

The pattern of social transformation in England

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Part Three: The Opening of Recruitment

Harold Perkin

The Pattern of Social Transformation in England

Between 1850 and 1930 there took place in England a revolution in higher education. It was a revolution in the meaning, purpose, size and personnel, both staff and students, of the English universities, and it was arguably more profound than any change since the 13th century foundation of Oxford and Cambridge or before the transition towards mass higher education of the 1960s. In round terms it was nothing less than the transformation of the university from a marginal institution, an optional finishing school for young gentlemen and prospective clergymen, into the central power house of modern industrial society.

The measure of this revolution can be taken by asking what difference it would have made to English society in 1850 and again in 1930 if the universities had suddenly disappeared. In 1850—almost none. The 850-strong Oxbridge intake, mostly sons of landowners and clergy, could easily, like most of their class, have found alternative ways of passing the time and, if they wished, of qualifying for the Church or other liberal professions in foreign travel, military college, articulated clerkships or the theological seminaries. Neither ordination for the Church, which took 38% of Cambridge graduates between 1800 and 1849, nor the professions of law, medicine, public administration and teaching, which took 21%, required a university degree, nor was a degree sufficient training for law or medicine. Hardly any Oxford or Cambridge man, even of the handful (6% at Cambridge) who came from business families, went into business.¹ The only occupation which might have suffered, and that a largely unpaid one, was politics—and most peers and M.P.s did not have a degree.

The 375 or so full-time internal students at London University in 1861 and the 50 at Durham were scarcely more relevant to the needs of the new industrial society of mid-Victorian England, apart perhaps from the majority who studied medicine and

1. Lawrence Stone, "The Size and Composition of the Oxford Student Body, 1580-1910" in L. Stone, ed., *The University in Society* (2 vols., Princeton, 1974), 1:91-2, tables 1 A and 1 B (for both Oxford and Cambridge admissions); Fritz K. Ringer, *Education and Society in Modern Europe* (Bloomington, 1979), 236 (for social origins and subsequent careers of Cambridge students, abstracted from Hester Jenkins and D. Caradog Jones, "Social Class of Cambridge Alumni of the 18th and 19th centuries," *British Journal of Sociology*, 1 [1950] and a 1938 survey by the Cambridge University Appointments Board).

the few scientists and engineers; and most doctors and engineers were still trained on the job by a form of apprenticeship.²

The Broadening of Social Recruitment:

In the English as distinct from the Scottish universities, where in Glasgow as many as a third of the students in the 1830s were working-class, there was scarcely a single workman's son.³ At Oxford in 1835 there was one and in 1860 no "plebeian," a term which embraced everyone below "gentleman" and the clergy,⁴ and there is no reason to think that there were more poor students at Cambridge, London or Durham, where the fees ensured that only the middle and upper class could afford them. Even the middle class were mostly absent from Oxford and Cambridge. Nearly two-thirds (63%) of Cambridge students between 1800 and 1849 came from landed and clergy families, 21% from the liberal professions, and only 6% from business and banking.⁵ All the Oxford students in 1835 and 1860 were sons of landowners, clergy and "gentlemen," though the 21 percent to 32 percent of the latter must have included some professional and business men.⁶ In no university in Britain were women of any class admitted. In total the English universities admitted less than 0.3% of what is now called the student age group, and if the Scottish universities admitted a larger share of a smaller population, most of these were between 15 and 18 years old and were not university students in the modern sense at all.⁷

As for the academic staff, they were chiefly drawn, as Arthur Engel has shown for Oxford, from the "gentlemanly" classes. Between 1813 and 1830, 45% of his sample were sons of clergymen, 28% of squires, armigers and "gentlemen," 15% of business and professional men, and only 5% from the "non-gentlemanly" classes. As late as the years 1881 to 1900 over 80% still came from the gentlemanly classes.⁸ More to the point, most of the dons at Oxford and Cambridge were "poor relations," young men of good parentage but little inherited wealth, who became temporary celibate fellows while they waited their turn for a college living in the Church which they needed because their families lacked the patronage or wealth to provide one. Only 15% remained in the university for life, either because they gained a professorship or headship of a college which allowed them to marry or because a Church living never came their way. The professors at London and Durham, almost all recruited from Oxford and Cambridge, only differed from most dons in that they had gained a life appointment with freedom to marry similar to the Oxbridge professors and heads of houses.

