment, the social debate emphasizes on the one hand popular aspirations for mobility, especially for those members of the new middle class who were emulating their workplace superiors. On the other hand it stresses the importance of the preservation of status through educational means, starting with the nobility and its endangered birth prerogatives and descending through the plutocracy (for younger sons who could not inherit) to the old middle class which tried to transform its meager possessions into educational certificates. (3) The political argumentation centers on state policy towards certain strata (like the Russian nobility in the 1850s or the proletariat in the 1920s) since admissions favored particular groups or discriminated against others (antisemitic quotas for instance). However it also underscores the expansion of government bureaucracy in the direction of the welfare state which created an intermittent but generally growing demand for graduates as in Germany. (4) Taking for granted the attractiveness of the ideal of the educated man, cultural explanations address the astounding popular hunger for self-improvement which often transcend any functional justification. While the effects of secularization on the cultural elite have been widely discussed, the importance of the deauthorization of religion for the middle and lower classes and the emergence of a pro-educational scientism need to be probed further.²⁸ Incorporating many aspects of the general transformation of society, these causative factors nevertheless found very real limits in resources, aspirations, institutional policies and cultural styles which preserved the continued exclusivity of much higher learning.

What were the consequences of the emergence of the middle class university? During mature industrial society the traditional elite system, mitigated by charity and patronage, gave way to a modern, competitive pattern, characterized by the struggle of previously uninterested (such as the wealthy middle class) or excluded (such as the new middle class) strata for access to higher learning. A comparison of the fragmentary indices of recruitment (Table 6)²⁹ indicates a gradual decline of the over-repre-

28. H. Kaelble, "Educational Opportunities in Europe, 1900-1970: The Emergence of a Pattern?" (paper delivered at the "Education and Social Change" conference, 1980); P. Lundgreen, "Besitz und Bildung. Einheit und Inkongruenz in der europäischen Sozialgeschichte?" *Geschichte und Gesellschaft*, 7 (1981), 262-75; J. McClelland, "Proletarianizing the Student Body," 122-146. Cf. Ringer, *Education and Society*, 71 ff, 157 ff.

29. The Cambridge and Oxford figures are from Kaelble, "Educational Opportunities," Tables 4 and 5 with a lower class figure added for Oxford on the assumption that about 50% of the British population in 1910 fell into that category. The pre-1930 sample is recalculated from

Table 6: Social Access to Higher Education: Index of Recruitment and Dissimilarity

	England		Germany		Russia		United States		
	Cambri. Oxford sample 1850-99	1910	Heid&Kiel Prussia 1847-57	Germany 1911/2	all higher ed. students 1914	Russia 1923/4	55 college sample 1925		
elite			35.3		21.6				
profs.			79.2		25.0			3.5	
up. mid.	57.0	48.0	6.6	7.0	3.7				
busin.			5.8		1.4	12.8		3.0	
	2.2	6.4		2.0		5.6	6.3		
old mc.			1.5		0.9			0.9	
lowerm. new mc.			0.6		2.2	2.5		1.2	
lower	0.0	0.02	0.3	0.006	0.03	0.08	0.2	0.32	0.42
dissim.			22	5883	46	108	15		21

Note: The Index of Recruitment is calculated by dividing the percentage of students from a certain stratum by the percentage of professionals in the population. Hence values above 1 indicate over-representation and values below 1 under-representation. The Index of Dissimilarity is calculated by dividing the index of representation for the highest by that of the lowest stratum in the table. As values decrease toward 1, the disparity of representation of different social groups diminishes. In order to minimize distortions due to the difficulty of matching social categories for students and the population, combined figures have been presented wherever separation proved analytically impossible.

