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UNIVERSITIES: THE PURSUIT OF BREAD, KNOWLEDGE AND FREEDOM

University College of Swansea

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by

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On the 1st May, 1851, Queen Victoria opened the Crystal Palace Exhibition. This Great Exhibition was the culmination of the previous 80 years of industrial life during which Britain had witnessed the first Industrial Revolution. It heralded 'the opening of the Golden Age of Victorianism'(1) and was a manifestation 'of a public recognition of the material progress of the age and the growing power of man over the physical world.'(2) At that time Britain was the pre-eminent industrial nation; we held a position of global power and influence for we produced half the cotton cloth of the world, two thirds of the coal and five-sevenths of the steel. Little wonder that the spirit of Britain in 1851 has been described as 'buoyant, optimistic and arrogant'.(3)

This mood, however, did not last long. By the end of the century the United States and Germany had both overtaken Britain in steel production whilst the United States had taken a decisive lead in machine tools and electrical engineering and Germany in chemicals. The latter country in particular had become the bogy nation as the label "made in Germany" increasingly replaced the label "made in Manchester". Professor Ashworth, the

economic historian, has described events graphically: 'As market after market fell into German hands foreign competition seemed to be a brooding menace rather than a bracing challenge.'(4) By the 1890s THE AGE OF BRITISH ECONOMIC SUPREMACY WAS OVER.

The signs that all was not well had been there long before this. Indeed, even in the euphoria engendered by the Great Exhibition a prophetic warning had been uttered by Sir Lyon Playfair, one of the country's leading chemists. In an address to the Government School of Mines he warned 'as surely as darkness follows the setting of the sun so surely will Britain recede as a manufacturing nation, unless her industrial population become much more conversant with science than they are now.'(5)

Initially the warning went largely unheeded. This was understandable, for Britain's industrial greatness seemed to owe little to universities or to education generally. It was assumed that our industrial greatness was the outcome of an inventive genius which we possessed to a greater extent than did other countries. 'Why should things not go on as they are' was the popular feeling. But when it became clear, even to the most intransigent observer, that things could not go on as they were a Great Debate ensued as to the causes of Britain's industrial decline relative to her competitors. Among the factors

cited was the apparent failure of our universities to provide the scientific and technological manpower which the country needed. Our universities had not been intended to serve the industrial needs of the nation and critics pointed to the growing prestige of the German universities and to the emphasis they were giving to science and technology. Britain's industrial decline and the ensuing Great Debate brought into sharp focus the function of the universities; it was to lead to more radical changes in universities in the fifty years after 1851 than had occurred in the preceding three centuries.

The original concept of a university was that of a 'studium generale' which came to mean a school where there were organised facilities for study so as to attract students from a wider community than just the immediate locality. Latin was the lingua franca and attendance was restricted mainly to the middle classes. The idea of 'social purpose' was evident in the early conception of a university for they originated partially as a response to the growing need for lawyers and an educated clergy. The benefits of education were seen to apply not only to those who had been exposed to the university process but also to the wider community who had need of doctors, lawyers and clergymen. The infant universities turned to Church, emperors and kings for protection, status and privilege. 'Such favours, of course, were not given without the

reciprocal expectation that the will of the patron would be respected by the university.'(6) The freedom of the universities was never absolute therefore and their claim to autonomy has always been a limited one.

As early as the end of the 15th century it became clear that Oxford and Cambridge were to be England's sole heritage from the European medieval movement. Being creatures of Church and state they had been pulled first this way and then that as their patrons changed with regularity, often losing freedom over selection of students, curricular ideas and staff. Throughout the 17th century, in particular, they were never allowed to ignore the fact that 'whoever paid the piper called the tune'. The tune was 'a steady production of men fit for state and Church and an absence of support for Dissenters'.(7) Under the Chancellorship of the Earl of Leicester it was obligatory that every student had to subscribe to the 39 Articles of the Church of England and to take the oath of Supremacy.

Under the influence of pressures from outside and complacency from within, Oxford and Cambridge during the 18th century gradually fell into a state of torpor. Until 1800, claimed Cardinal Newman, Oxford had given little education to the youth committed to its keeping. Numbers were low and those who came, came for the wrong reasons.

Furthermore, the curriculum was narrow, the standard of tuition was low and posts were limited to the clergy.