2. Figures from R. A. Lowe, Table 1, in his contribution to this volume; for the preponderance of medical students at London University and other civic colleges see W. H. G. Armytage, *Civic Universities* (London, 1955), 170-75.

3. Michael Sanderson, *The Universities and British Industry, 1850-1970* (London, 1972), 148.

4. Stone, 93.

5. Ringer, 236.

6. Stone, *loc. cit.*; Ringer, 239.

7. Sanderson, 149; Harold Perkin, *Key Profession: The History of the Association of University Teachers* (London, 1969), 6.

8. Arthur J. Engel, "From Clergyman to Don: The Rise of the Academic Profession in 19th-century Oxford" (Diss., Princeton University, 1975) Appendix 2.

Only these few career academics would have permanently missed the universities of 1850.

Nor could the English universities claim to be vital to intellectual culture or scientific research. Not one of the intellectual giants of the early 19th century (Bentham, Coleridge, Malthus, Ricardo, Davy, Faraday or Darwin) was a university don, and the few academic scientists like Wheatstone, Daniell and Lyell were only to be found at the new University of London. The Royal Commission of 1852 on Oxford feared that "the clergy and gentry who are educated at the university" would in their ignorance of physical science be left behind by their social inferiors, to the serious injury of both science and other branches of knowledge.⁹

Lest it should be thought that Scotland was more advanced—as it certainly had been in the 18th century with the European leadership of Adam Fergusson, Dugald Stewart, Adam Smith, John Millar and the Scottish historical school of philosophy—one Scottish historian has talked of "the intellectual paralysis of intellectual life associated with Victorian Scotland." If that is exaggerated, the undergraduate faculties of Scottish universities were really secondary schools for 12- to 17-year-olds—"miserable filthy little urchins" as *Blackwood's Edinburgh Magazine* called those of Glasgow in 1823.¹⁰ Their output, chiefly of kirk ministers and village dominies, was no more relevant to modern industrial society than that of Oxbridge.

In sum, the universities of Britain in 1850 could have been abolished with no great loss to the British economy and society. They were, indeed, less important than in the early 17th century, when on the eve of the Civil War they had educated 1.1% of the age group, over three times the percentage of 1850.¹¹

By contrast, what if the universities had disappeared in 1930? That would have inflicted an immense loss on society and industry. By that date there were, including the five Scottish ones, 22 universities and university colleges in receipt of Treasury grants (24 if we include the unfunded colleges at Hull and Leicester) and 58 institutions if we count the separately funded colleges and schools of London and the University of Wales. They catered to about 50,000 students, representing 1.7% of the age group, or at least six times the percentage of 1850.¹² More important, it was a more critical percentage, a true elite which would supply most of the top positions in the Cabinet, the civil service, the medical and legal professions, and made a substantial contribution to the owners and managers of banking and big business.

As for the social origins of the students, the universities now catered, if unequally, to the whole social range. Nearly a quarter (23%)—more than a quarter of the men (27%)—were children of manual workers, a larger percentage than in any other West

9. *Report of the Royal Commission on the University of Oxford* (1852), 79–80.

10. "Vindiciae Gallicae," *Blackwood's Edinburgh Magazine*, 13 (1823), 94: the undergraduate Faculty of Arts was "a school where boys from twelve years of age to sixteen or seventeen" were instructed in elementary Classics, Mathematics, Logic, Ethics, etc., and were not to be compared with those of Eton, Westminster, Winchester, or Harrow (English grammar boarding schools).