sentation of the elite and upper middle class and therefore a reduction in the disparity between upper and lower classes, as well as a gradual convergence towards a common distribution.³⁰ But the gains were not duplicated to the same degree by working-class children, farmers' sons, the offspring of minorities, etc. They began to make considerable progress in Russia and Britain, but still remained substantially under-represented everywhere. Moreover much of the new equality was rhetorical rather than real, compensatory more than substantive, since cooptation into the outer layers of learning, the applied institutions, technological subject areas, or open faculties like theology and philosophy, permitted the perpetuation of elitism in the more prestigious professions such as law and medicine. By raising expectations while only partially fulfilling them, this limited opening of higher education increased social tensions within institutions. It also created political pressures which prompted the first measures to reduce inequality and eventually led to a new era of welfare opportunities in the middle of the 20th century. Ironically the influx from the lower middle class and the limited inclusion of the working class helped to stabilize the system. When the children of these educationally mobile children entered the university, they contributed to "academic" self-recruitment, keeping its share at about 1/5 of the student body from then on. Finally the partial broadening of recruitment also furthered the importance of educational qualifications over job performance in government and business. Hence the middle-class complexion of the university served to legitimate its increasingly important selection function by blending cultured self-perpetuation and status preservation with a degree of mobility based on meritocracy.³¹

The Process of Professionalization:

The newest focus of the debate about the transformation of higher learning is the emergence of the professions. Rescuing the "forgotten middle class," i. e. the non-

J. Floud, "The Educational Experience," 137f. The Heidelberg and Kiel figures are from Jarausch, "Die neuhumanistische Universität und die bürgerliche Gesellschaft," *Darstellungen und Quellen zur Geschichte der deutschen Einheitsbewegung*, Table 9; The German figures for 1930 are recalculated from Kaelble, *Historische Mobilitätsforschung*, Table 12 and Ringer, *Education and Society*, 315. The Russian 1914 figures are from D. Brower, "Social Stratification," Table 2; the Soviet figures for 1923/4 and 1927/8 are from J. McClelland, "Proletarianizing the Student Body," Table 4. The U.S. 1925 sample is calculated once again from Reynolds, *Social and Economic Status*.

30. Some national peculiarities in Table 5 deserve notice. Although virtually non-existent in Oxbridge in the middle of the 19th century, the working-class had made considerable gains in England by the 1930s. In Germany the opening was a victory of the new middle class (2.5 times over-represented) which means that Central Europe was most elitist by 1930, although it had started out more openly. In Russia the change was most rapid and complete, so that the proletariat was over-represented (1.6) by the late 1920s. In America business representation was particularly strong and the service occupations also exceeded the old middle class, whereas the system appears more accessible for workers in individual institutions such as Temple than as a whole.
31. The concepts of charity, competitive and welfare opportunities are from H. Kaelble, "Educational Opportunities and Government Policies," part one; Cf. Jarausch, "The Social Transformation of the University," 60ff, and "Die neuhumanistische Universität," *passim*.

capitalist bourgeoisie, from oblivion, this concept draws attention to the social product of higher education, the academics, and to their impact upon society. Since contemporaries talked about *Berufsstand* (occupational estate), in Central and Eastern Europe the very term was a Western import, although its implications were very much in evidence. If one accepts B. Bledstein's definition as a basis for discussion ("a full time occupation in which a person earned the principal source of an income ... mastered an esoteric but useful body of systematic knowledge, completed theoretical training before entering a practice or apprenticeship, and received a degree or license from a recognized institution"), the crucial role of higher learning for the emergence of "the culture of professionalism" is obvious. Because of the slipperiness of the concept, which is embroiled in an interminable discussion about a finite set of ideal-typical traits, this analysis must be limited to its connection with higher education, whose importance can hardly be overestimated for professionalization. In order to reduce the confusion, three preliminary clarifications are in order. (1) Although the development of the professorial research ethic is central to the rise of the academic profession, the professionalization of the callings of university graduates is distinctive, broader and sometimes independent of higher learning. (2) Both processes within and without the university take place in an interactive triangle composed of the profession (with its practitioners and organizations), the state (as regulator and certifier) and institutionalized higher education (as training ground). (3) While expansion, differentiation and recruitment condition their interplay, higher learning affects professionalization primarily in terms of admission (selection), curriculum (knowledge) and examination (credentialling).³²

The relationship between professionalization and higher learning is, therefore, more complex than assumed in static sociological theory or historical analysis, proclaiming it a dominant principle of contemporary society. Although "professional" training had, in the Middle Ages, taken place in the universities, by the middle of the 19th century liberal education and pure research had pushed much professional preparation outside, e.g. in England. Only in the present century was it gradually reabsorbed by higher learning. Moreover the "old professions", usually defined as the clergy, lawyers, doctors (that is problematic especially in the U.S.) and professors, already flourished by 1850 and therefore only expanded in size, increased in scientific character, and somewhat opened their recruitment thereafter. The emerging "new professions", such as high-school teachers, engineers, chemists, etc. were more intimately involved, since their victories in gaining university admission, in obtaining scientific standing for their disciplines and in achieving a standardized and recognized set of examinations were both cause and consequence of enrollment expansion, differentiation and social opening. At times the resistance of the state bureaucracy and of university professors to organizational pressures could defeat the aspi-