At that time Oxford and Cambridge, wrote Newman,

> 'were little more than comfortable monastic establishments for clerical sinecurists with a tinge of letters while young men of family between Eton and the Grand Tour, and a number of more ordinary individuals designed for the Church spent their time there very pleasantly, some with a great deal of drinking and cheerful noise, and some with a <u>little</u> reading of books.'(8)

Classics dominated the curriculum at Oxford because it was considered to be the foundation of a 'liberal' education; even as late as 1870 out of a total of 376 fellowships and scholarships at the two universities no fewer than 212 were in classics. Oxford and Cambridge were inextricably linked with the great public schools of England which supplied the universities with most of their students. In those schools the chief honours were classical, the headmasters and tutors were men distinguished chiefly as classical scholars, ardently attached to classical learning.(9) Opinion among the headmasters of the schools was that classics was the most

appropriate study for first-class minds and the foundation of a liberal education. Science on the other hand was not considered to have a high value. Thring at Uppingham saw some value in teaching science, for in science the most backward in classical knowledge could take refuge. There they could find something to interest them. At Rugby, Temple's objection to science was based on his belief that 'science did not have any tendency to humanise.' 'Such studies', he argued, 'do not make a man more human but simply more intelligent.'(10)

Around mid-century pressures for change began to build up both within the two universities and from without - in the 1850s both Oxford and Cambridge came under the scrutiny of Royal Commissions. In response to those pressures curricular reform were effected by the end of the century. Science subjects gradually became more popular whilst divinity and classics slipped back. However, they gave way, not to technologies, but to history, which by 1914 headed the honours lists at Oxford and was second at Cambridge. The technologies meanwhile had scarcely gained a foothold at the ancient universities.

At Cambridge, physics and mathematics acquired great prestige. The University became the pre-eminent centre for the study of these subjects whereas the more

industrially useful chemistry was very much a German science in the nineteenth century, most self-respecting British chemists having acquired a German Ph.D. The ultimate intellectual goal in Britain was to be Senior Wrangler, top of the 'firsts' in the Cambridge mathematics tripos. Regrettably, it did not add greatly to our industrial performance for more students who earned the distinction ended up as Bishops than as industrial scientists. The ultimate in a well-rounded liberal education was considered to be a double-first in classics and mathematics.

Engineering in contrast was considered to be neither intellectually demanding nor part of a liberal education; in any case it was scarcely fitting as a pursuit for a gentleman or a young man from a rising middle-class family - it was rather a calling seen primarily as suitable for the artisan. The first professor of engineering at Liverpool, W. S. Hele-Shaw, upset his middle-class family by rejecting a career in medicine and choosing instead an apprenticeship in the dockyard. From there he won a Whitworth scholarship to the University College of the West of England at Bristol which set him on his academic career. An apprenticeship followed by one of the private scholarships endowed by the great mechanical engineer Sir Joseph Whitworth offered one of the main avenues to the top of the academic tree in the nineteenth century.

To some extent the taint surrounding engineering as a profession still persists in this country. Critics have complained that technology has always had a "dark image", the low social evaluation of the engineering profession being pointed out by many Royal Commissions, most recently of course by the Finniston Committee.

Many reformists grew impatient of waiting for reform at Oxford and Cambridge. Merchants, manufacturers and dissenters decided to by-pass Oxbridge and took matters into their own hands. The gauntlet was thrown down as early as 1826 with the establishment of University College, London. Opened in 1826 its founders - Whigs, Dissenters and Utilitarians - had taken note of the recent founding of the University of Berlin and of the University of Virginia where Thomas Jefferson in 1819 had said of the University that its purpose was

> 'To harmonise and promote the interests of agriculture, manufactures and commerce. To enlighten the people with mathematical and physical sciences which advance the arts of industry and administer to the wealth, the subsistence and comforts of life.'(11)

- a round declaration indeed of social purpose.

At University College, professors were appointed in applied chemistry and in several branches of engineering. In emphasising science and technology this early University College set the pattern for the great civic colleges of the industrial cities that were to follow. Thus, later in the century, we find metallurgy at Sheffield, mining at Nottingham, naval architecture at Newcastle, textile industries at Leeds and even brewing chemistry at Birmingham.