11. Stone, 103.

12. University Grants Committee, *Report for the Period 1929–30 to 1934–35* (London, H. M. S. O., 1936), 11; Robbins Committee, *Report on Higher Education* (London, H. M. S. O., 1963), 16.

European country.¹³ Although the child of a professional or managerial father had over 30 times the chance of getting to university of that of an unskilled worker, what has more often been overlooked is that only about one-third of upper class off-spring got there, which meant that two-thirds were beaten in the climb up the educational ladder by children from below.¹⁴ Women, too, now found a place there, with 23% of the student body, though fewer of them (13%) came from the working class.¹⁵ (To complete the picture we should add the large non-university sector of higher education, mainly teacher training and technical colleges, which contained another one percent of the age group and far more women and working-class students.)

The university teachers, too, had changed out of all recognition. No longer mainly clergymen waiting for permanent employment, they had become secular professional academics with a recognizably structured lifetime career. There is little information on their social background until after the Second World War. Of those in a 1968 sample who had entered university service before 1945 most, 83.2%, came from the professional and managerial classes and only 5.3% from the working class; but what is perhaps more significant is that the largest group, 42.5%, came from lesser managerial and professional families and, if we add the non-manual workers, half (49.6%) came from the lower middle class, and more than half (54.9%) from below the top social class.¹⁶ Allowing in the latter for professional and salaried fathers with very little capital, there can be little doubt that the vast majority of academics were middle-class men (only about 10% were women, as now) with little family wealth and wholly dependent on their university salaries. As the best examinees of their peer group, they reflected belatedly the changed composition of the student body, but with a bias towards the scholarship boy from the grammar and direct grant schools, from which came no less than 72.3 percent. Although the largest single group, 43.4%, were graduates of Oxbridge, where nearly half came from the public boarding schools, only 22.3% of the university teachers were boarding-school products—a much smaller percentage than in most elites in Britain at that time.¹⁷ University teaching had become a meritocratic profession mainly for the bright but poorer sons of the middle class.

The Rising Importance of Higher Learning:

Meanwhile the whole meaning and purpose of the university as an institution had changed. Apart from educating a large fraction of the elite in most occupations and acting as a narrow but effective channel of social mobility especially from the lower middle ranges of society, the university had come to play a much more central role in the economy and indeed in matters of life and death. Michael Sanderson has chronicled the increasing involvement of the universities from the late 19th century on-

13. The figures are for those of university admission age (18) in 1928-47 and are taken from Jean Floud "The Educational Experience of the Adult Population of England and Wales as at July 1949" in D. V. Glass, ed., *Social Mobility in Britain* (London, 1954), cited by A. H. Halsey, *Trends in British Society Since 1900* (London, 1972), 189, 219.

14. Figures from Jean Floud, cited by Ringer, 243.

15. Halsey, 217 and 219.

16. Perkin, 262.

17. Perkin, 259, 260.

wards in industry, beginning with shipbuilding, chemicals and electrical engineering and continuing with man-made fibers and plastics, pharmaceuticals, dyestuffs and electronics, a development to which we shall return.¹⁸ Beyond that, university science had begun to explore the keys to life in cellular biology, bacteriology, virology, genetics, and to death as well as life in atomic research. One has only to recall a few of the names—Rutherford in nuclear physics, Fleming in antibiotics, Blackett in operational research—to realize how blindingly relevant the universities had become to the survival of man on this planet.

On a humbler level, the universities had begun to take over from apprenticeship and the professional institutions the advanced education of most of the higher professions. As the Vice-Chancellor of London University put it, belatedly in 1946, "The truth is that all the professions are pressing us, as universities, to take on the greater part, if not the whole, of the requisite professional or technical training for their own professional subjects." He went on to mention accountancy, veterinary medicine, estate management, youth leadership and journalism¹⁹—marginal professions compared with those which had already been absorbed. The U.G.C. annual listings from 1925–26 of "branches of study in which advanced students were engaged" chronicle this trend: 7 kinds of engineering, 10 of agricultural science, at least 12 industrial technologies from aeronautics and brewing to oil and textiles, 28 specialisms in medicine, and a new and burgeoning range of economic and social sciences.²⁰ We must not exaggerate the extent to which the universities were the progenitors of a more qualified, professional society, but academics were already on the way to becoming the key profession, the profession which provides both the expertise and the experts for most of the other professions.²¹ If the universities had disappeared in 1930, they would have left a gaping hole in the social and industrial fabric—and Hitler would have won the Second World War.