32. B. J. Bledstein, *The Culture of Professionalism: The Middle Class and the Development of Higher Education in America* (New York, 1976), 86f; A. LaVopa, "The Language of Profession: Germany in the Late 18th Century" (MS, Princeton, 1980); D. Rüschemeyer, "Professionalisierung: Theoretische Probleme für die vergleichende Geschichtsforschung," *Geschichte und Gesellschaft*, 6 (1980), 311-325; K. H. Jarausch, "Higher Education and Professionalization" (comment on a session on "Careers, Profession and Nineteenth Century Higher Education" at the 1979 SSHA meeting at Cambridge).

ration of an upwardly mobile occupation which carefully imitated the model of the older professions. At other times they were deflected into less prestigious units, tiers or types of institutions, even if they occasionally shared the same function as in Tsarist Russia. Finally, the interaction between higher learning and professionalization also varied by social/cultural tradition. The liberal Anglo-American model was characterized by vigorous professional organization and autonomy (even in professional training). In contrast the bureaucratic German-Russian pattern depended heavily on state regulation and licensing, since all three corners of the triangle (professionals, officials and professors) revolved around government.³³

Although some university spokesmen claimed to pursue only science (*Wissenschaft, nauka*), higher education, by also providing professional training, influenced professionalization in three fundamental ways. First, formal admission requirements and informal pressures of habit and expectation combined to create a clearly identifiable pattern of social selection among fields of study and institutions, which channeled certain social strata into specific professions. Everywhere law was the most prestigious faculty, attracting the nobility or the wealthy patriciate as well as some children of academics. Medicine was somewhat more diverse with doctors' or apothecaries' offspring, wealthy sons and some lower-middle-class children able to afford its considerable costs. Favored by sons of clergymen, Protestant and Orthodox theology drew upon teachers' and peasants' children because of its numerous stipends, while Catholic theology was even more lower middle and lower class. Finally, the arts and science subjects were the true melting pot of the university, blending a few academic children with sons of the plutocracy and especially of the old and new lower middle class. The less prestigious institutes, specialized schools, etc., aside from their practitioners' children, attracted an even less distinguished clientele except for some special Russian institutes and high technology institutions. Second, the curriculum provided an aura of scientific theory, so important to the professional's claim to superior expertise. However in practice the gulf between professional research interests, the students' learning of the "scientific method" and the later needs of the practitioner seemed to be widening, except in industrial research. Hence the universities were less successful than the technical colleges and institutes in imparting practical skills which might be applied upon graduation without subsequent internship. Though less directly identifiable, liberal education also added an important command of culture and that social veneer which made the graduate acceptable as a member of the professional class. Third, the examination system, whether entirely academic (as for German chemists), bureaucratic (as for Russian doctors) or independent (such as the English bar examination), provided that essential proof of competence upon which the professional based his claim to market monopoly. The clash between the academic's insistence on intellectual attainment and the practitioner's

33. M. S. Larson, *The Rise of Professionalism: A Sociological Analysis* (Berkeley, 1977); H. Perkin, "Professionalization and English Society Since 1880" (MS Princeton, 1979); R. Spree, "The Impact of the Professionalization of Physicians on Social Change in Germany During the Late 19th and Early 20th Centuries," *Historical Social Research*, 15 (1980), 24-39; A. La-Vopa, *Prussian Schoolteachers: Profession and Office, 1763-1848* (Chapel Hill, 1980); A. Engel, "Emerging Concepts of the Academic Profession at Oxford 1800-1845," in L. Stone, *The University in Society*, 1: 322-338.

emphasis on applicable skill, either divided the internal content of the examination as in the West or established two successive theoretical and practical stages as on the Continent.³⁴