In the development of these civic colleges successive governments largely stood aside until the first grants were allocated in 1889. After all it was the age of 'self-help' and 'laissez-faire'. The civic colleges were set up as a result of private benefactions and public subscriptions; they lived a hand-to-mouth existence on endowments and constant appeals to the public. It was a form of funding described by Ramsay Muir, a young historian at Liverpool as 'precarious and undignified'. Universities, he argued, should not have to depend on charity. A policy of private funding by the richest and most powerful nation of the day seriously held back the development of the civic colleges.

The effects of national policy can be illustrated by reference to Owens College, Manchester. This was founded

in 1851 following a bequest of £100,000 by John Owens, a draper of the City. The new College was soon in financial difficulties but it struggled on as best it could. Things were at a low ebb when in 1868 a deputation of Lancashire citizens approached Disraeli, the then Prime Minister, to seek government aid. The request had Disraeli's fullest sympathy but nothing came of the application. Two years later another deputation visited Mr. Gladstone, who had replaced Disraeli as Prime Minister. Again, the deputation had the Prime Minister's fullest sympathy. But Mr. Gladstone suggested they see his Chancellor of the Exchequer who would have to find the money. The Chancellor was Robert Lowe, instigator of the system of 'payment-by-results' in education, who had dismissed another deputation with the words 'I hold it as our duty not to spend public money to do that which people should do for themselves.'(12) Nothing came of this application also, but Lancashire people found it extremely difficult 'to do for themselves' as Lowe advised, developments at Owens College being disappointingly slow and conditions rudimentary. The College came close to closure on several occasions. On one of those occasions (1858) the Manchester Guardian declared:

> 'Explain it as we may, the fact is certain that this College, which eight years ago it was hoped would form the nucleus of a university, is a mortifying failure.'(13)

Fortunately, Owens College did survive to become a great university. Similar sagas were unfolding in the other civic colleges. It was largely in them that the country's leading technologists were trained in the final quarter of the century though critics considered they were too few in number; by 1914 Germany claimed to have 25,000 graduate scientists and technologists, many of them working in England; the corresponding number in Britain was less than 4,000.(14)

There was another aspect of the Debate about the purpose of universities which was of great significance in those years and that was the place of research. The traditional philosophy at Oxford and Cambridge emphasised the importance of teaching and of close tutor-student relationships. This philosophy had been adopted by the fledgling civic colleges. Towards the end of the century the importance of research received increasing recognition. Thomas Huxley, in arguing for the establishment of faculties of science in universities, emphasised that such faculties 'would have the additional advantage of providing in some measure for one of the greatest wants of our time and country. I mean the proper support and encouragement of original research.'(15) The Reverend Mark Pattison, Rector of Lincoln College,

Oxford, in his seminal work Suggestions on Academical Organisation, published in 1860, wrote:

> 'There remains but one possible pattern on which a university can be constructed ... This is sometimes called the German type ... the Professor of a modern university ought to regard himself primarily as a learner, and a teacher only secondarily.'(16)

But if universities, hard pressed as they were, were to take on the burden of supporting research, particularly in the expensive fields of science and technology, where was the money to come from? This was a problem concerning Professor Moore, first holder of the chair of biochemistry at Liverpool University who wrote in 1911:

> 'It is much to be regretted that in the financial system of our universities no separate provision is made for the endowment of research apart from undergraduate teaching. ... The result is a perpetual struggle for the partition of a sum of money inadequate to supply completely the needs of both and in such a struggle, research, though equally or even more important, comes off worst because it is usually regarded by administrators as a luxury whereas teaching is deemed an essential function in the work of a university.'(17)

For the greater part of the 19th century there was no overriding compulsion to actively engage in research if one did not wish to do so, ... academic tenure was not threatened by the necessity to 'produce and publish'. Let me cite the example of one Welshman, Henry Arthur Morgan. Entering Jesus College, Cambridge, as a young student he graduated in mathematics, gained a Fellowship, held nearly every office in the College before becoming eventually its Master. 'Black Morgan', a vigorous and muscular figure, was described as a great oarsman and mountaineer, one of the first to climb the Jungfrau-Joch. Although spending a total of 63 years at Jesus College, he published little, his only notable publication being 'Church and Dissent in Wales'.(18) It is a commentary on those days or perhaps on these days, depending on one's perspective, that one could aspire to become a Master of a College with less research effort than it would require today to satisfy a Probation Committee.