It would be interesting to trace the stages by which this extraordinary change between 1850 and 1930 in the meaning, purpose, size and personnel of universities came about. The story would begin with the seething discontent of the new industrial classes at the exclusiveness and complacency of Oxford and Cambridge, which had come to monopolize for the Anglican clergy and gentry a national resource originally founded for poor scholars. It would follow the movement for reform both outside Oxbridge, in the effort to found alternative institutions for middle-class sons in London and the great industrial cities, and inside, with the help of parliamentary pressure coming to the aid of clerical dons seeking a lifelong career compatible with marriage and an opportunity to study and teach more relevant subjects like history, modern languages, the physical sciences and economics. It would bring in their increasing involvement in industry, with massive donations from industrialists on one side and on the other the penetration of academic inventors and consultants into the process of technological advance. It would show the increasing financial support of

18. Sanderson, *passim*.

19. *Home Universities Conference, 1946: Report of Proceedings* (Association of Commonwealth Universities, London, 1946).

20. University Grants Committee, *Returns from Universities and University Colleges ...* (annually from 1925–26 onwards) (London, H. M. S. O., 1926).

21. Cf. Perkin, *Key Profession*, Chap. 1.

the state from the first minute grant of £ 15,000 to university colleges in 1889, through the establishment of the Department of Scientific and Industrial Research in 1917 and of the U.G.C. in 1919, to the shouldering by the 1930s of about one-third of university expenditure and the consequent "remote control" of academic remuneration. Above all, it would trace the construction of an educational ladder, from the higher grade elementary schools of the 1880s and the state-supported secondary schools of 1902 through the grammar school scholarship of 1907 to the state and L.E.A. university studentships from 1920 onwards.²²

This story has, however, been more than adequately chronicled by Armytage, Sanderson, Sheldon Rothblatt, Arthur Engel and others.²³ In the space available it is more important to ask why this revolution took place at all, and why in so short a time, in what was by any standards the most aristocratic, conservative and class-ridden of modern industrial societies. It is not enough to point, with A. H. Halsey, to "the remarkable absorptive capacity, the judicious and un-Marxist Fabianism of the upper classes."²⁴ The upper classes were not Fabian except perhaps in the original Roman sense of knowing when to retreat to still stronger positions, and attitudes are not causes but effects which themselves need explanation. Just as the most important reason for the first Industrial Revolution can be found not in the progressive attitudes of English landlords but in the material self-interest underlying those attitudes—they stood to gain in increased rent from the enclosures, mines, canals, railways and new towns²⁵—so their part in the early stages of the university revolution can best be explained by self-interest, including their interest in political survival and the art of compromise to avoid something worse.

But first we must rid ourselves of the unhistorical and intellectualist fallacy that the universities before the great transformation were as important to the ruling classes as they have since become to intellectuals. It is salutary to be reminded how contemptuous the old landed class could be of academic pursuits. As a student one of my friends, now a senior Oxford don, was found reading by his fox-hunting aunt, a female squire. "What!" she said, "Are you still reading a book? Most unhealthy! Why don't you get out and ride a horse?" There were aristocratic politicians in 1850 who were scholars, like the Earl of Derby who preferred translating Homer to being

22. Cf. A. H. Halsey, A. F. Heath and J. M. Ridge, *Origins and Destinations: Family, Class and Education in Modern Britain* (Oxford, 1980), 25: the proportion of scholarships or "free places" in grammar schools rose from a required 25% under the 1907 regulations to an actual 45% in 1931 (drawn mainly from the less affluent middle class and the upper working class). See also R. H. Tawney, *Secondary Education for All* (London, 1922), 20: "The number both of pupils and school places in 1922 is ... all too small. But, inadequate as they are, they represent something like an educational revolution compared with the almost complete absence of public provision which existed prior to 1902" (quoted *ibid.*). A more detailed account may be found in G. A. N. Lowndes, *The Silent Social Revolution* (2nd ed., Oxford, 1969).