Since the numerical parameters of professionalization are somewhat indistinct, there is little agreement on the reasons for the interaction between profession and higher education. Focused on "the provision of an esoteric, evanescent, fiduciary service" Western literature generally argues that "the professions were called forth by the free market." Hence the collective manipulation of demand by organized practitioners who persuaded the public to grant them a monopoly in exchange for certain standards of expertise and skill became the central cause. However this liberal reconciliation of free competition with economic security was predicated upon the victory of the academically trained occupational elite over other practitioners, and therefore involved higher learning at least as an important political tool. In contrast, continental scholarship stresses "the close association of many professions with the authority and prestige of the state" which was the chief employer of older professionals, controlled educational requirements or testing procedures and regulated the practice of the liberal professions. The ascendancy of the old professions like doctors over non-academic competitors like surgeons, midwives, witches, etc. (in 1852 in Germany) may well have been a matter of the status policy of university graduates who persuaded the government to disenfranchise the others even before medical science had a higher cure rate than traditional folk healing. But once again the crucial argument that convinced the bureaucracy rested on the higher learning of the true professional. Because it was often used to gain power (such as by one professional faction over another), studies of professionalization ought to probe the educational dimension more thoroughly than hitherto. The coincidence between the rise of the new professions and the transformation of higher learning is not entirely accidental. Universities and especially technical colleges produced novel careers through scholarly specialization while aspiring practitioners time and again tried to legitimate their claim to professional status through higher learning. Ultimately professionalization and academization therefore fed on each other by continually upgrading entrance requirements (i. e. demanding more formal secondary schooling), making the curriculum content and teaching style more scientific (even trying to transform legal instruction from memorizing rules into legal research) and by increasing academic demands for the various certifying examinations.³⁵

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34. A. Engel, *From Clergyman to Don: The Rise of the Academic Profession in 19th Century Oxford* (New York, 1982); C. E. McClelland, *State, Society and University in Germany 1700-1914* (Cambridge, 1980); C. E. Timberlake, *Essays on Russian Liberalism* (Columbia, 1972); D. Light, "Introduction: The Structure of the Academic Professions," *Sociology of Education*, 47 (1974), 2-28. Cf. K. H. Jarausch, "Professional Education at German Universities," (paper delivered at the Western Association for German Studies meeting at Wichita State University, 1980).
35. H. Perkin, "Professionalization," *passim*; Nancy M. Frieden, *The Russian Physician, 1830-1905: Professional, Reformer, Radical* (Princeton, 1981), especially chapter 5; C. Huerkamp, "Ärzte und Professionalisierung in Deutschland: Überlegungen zum Wandel des Arztberufs im 19. Jahrhundert," *Geschichte und Gesellschaft*, 6 (1980), 349-382; D. Rüschemeyer, *Lawyers and their Society* (Cambridge, Mass., 1973).

The implications of professionalization therefore involve not only higher learning, but also society and polity. Although the process began during the first half of the 19th century, in the subsequent decades the academic career emerged as full-fledged profession in its own right, structured into successive steps from *Assistentur* to *Ordinariat*, from tutorship to professorship. This process was accompanied by an increasing tension between professional training and liberal education. Expansion, diversification and social opening brought growing masses of vocational students into academe, but not only in Britain was the hold of neohumanism so strong that any number of technical colleges reverted to the arts curriculum and the collegiate model. Although in Russia technical training clearly won out by the 1920s, elsewhere the liberal arts (especially in the U.S.) showed a surprising resilience and popularity with students. Hence it would be incorrect to assert that professional training had triumphed completely. The very sequence of undergraduate study followed by a professional school, which emerged during this period, represents a compromise between both demands. In a broader sense, the professionalization of academe also led to a professionalization of society, since, however they were defined, the "professions" multiplied more quickly than the population at large (Table 7).³⁶ The older professions academized, organized and grew moderately, thereby gaining and maintaining an upper-middle-class position by combining a market monopoly with meritocratic educational credentials. The new professions strove mightily to follow this pattern through admission to some form of higher learning, recognition of the scientific nature of their expertise and establishment of certifying examinations based on knowledge and skill. However many aspiring groups remained quasi-professions, because their subjects were not academically recognized, their low pay consigned them to the lower middle class, and their associations were too weak to wrest autonomy from the public or the state. In creating professional status politics, professionalization contributed both to the spread of Liberalism in Central and Eastern Europe and to its internal division between a commercial-entrepreneurial bourgeoisie and a cultural-academic *Bildungsbürgertum*.³⁷