By 1914, however, the universities had become more recognisably the institutions we know them today; undergraduate teaching was still the raison d'etre with postgraduate studies a minor activity but the importance of research was rapidly growing. Technologies were by

this time widespread outside Oxbridge and the demands they made on resources together with the costs of research had compelled the state to abandon its former adherence to a policy of local funding. In becoming increasingly involved with the universities though, governments were not so much concerned with the general education of the youth of the country as with the country's rapidly declining industrial economy. It was the fear of foreign competition that acted as the great spur.

Bringing the argument nearer home we can remind ourselves that this region at the beginning of the century was the metalliferous centre of the world. Within 15 miles of Swansea there were 240 collieries, 31 ironworks, 31 tin works, 4 steel works, 6 zinc works, 19 copper works and 50 other works. Yet the region had no university to serve those industries. It was Sir Richard Martin, a local industrialist, whose only education was obtained at the Copper Works School at Hafod, who urged on the Haldane Committee the necessity of having a University College at Swansea which would specialise in technological education. This University College, then, came into being in 1921 partly to ensure that our industries would have the scientific and technological back-up to make them competitive in the post-war period.

The irony is that economic historians of today cannot agree whether Britain could have performed substantially better in the period 1870 to 1920 given the circumstances prevailing at the time and, even if she had been able to, the extent to which an improved system of education could have contributed remains an open question.

It is true, nevertheless, that one can look back on the critical period 1870 to 1920 as one during which the PURSUIT OF BREAD was a dominant factor in the creation and funding of our universities, to an extent that it had never been before.

This is not to deny that the universities were not also engaged in the pursuit of knowledge for its own sake, knowledge that was not related to economic growth or industrial advancement. But for much of the 19th century that knowledge was of a limited kind and it was available mainly to a social elite. R. H. Tawney writing in his Commonplace Book described universities as having two obligations:

> 'The business of a university', he wrote, 'is twofold. It is to uphold an INTELLECTUAL STANDARD and a MORAL STANDARD. The intellectual standard it upholds by maintining a severe intellectual discipline. The moral standard it upholds by making that discipline accessible to

all who will submit to it, by relaxing it for none merely because they are poor or socially incompetent.'

The founders of the civic colleges had such moral considerations in mind. They looked to a wider clientele than just young men from the best schools. When Owens College opened its doors in 1851 there were more adults in evening classes than there were young students in day classes. All the staff, including the Principal, lectured in the evening to adult students. Sir Henry Roscoe, Professor of Chemistry, gave special Penny Science Lectures, so-called because the fee was a penny per lecture, on the industrial aspects of chemistry, to working men and he also gave recreative lectures to unemployed cotton operatives. The civic colleges, as well as accepting students from any part of the country, were also regional and local institutions providing for the needs of the communities that had created them.

It was concern with moral obligations arising from a realisation that they were socially exclusive that led to talk at Oxford and Cambridge in the 1840s of university extension, that is, to study outside the walls, on the principle that if people could not come to universities, then the universities must go to the people. Some time was to elapse before this came to fruition. It began in 1867

when James Stuart, a young Fellow at Trinity College was invited by the North of England Council for the Promotion of Higher Education for Women to deliver a series of lectures in the four northern cities of Leeds, Liverpool, Manchester and Sheffield. He was asked to lecture on education but chose instead to lecture on astronomy to audiences of several hundred ladies. He followed this up by lecturing to railwaymen at Crewe and to the Rochdale Equitable Pioneers Co-operative Society.

In 1873 he persuaded the University of Cambridge to put the work on a proper footing. London and Oxford quickly followed suit and later most of the civic universities also became involved in the general and cultural education of adults through the provision of extra-mural classes. In the absence of adequate school systems and with restricted opportunities for higher education there was a great need for such extra-mural education. The universities, in joining a variety of other organisations attempting to meet the educational needs of adults, became part of a movement, an educational and moral crusade.