23. Armytage, *op. cit.*, Sanderson, *op. cit.*, Sheldon Rothblatt, *The Revolution of the Dons: Cambridge and Society in Victorian England* (London, 1968), Engel, *op. cit.*

24. A. H. Halsey, "British Universities and Intellectual Life" in A. H. Halsey, J. T. Floud and C. A. Anderson, eds., *Education, Economy and Society* (London, 1961), 506.

25. Cf. Harold Perkin, *The Origins of Modern English Society, 1780-1880* (London, 1969), esp. chap. 3.

Prime Minister, or Peel and Gladstone who both took double firsts at Oxford. But the great majority thought brain work only marginally superior to manual work and, when necessary to their well-being, preferably done by other people for the pitiful wages it was worth. Education was mainly valued for the group unity and social superiority it brought, including the ability to understand the Latin tags in parliamentary speeches, but this was more a product of the great public schools than of the ancient universities, which were "optional extras." As for the modern universities, they were objects of charity for the lower orders, much like the village church schools on a larger scale, important for political support and social control, but on no account to be attended by one's own children.

The defence of the privileges of Oxford and Cambridge was really the defence of the Church of England monopoly, which by 1851, when it was discovered that only a minority of the population attended the established Church,²⁶ had become indefensible. Even Gladstone, M. P. for the University and a high Anglican and loyal alumnus, was not prepared to defend it and introduced the bill to reform Oxford himself.²⁷ It was, like the 1832 Reform Act or the Repeal of the Corn Laws, a concession which gave nothing vital away. The dissenters would be pleased and, as long as Latin and Greek were prerequisites for admission, the sons of the clergy and gentry and those professions which chose to be "civilized" in the public schools would still have the edge over all competitors. Moreover, once Oxford and Cambridge were reformed it became possible to justify new forms of privilege, such as their near-monopoly of the competitive examinations for the civil service from 1870. Reform was a retreat to a stronger position.

In the same way the new civic universities could be tolerated and even encouraged with royal charters and, eventually, government funds because they infringed upon no aristocratic interest, they drew middle-class political support, and they were, in their view, only a higher form of that "technical instruction" which the government already supported via the Science and Art Department from the 1850s and the "whiskey money" after 1889.²⁸ It was also in the national interest and in the interests of increased urban rents if the country was prosperous in the face of international competition. It would be a mistake, however, to attach too much importance to the fear of foreign competition engendered by the international exhibitions of 1851, 1867, and 1878.²⁹ This may have been a factor in state support for evening classes and technical colleges but at the university level it assumes at too early a stage a strong and direct connection with industrial employment which was simply not there. Only seven per cent of Cambridge graduates in 1850-99 went into business, including banking, and though the figures for London or the civic and Scottish universities are patchy, the percentages there around the turn of the century were not much greater.³⁰ The great majority of graduates both from Oxbridge and from the provincial universities down to the First World War went into the professions, including the clergy (dissenting as

26. *Census of England and Wales, 1851: Religious Worship* (London, H. M. S. O., 1854).

27. John Morley, *Life of Gladstone* (London, 1908), 1:369-79.

28. O. M. V. Argles, *From South Kensington to Robbins: An Account of English Technical and Scientific Education since 1851* (London, 1964), chap. 2.