Higher Education and "Modernization":

The emergence of the large, diverse, middle-class and professional system of higher learning between 1850 and 1930 casts a new light on the relationship between educa-

36. For the sources of Table 7 see B. R. Mitchell and P. Deane, *Abstract of British Historical Statistics* (Cambridge, 1962), 60f. The first set of German figures (1852 and 1907) is from Jarausch, *Students, Society*, Table 2-3 as well as from T. Geiger, *Die soziale Schichtung des deutschen Volkes* (Stuttgart, 1932), 20ff. (for 1925). The other numbers are from W. G. Hoffmann, *Das Wachstum der deutschen Wirtschaft*, 204ff.

37. D. R. Skopp, "Auf der untersten Sprosse: Der Volksschullehrer als 'Semi-Professional' im Deutschland des 19. Jahrhunderts," *Geschichte und Gesellschaft*, 6 (1980), 383-402; R. S. Turner, "Social Mobility and the Traditional Professions in Prussia, 1770-1848" (MS, New Brunswick, 1979); P. Stearns, "The Middle Class: Towards a Precise Definition," *Comparative Studies in Society and History*, 21 (1979), 377-396. The non-economic sector of the upper and middle class has been consistently ignored by social historians preoccupied with industrialization.

Table 7: The Professions in the Workforce in Percent

	Britain		Germany		Russia	United States	
	Prof & Serv.	Prof & Tech.	Acad. Profs.	Prof & Serv.		Grads	Prof & Serv.
1852			0.64	2.9		.69	
1871	3.9			3.0		.84	1.78
1890	4.4			3.5		.92	3.96
1910	4.1		1.16	4.6	.19		5.4
1930	6.1		2.56	7.9	.31		8.0

Note: The categorization of the British census figures changed during World War One from "professional occupations and their subordinate services" to "professional and technical occupations." The last entry is for 1951. The first German figures attempt to include only presumptive graduates of higher education. In contrast the second German figures, according to census practice, include government officials and free professionals (except for the military) irrespective of academic qualification. The first Russian figure is from the 1897 census which indicates that 133,600 received some kind of higher education out of a workforce of 69,148,022 males and females. The second figure from the 1926 census (when it was dangerous to be regarded as a professional) is 233,000 (while another one of 280,000 also appears). Both were averaged to about 250,000 and compared to a workforce of 80,453,000 (including all 15-60 year olds). The figures were compiled by P. Alston. The first U.S. figures represent college graduates as proportion of all males over the age of 20. They were compiled by A. Creutz and presented in a paper called "College Graduates and the Professions in Nineteenth Century America" (MS Dearborn, 1980). The second U.S. figures describe the percentage of the professional service category among total American employment in 1870, 1900, 1920 and 1940. They were computed from D. Bell, *The Coming of Post-Industrial Society* (New York, 1973), 130.

tion and social change. Sociological theories stressing "educational mobilization" explain only the enrollment expansion and not even that very well. Since higher learning does not necessarily grow directly with population, the spread of literacy and the diffusion of primary schooling precede, but also sometimes follow, the expansion of the universities, as in Russia. The "partial modernization" approach seems more attuned to the contradictions in the differentiation process between scientific progress and academic traditionalism. It reconciles the proliferation of non-university institutions with the continued magnetism of the most elitist (Oxbridge) styles of higher learning. But its relevance for the other three topics is limited. The historical thesis of the active incongruence of higher learning with change helps to highlight the dichotomy between the commercial-industrial and the educational-bureaucratic middle class and points out the obstacles to mobility for the proletariat and other discriminated groups. But it overstates "the perpetuation of tradition" because "outlooks more or less explicitly at odds with their time" were not so prevalent in the technical and other non-university sectors and largely absent among scientists and doctors as

well. Instead, professionalization with its mixture of modern (science, skill, examination) elements with traditional (organization, autonomy, ethos) traits suggests as an alternative the ambivalence of modernization. The ambiguity of the relationship between education and social change emphasizes the dynamics of growth, diversification, social opening and professionalization while at the same time indicating their very real limits. The adjective "ambivalent" also describes the academics' conflict of emotions over the transformation of higher learning. While many enthusiastically welcomed its research advances, at the same time they pessimistically struggled against its decivilizing dangers.³⁸