James Stuart had identified two social groups whose opportunities for learning were severely restricted in the 19th century, namely, middle-class ladies and the industrial worker. But the desire to learn and the thirst

for knowledge was widespread. Such was this desire that individuals were prepared to make enormous sacrifices in time and effort in pursuing it. Tales abound in the literature of the movement of such sacrifices, none more remarkable than that of Thomas Cooper, a Leicester Chartist and shoemaker. Cooper mapped out the following programme of study for himself:

> 'I thought it possible', he wrote, 'that by the time I reached the age of 24 I might be able to master the elements of Latin, Greek, Hebrew and French; might well get through Euclid and through a course of Algebra; might commit the entire "Paradise Lost" and seven of the best plays of Shakespeare, to memory, and might read a large and solid course of history and be well acquainted with the current literature of the day. Historical reading was my first employment on weekday mornings when I rose at four, until seven o'clock, the time of dinner, - usually eating my food with a spoon, after I had cut it in pieces, and having my eyes on a book all the time. I sat at work till eight or nine at night and then walked about our little room and committed Hamlet to memory until compelled to go to bed from sheer exhaustion - for I was repeating something, audibly, as I sat at work,

> the greater part of the day - either declensions and conjugations, or rules of syntax, or propositions of Euclid, or the Paradise Lost or poetry of some modern or living author.'(19)

For four years Thomas Cooper pursued this intensive course of study, acquiring amongst other subjects, a knowledge of Latin, Greek, French, Italian and Hebrew.

It would be nice to round off this story by saying that Thomas Cooper eventually became Master of a Cambridge College or Lord Chancellor of England. Alas, such an ending was not to be! He did not even get to university. At the end of four years a complete physical and mental breakdown put an end alike to his studies and to his shoemaking.

The contribution of the universities to the adult education movement cannot be over-estimated. Emeritus Professor Ieuan Williams in his Inaugural Lecture in 1981 referred to the great figures of this College who from the 1920s made notable contributions to extra-mural work. So it was at Oxford, Cambridge and the civic universities in the 19th century. University men of the highest quality readily went to industrial towns in the north, and not only lectured but made friends with their audience.

Great names in the movement included Michael Sadler, Cosmo Gordon Lang (later Archbishop of Canterbury), Hilare Belloc, Sir Bernard Pares, at Liverpool, and Tout and Oliver Eton at Manchester. The greatest apparently were Hudson Shaw of Cambridge and R. G. Moulton of Oxford. Of the latter it has been said that 'he carried his audience to the heart of great literature, and made them eager to study it for themselves ... He spoke always without notes ... recognising that lecturing was his business in life, and he considered with care every detail of gesture and voice management. There was one small point in which his lectures had an almost solitary pre-eminence. They always ended exactly at the appointed moment. Audiences used to cheer as his last words were mingled with the striking of a neighbouring clock.'(20)

The effect of these great men on the populace can be imagined. The Sheffield and Rotherham Independent Newspaper in 1875 declared: 'The Cambridge lectures had produced a most marvellous effect upon the upper middle classes. The conversation now heard and the books now read are of a very superior kind.(21) Note the allusion to the upper middle-classes. Despite Stuart's efforts up and down the country the University Extension Movement was not notably successful in its early days in attracting a socially diverse audience and it was not until the emergence of the Workers' Education Association

in 1903 that more headway was made in that direction. Under the inspiration of Tawney and Albert Mansbridge, whose belief was that 'all men, however humble, should be made partakers of the "glory of education", an alliance of the universities, Trade Unions and the Co-operative Movement was brought into being with this end in view. The aspirations of the working man were well expressed by Joseph Evans, a Gloucestershire miner:

> 'What we want as working men,' he wrote, 'are teachers who will mount the glorious tower of truth, and soar above the smoke of contending parties, who will tell us the whole truth, and nothing but the truth. I think the university teacher is the best able to give us unprejudiced, unadulterated education.'(22)

It would perhaps be too much to claim that university academics have lived up to this standard and have offered nothing but unprejudiced, unadulterated education, nevertheless, they have contributed to a fine tradition throughout the century providing learning opportunities to a wide circle of people.

In looking at the 19th century it is forgivable if we allow ourselves a wry smile at the often naive level of their thinking. Yet the exercise is valuable in that it

reminds us that our present-day thinking may also be inadequate. How will history judge us? Can we claim that we have got our university system right today, or indeed at any time since 1914?