29. Cf. Argles; Armytage, 219-22.

30. Ringer, 236; Sanderson, 100-101, 111-14, 173-79.

well as Anglican), public administration, law, medicine and teaching. Even the scientists and engineers tended to prefer public employment, teaching or private professional practice to industry.³¹ Industrialism was certainly the main driving force behind higher education, as it was behind the expansion of the professions, but it was industrialism in the broadest sense of the growth of a new urban class society demanding more and better professional and administrative services, not in the narrower sense of the employment needs of industry itself. These could still best be met, it was generally agreed, by training on the job supplemented by mainly part-time technical instruction below the university level. With a few significant exceptions in particular science and engineering departments where the seeds of the future were being sown,³² the new and reformed universities down to the early years of the 20th century were chiefly schools preparatory to the literate and liberal professions and instruments for turning the sons of the other classes, whether landowners, business men or the few, notably in Wales and Scotland, from the working class, into professional men.

The Causes of the Social Transformation:

We are thus left with a paradox. If the reforms and new foundations of the Victorian age had only succeeded in changing the universities from finishing schools for young gentlemen and prospective clergymen into preparatory schools for the professions, how then did they manage to become by 1930 so vital to modern industry and society? Mainly because of changes *outside* the universities which transformed the structure of demand for their products, both for knowledge and for graduates. These changes, which began in the late 19th century and came to full fruition in the inter-war period, can be summed up as follows:

- 1) the rise of big business and with it of a plutocratic class by an amalgamation of the new millionaires with the old great landowners;
- 2) the relative decline of the landed gentry (the rural squires) and of the clergy whose incomes were heavily dependent on falling agricultural prices;
- 3) the emergence of new science-based industries closely linked to university research and graduate employment;
- 4) the growth of state administration and its more direct involvement in the economy and social life;
- 5) the narrowing, by taxation and educational policies as well as by big business and big government, of the channels of social recruitment and their concentration in the system of education and qualification.

The rise of big business between the 1880s and the 1920s is well-known in its economic aspects, but its social effects have been little studied. The number of joint-stock companies rose from 11,000 in 1888 to about 65,000 in 1914,³³ but more to the point was the rise of giant enterprises like Lever Brothers, Courtaulds, J. and P.

31. Sanderson, *loc. cit.*

32. Sanderson, esp. 83-93, 107-11, 160-65.

33. Sir John H. Clapham, *An Economic History of Modern Britain* (Cambridge, 1926), 3:202, 222.

Coats and Brunner-Mond, predecessor of I. C. I. The social effects of this development, coupled with those of the so-called "Great Depression" of 1874-96 on agricultural prices and rents, were profound. The wealth and status of the majority of the landed class were undermined, but the richer landlords, like the great London dukes with urban property, mines and other resources were joined in a new plutocratic, London-based class by great capitalists, many of them self-made millionaires like Lord Leverhulme, Lord Northcliffe, Cecil Rhodes and Sir Thomas Lipton.³⁴ The aristocracy rushed to diversify their holdings and incomes, on the one side to join the boards of joint-stock companies—one-quarter of the peerage became company directors by 1896—and on the other side to join the "flight from the land" which, after the 1909 "People's Budget" with its supertax and threatened land taxes, began the biggest transfer of land since the Conquest.³⁵ The plutocrats were few, however, and for most of the upper class a leisured life on the land was no longer an automatic right. Their children would have to fend for themselves and compete, admittedly with competitive advantages, with others for the top jobs in society.

The decline in agricultural rents and prices, to which the clergy's incomes were tied, removed overnight the attraction of the main alternative career for younger sons and for the sons of the clergy themselves. At the same time the secular professionalization of college fellowships removed another reason for ordination.³⁶ The proportion of Cambridge graduates going into the Church plummeted from 38% between 1850 and 1899 to six percent in the 1930s. The two largest classes which still between 1850 and 1899 supplied 50% of Cambridge graduates clearly had to find other jobs to do, often without higher education, and their numbers fell to nine percent by the 1930s. Their places were taken partly by children of the professional class, who increased from 26% to 30% of a much larger student body, but much more by those of the business class, who increased from 15 percent to 46 percent.