The ambivalence of this transition is evident in the different path followed by each country. Starting with comparatively low relative enrollment, England expanded vigorously by adding a host of new university, technical and teaching institutions which no longer conformed to the collegiate ideal. The social elitism of Oxbridge therefore gradually gave way to a still somewhat narrow but accessible system, especially for the lower class, since the hold of liberal education was broken by compensatory vocationalism. Beginning with higher enrollments, Germany increased more slowly, pioneering the model of scholarly specialization and higher technical or business education, but was more reluctant to include primary teacher training and other subjects. Its upper-class recruitment broadened only to include the new and old lower middle class while keeping out the proletariat. In contrast to English distrust between the professions and the universities, the association of state, higher education and professionals became even more intimate with *Bildung* giving way to *Ausbildung* (cultivation to professional training). With the lowest original enrollment, Russia made the most dramatic gains, less by expanding its universities than by creating numerous higher institutes, especially from the 1890s to the 1930s. Thereby the most elitist (noble) system was transformed into the most open (at least for the proletariat and peasantry) at the price of legal discrimination against the educated and propertied middle class. Instead of being content with democratizing the universities, the Bolsheviks rather promoted the training of proletarian cadres, immediately useful for the production process of the first Five Year Plan. Having the highest enrollment, because of the secondary role of much of undergraduate collegiate education, the United States experienced further growth and continued to lead the other three countries by 1930. The staggering diversity of religious, regional, social and academic characteristics of institutions persisted, although a graduate university sector in the European sense of the word emerged out of the traditional colleges after the Civil War. Because of its greatest initial egalitarianism (making some kind of educational certificate available to almost everyone who wanted it), there was less subsequent broadening of social access than in other countries. Curiously enough, professional education did not displace the liberal arts, but in a characteristic compromise, was added onto the

38. W. Rüegg, "Bildungssoziologische Ansätze zur Erforschung des Bildungswesens im 19. Jahrhundert," in his and O. Neuloh, eds., *Zur soziologischen Theorie und Analyse des 19. Jahrhunderts* (Göttingen, 1971); D. Rüschemeyer, "Modernisierung und die Gebildeten im Kaiserlichen Deutschland," *Kölner Zeitschrift für Soziologie und Sozialpsychologie, Sonderheft* 16 (1973), 515-29; Ringer, *Education and Society*, 6 ff., 18 ff. For the ambivalence of the educated cf. K. H. Jarausch, "Liberal Education as Illiberal Socialization: The Case of Students in Imperial Germany," *Journal of Modern History*, 50 (1979), 609-36.

undergraduate sequence for the most prestigious occupations while vocational training became a lower class token alternative.³⁹

The causes of the transformation are ambiguous as well. In contrast to contemporary rhetoric about the contribution of higher learning to economic growth, it has been difficult to substantiate this connection beyond the effect of higher technical and managerial training. Instead, the spread of higher education seems to coincide with general "cultural and material progress" as a consumption good, afforded by more parents of modest means. Despite the covariation of enrollment and industrial production curves, predictions of demand have proved baffling for government statisticians while the market cycles of deficit and oversupply seem impervious to bureaucratic manipulation. The role of education in the emergence of class society is similarly contradictory. The shift from birth and wealth to expertise as a job requirement opened the doors for some meritocratic competition, but continued to favor the older elites. The formalization of legal entitlements (first on the Continent, but eventually also in the West) represented a typical liberal compromise between aspirations for mobility and self-perpetuation of the educated. Nevertheless the "social-aristocratic" tone of the cultured created one of the crucial status divisions of modern society. Despite the late 19th century belief in the progress of science and technology, the humanism inherent in liberal education continued to be attractive to students who craved its social distinctions. While the rationality of higher learning contributed to secularization, the classical content of cultivation sometimes turned academics away from the cacophony of the machine and the masses, making them profoundly uneasy about modernity. But exaggerated faith in rational knowledge and popular scientism fueled the expansion of scientific and technological subjects as social cure-alls as well. The rhetoric about academic freedom notwithstanding, the expansion of state funding also led to increased bureaucratic control which decided who got educated where and in what field. Though supporting science and technology, governments often tried to muzzle criticism coming from the universities.⁴⁰ Economic growth, social aspirations, cultural values and state policy, therefore served as essential motors of the transformation of higher learning across national frontiers.