Over the last twenty years we have witnessed a remarkable expansion of the university population following the recommendations of the Robbins Committee on Higher Education in 1963. The Committee rejected manpower planning, that is, the national need for graduates, as the basis for determining the size of the higher education population. It chose to base it instead on the principle that 'all young persons qualified by ability and attainment to pursue a full-time course in higher education should have the opportunity to do so.'(23) It was the Committee's estimates of future qualified demand that led it to call for a great expansion of the higher education population.

Expansion came to a halt in the 1970s. It was followed by stagnation, which in turn gave way to contraction. The Robbins Principle, which had tacitly been abandoned in the early 1970s, finally gave way to the principle of "cash limits". Cash, rather than qualified demand, became the major determinant of the number of undergraduate places to be provided. Over the last few years there has been bloodletting and shrinkage followed

by transfusions of new blood; this process will continue as the universities contract and are restructured to give the new 1990s "slimmed down" university model.

The size, nature and composition of our universities will be a matter of debate for some time to come. The DES has predicted a fall of up to 19% in total higher education demand by the end of the 1990s because of demographic changes. These figures have been challenged by several bodies, notably the Royal Statistical Society, which predicts an increased demand arising not only from economic and technological changes but also as a result of female emancipation and a rising demand from adults. However, the Governments's Expenditure Plans (Cmnd 9143,11) make it clear that it will be the numbers of 18 year-olds which will determine the size of the university population.

What is evident is that with a contracting system the universities will not be tailored to meet customer demand and inevitably there will be many potential would-be students among the young, but especially among the not-so-young, who would benefit from a university education but who will fail to gain university places. Whether it will be their desire to pursue bread or to pursue knowledge for its own sake their freedom to do so will be diminished.

Let us consider the not-so-young first. Excluding the Open University, fewer than 10% of students accepted for places on first degree courses each year are over 21 years of age and fewer than 4% are over 25 years of age. This is in a society noted for high drop-out rates after the statutory school leaving age of 16 and in which under-achievement is all too common. The situation will not markedly change so long as we cling to the idea that a degree is still inseparable from a period of three or four years continuous study in residence. It is not only with regard to degrees that we need to be more flexible. 'Education', as Charles Carter, formerly Vice-Chancellor of Lancaster University, once pointed out, 'cannot be likened to an Act of Salvation which once experienced enables us to remain pure for life'. Yet, argues, Lord Ashby, we behave as if university education is just that, and assume that a three-year undergraduate course is sufficient to set a person up for life.

We live in an age when it is obligatory to pay lip-service to continuing education. The Robbins Committee on Higher Education, the Russell Committee on Adult Education, and the Finniston Committee on Engineers all emphasised the urgent need for continuing education. In 1980 the Committee of Vice-Chancellors and Principals in a submission to the House of Commons Select Committee

on Education, Science and the Arts pointed out that 'the funding of our universities makes inadequate provision for continuing education.'

Little has been done about it since. Here lies the crux of the problem. Everyone is in favour of continuing education but no one wants to pay for it.

Turning to another aspect of the university population. The Royal Statistical Society pointed to the rising aspirations of girls as a factor likely to lead to an increased demand for university places. The Robbins Committee had noted in 1963 that only 8% of the relevant female age group entered higher education whereas 22% of the males did so. Yet, just as many girls passed 'O' levels as did boys. Since Robbins, great changes have taken place: firstly, the demand for university places by girls has multiplied fourfold; secondly, during the 1970s the demand from girls to read medicine doubled, for law it trebled, and for business studies it quadrupled. Male students in universities, though, still outnumber female students by 3 to 2 on undergraduate courses and in the age range 21 to 25 they outnumber them by 4 to 1.

The Robbins Committee in emphasising equality of opportunity pointed to imbalances in the university student population relating to class background, sex and

age of students. These imbalances continue to exist, if to a lesser degree than in the days of Robbins. Nevertheless, there are critics who would accuse universities of bias in their selection procedures - of class bias, of bias against females and of bias against older students. Without wishing to exonerate universities completely it is only fair to point out that the selection profiles to a considerable degree mimic the 'expressed demand' profiles. There is though a world of difference between expressed demand and 'latent demand'. For an explanation of these apparent biases in university selection one needs to look outside universities at sociological factors, in particular at deep-seated attitudes in society.