Still more striking was the change in social destinations. The share of those going into the Church and landowning as a career shrank from 45 percent to six percent (0% in land) and they were replaced partly by an increase in professional employment from 39% to 49%, still more by an increase of those going into business from seven percent to 31 percent.³⁷ Sanderson's figures show larger percentages of Cambridge graduates going into industry and business between the Wars, rising to 52% in 1929 and averaging 40% for the whole period.³⁸ Oxford, allowing for its larger weighting of arts degrees, had a similarly dramatic increase in business careers, from seven percent between 1906 and 1910 to 31% in 1938, and averaging 24% in the 1920s and 1930s.³⁹ Curiously enough, apart from Birmingham, Liverpool and Newcastle, which averaged 32%, 52% and 64% in the early 1920s, most provincial universities had smaller proportions going into business than Oxford and particularly Cam-

34. Cf. F. M. L. Thompson, *English Landed Society in the 19th Century* (London, 1963), chap. 11; and Harold Perkin, "Land Reform and Class Conflict in Victorian Britain" in John Butt and P. F. Clarke, *The Victorians and Social Protest* (Newton Abbot, 1973).

35. Thompson, 306-07, 321-26.

36. Cf. Engel, 467.

37. Ringer, 236.

38. Sanderson, 279.

39. Sanderson, 279.

bridge.⁴⁰ This underlines the fact that the upper and upper middle classes who still dominated Oxbridge were much quicker to seize the new opportunities in business, and were more welcome as recruits with "the right social background" than provincial graduates. Such indeed was the aim of the Appointments Boards set up in Oxford and Cambridge in the 1890s with the help of business men like Sir Douglas Fox, Lord Rothschild and Nathaniel Cohen with the express purpose of recruiting graduates for big business.⁴¹ Even an Oxbridge arts graduate, it was assumed, was a better prospect for management than a provincial scientist or engineer, and it is noticeable that the graduates from other universities were nearly all scientists and engineers, mainly recruited for research and production and only rarely for management training.

Graduate scientists and engineers, however, were certainly needed for the new science-based industries of the 20th century. Many of these, such as steam turbines, electrical engineering, electronics and broadcasting, dyestuffs, pharmaceuticals, man-made fibers and petrochemicals, were based on fundamental research done mainly in 19th century universities, often with active collaboration between industrialists and professors like Sir Henry Roscoe, Lord Kelvin, MacQuorn Rankine and J. J. Thomson. Such science professors acted not only as consultants but as recruiting agents between their students and business, and their departments became the seedbeds of whole new industries.⁴² By the inter-war period the universities had become vital to the development and survival of the most advanced and rapidly growing sectors of British industry.

The growth of big government which began in the late 19th century also provided opportunities for graduate employment and academic consultancy. The number of civil servants which had scarcely kept pace with population for most of the 19th century leapt from 50,859 in 1881 to 116,413 in 1901, to 317,721 in 1922 (during the post-War decline) and to 350,293 in 1936.⁴³ The increase was due to the growth in government responsibility for an ever-widening range of services, including education, public health, factory inspection, industrial arbitration and conciliation, as well as the rising scale of military operations, and above all to the incipient rise of the welfare state, which took central government offices for the first time (except for the Customs and Excise) into every provincial town and placed new burdens on the local authorities as well. By no means all the new civil servants and local government officials were graduates but those in the higher echelons were, and the highest grade of the civil service was almost exclusively recruited from Oxford and Cambridge.⁴⁴ At lower levels, such as factory inspection and social work, other graduates could find a foothold. The London School of Economics, for example, set up the first course in welfare work.⁴⁵ The universities, and especially Cambridge and London began in-

40. Sanderson, 279.

41. Sanderson, 55-58.

42. Sanderson, 100-101, 111-14, 173-79.

43. H. Finer, *The British Civil Service* (London, 1937), 24.

44. Cf. R. K. Kelsall, *Higher Civil Servants in Britain from 1870 to the Present Day* (London, 1955).

45. Lord Beveridge, *The London School of Economics and its Problems, 1919-37* (London, 1960), 86.

creasingly to furnish the government with consultants on social and economic problems like J. M. Keynes, R. H. Tawney and W. H. Beveridge, though it did not always accept their advice.⁴⁶ Here again the universities found themselves at the heart of one of the most far-reaching developments of modern society, the expanding corporate state.