39. The extant data in Ringer, *Education and Society* and the above tables are too fragmentary to support anything but these preliminary impressions. According to issue, alignments of countries differ. In terms of expansion the established British and German institutions grew less dramatically than the emerging Russian and American systems. In terms of diversity the American and German systems seem to have held the lead, at least initially. In terms of social access Russia and Britain seem to have been the most open for the lower class by 1930. Finally in terms of professionalization the Anglo-American association-autonomy model appears to differ basically from the Continental (German-Russian) state-education model.

40. P. Lundgreen, "Educational Expansion and Economic Growth in Nineteenth Century Germany," in Stone, ed., *Schooling and Society* (Baltimore, 1976); W. G. Hoffmann, "Erziehungs- und Forschungsausgaben im wirtschaftlichen Wachstumsprozeß," in: G. Hess, ed., *Eine Freundesgabe der Wissenschaft für E. H. Vits* (Frankfurt, 1963), 101-33; R. Meyer "Das Berechtigungswesen in seiner Bedeutung für Schule und Gesellschaft im 19. Jahrhundert," *Zeitschrift für die gesamte Staatswissenschaft*, 12 (1968), 763 ff.; L. O'Boyle, "Education and Social Structure: The Humanist Tradition Reexamined," *Internationales Archiv für Geschichte der deutschen Literatur*, 1 (1976), 246 ff.; K. Vondung, ed., *Das Wilhelminische Bildungsbürgertum* (Göttingen, 1976).

But their particular strength varied in each context, their force was buffered by the relative autonomy of educational institutions, and their impact was mediated by the conflicting decisions of corporate groups and individual actors.⁴¹

The implications of the transformation of the university into “an expression of the age, as well as an influence operating upon both present and future” also raise a host of puzzling questions. In the transition from traditional elite higher learning to modern mass higher education the large, diverse, middle-class, professional system which emerged around the turn of the century represents an intermediary stage. Still echoing earlier ideals, higher learning performed by 1930 a far broader mission in society than a three-quarter century before. Although resented by a cultured minority, the expansion of enrollment beyond population growth moved universities from the periphery into the center of cultural life. Through incorporating “secondary, technical, vocational, and popular education”, the diversified modern institutions played a crucial economic role in providing technological innovation and trained manpower. The cooptation of the lower middle class increased the chances for mobility or status preservation, and therefore helped legitimate the continuation of privilege as meritocratic. Finally, the political “adulteration and dilution” of the curriculum to include business, journalism, home economics, etc., contributed to the rise of ever new “professions”. Nevertheless the emergence of “modern” higher learning before 1930 also encountered definite limits. No country outside of America enrolled more than 10% of the age cohort. Especially in the traditional British and German systems scientific differentiation did not mean the abandonment of the chair/institute system which restricted subjects to those deemed sufficiently “academic”. Only in Russia were more than 10% of the students recruited from the bottom half of the population. Finally, even in the newest system the professionalization of vocational training did not include every new pretender to academic status such as “hair-dressing”. The unresolved tension between modernity and tradition in this intermediary stage of higher learning contributed to those pressures which led to the next transformation, the emergence of mass higher education. In 1930 Abraham Flexner, in his grand comparison of American, English and German universities, could still cling to a vanishing ideal:

A modern university would then address itself whole-heartedly and unreservedly to the advancement of knowledge, the study of problems, from what ever source they come, and the training of men—all at the highest level of possible effort.⁴²

41. M. S. Archer, *Social Origins of Educational Systems* (London, 1979) and J. E. Craig, “On the Development of Educational Systems,” *American Journal of Education*, 89 (1981), 189–211. Rather than nominalist abstractions, the intermediary linkages are crucial.

42. A. Flexner, *Universities: American, English, German* (London, 1930), 3–218. In 1967 Clark Kerr wrote in his introduction to the new edition with all the arrogance of the prophet of the “multiversity” before the student revolution: “The universities did all the wrong things—undergraduate instruction, professional schools (other than law and medicine), service activities, vocational courses, extension work. They did all the wrong things—and they entered the Golden Age.” For the ideological reversal of the educated accompanying the social transformation see Jarausch, *Students, Society and Politics in Imperial Germany: The Rise of Academic Illiberalism* (Princeton, 1982).