The combined effect of all these four developments was to converge on the fifth, the channelling of recruitment to most of the elites in society through education and the qualification systems, at the apex of which now stood the universities. Given the closing of other avenues, into leisured landownership or the Church, even the children of the upper class were forced to seek higher education if they wished to be certain to reach the top. With the rise of big business and the operation of super-tax and death duties it became more difficult (though not impossible) for middle-class and the few working-class entrepreneurs to build up a business and make a fortune,⁴⁷ and so hopes of social mobility were channelled towards education. The educational ladder itself diverted middle and working-class talent away from traditional forms of social climbing, and many a potential self-made man became a professor or a civil servant instead. The ladder brought talent from below into competition with the children of the higher classes. By a quirk of the English system it was easier for a really bright but poor child to go to Oxford or Cambridge than to a provincial university since, after the reforms of the 1870s, there were far more open scholarships there to be won. Although the scholars were few, they had by definition to be good at competitive examinations, and they tended to get better degrees and a larger share of university fellowships and civil service places, which accounts for the rapid shift in those professions towards recruitment from the lower middle ranges of society.⁴⁸ Thus the competition was immediately felt by the sons of the higher classes, who had to strive harder in the educational competition or shift their attention to careers where social background and "character" gave them an advantage, in business and the socially superior and more expensive professions such as law and medicine.

The net result of this convergence of recruitment upon the educational route was what may be called a "threshold effect." With dramatic suddenness, between the first and third decades of the 20th century the percentage of the age group enrolled in universities doubled, from 0.8 percent to 1.5 percent. Higher education became fashionable, almost a necessity, even for the rich who wished to reach the top of the great functional elites and even for those who came from the business class and/or hoped to get into management. They avoided the provincial universities, but both Oxbridge and the rest became more vital to the middle classes, both for those who followed the now traditional routes into the professions and the more adventurous who were will-

46. Keynes was an economic adviser to the British delegation to the Versailles Treaty conference, 1919; Tawney the leading member of the Hadow Committee on secondary education, 1926; and Beveridge's contributions range from assistance to Churchill over labor exchanges, 1909, to his famous report on *Social Insurance and Allied Services*, 1942.

47. For the changing social origins of large company chairmen and millionaires, see H. J. Perkin, *Elites in British Society since 1880* (unpublished report to S. S. R. C., 1976, deposited in British Library Lending Division).

48. Perkin, above, and "The Recruitment of Elites in British Society since 1880", *Journal of Social History*, Winter 1978.

ing to take their chances in business. For bright boys and (fewer) girls from the working class all their hopes of social mobility came to center on the grammar school and university, preferably Oxbridge. For all classes the university became the normal route to high status and income. This was an aspect of the rise of professionalism as the guiding principle of modern society.

Thus the revolution in British higher education, though from one point of view occupying the whole period between 1850 and 1930 and by no means complete even then, from another passed its critical turning point almost overnight, between, say, 1900 and 1920. The war, though not itself the cause, accelerated the transition, by extending the role of the state, challenging the automatic leadership of the traditional ruling class, bringing forward new leaders from the ranks, and shaking up old assumptions about what men—and women—from different social backgrounds could do and not do. But the causes lay much deeper, in the profound shifts in income, social structure and expectations about the distribution of life chances which began in the late 19th century. At the risk of massive oversimplification of complex developments, the revolution may be summed up in a sentence. Before, 1900, despite many undercurrents of change, the universities are still in the world of leisured gentlemen and the gentlemanly professions; after 1920, despite many hangovers from the past, they are in the bustling, strenuous world of business and the competitive professions, where serious preparation for high status and incomes is channelled increasingly through higher education. By the 1920s the university is no longer a finishing school for young gentlemen; it is the central power house of modern industry and society.