The association betweeen university education and parental occupation is very marked, more marked in the case of girls than it is for boys. The university population is still preponderately drawn from the professional and managerial sectors of society, indeed, the participation of young working-class people in higher education has not increased proportionately since the 1930s. No one could pretend that an individual born to a large family in Liverpool 8 or Brixton has the same chance to have a university education as one of similar ability born to a professional family in Dorking.

The influence of parents, neighbourhoods and schools are all too evident. But there are obviously limits to the extent to which one can legislate and design society to overcome such factors.

Furthermore, there are psychological factors to consider. Some children from adverse backgrounds are motivated to succeed whereas others are not. Likewise, some children blessed with favourable backgrounds and all the advantages either fail to be switched on or take the wrong turnings. However perfect parents, schools and teachers may become, wrong decisions will continue to be made in early life and in any case one cannot legislate against illness or death of parents which sometimes jeopardise the careers of young people. Opportunities for learning in later life will always be essential.

It is all the more encouraging, therefore, to see that the UGC and the National Advisory Body in their advice to the Secretary of State for Education and Science have suggested a new radical principle to replace the Robbins Principle which placed all its emphasis on the young. The new principle is:

> "Courses of higher education should be available for all those who <u>are able to benefit from them</u> and <u>who wish to do so</u>."

To make this a reality, however, and to create the conditions for freedom that it implies will require changes, not only in universities but also fundamental changes in society.

There is overwhelming evidence that despite the existence of the Open University there are many other adults who would dearly love to have the opportunity to study in universities and who would clearly benefit from it. Some do not come forward because their earlier experiences have disposed them to believe that education is not for "them". Others are prevented from doing so because work or family commitments make it impossible for them to be available full-time for three years. The lack of financial support is frequently another drawback. The system of grants has always held pitfalls for adult students; in any case discretionary grants are rapidly vanishing from the scene as local authorities struggle to meet their expenditure targets. It is a case of '<u>whatever UGC proposes, government policy disposes</u>'.

The universities are still very much the preserve of the young - at least in Britain. Eighty-eight per cent of the university population is full-time, three out of four students being full-time first degree students who in the main are between 18 and 21 years of age. What of the young in universities? Each year the government spends some

£1,000 million on undergraduate and postgraduate education in universities, the greater part of it on undergraduate provision. Does it get what it wants from this expenditure? Ever since Robbins we have had a 'demand-led' system where the composition of the university population has been partly determined by the choices made by youngsters. What are those choices? What, for instance, are the top five subjects most in demand among youngsters?

The first five subjects are medicine, law, mathematics, English and modern languages. Mechanical engineering is 10th, civil engineering 15th, chemical engineering 27th, whilst production engineering and metallurgy are not in the first 30 places.

In 1983, only 44% of candidates were accepted - a lower proportion than in any year since the Robbins Report appeared; 88,000 candidates failed to gain a place. In some subjects there was spare capacity, whereas in others competition was very severe. Thus in medicine only 29% of applicants were accepted; likewise in law and accountancy the proportions accepted were low - 35% and 37% respectively. On the other hand, 77% of those applying for chemical engineering, 82% in the case of metallurgy and 94% in chemistry were accepted - figures which naturally reflect the shortage of applicants in those subjects.

There is also the matter of QUALITY of candidate involved. Where are our high fliers going? In 1980 the highest grades were required in veterinary science, a fact for which James Herriot has a great deal to answer for. Setting aside the criticisms of 'A' levels as predictors of achievement if we simply define 'high fliers' as those children doing very well at 'A' level, say a score of 13 or more i.e. a minimum of AAC or ABB in 3 subjects we find in 1980 that of those applying to read medicince 54% had such a score. Thirty-three percent of those applying for law had such figures, whilst in classical languages it was 33%, in English 26% and in history 22%. On the other side of the coin only 17% of those applying to read electrical engineering had similar scores, whilst the figure in civil engineering was 10%: in business studies it was 4%.

Over the period since Robbins the demand to read medicine has multiplied threefold whilst the demand for law has grown by a factor of four. Growing faster than any subject is accountancy, the demand for which has increased over the last decade by a factor of ten. Meanwhile physics and chemistry have languished and are no higher now than they were in 1963.

It is clear from these figures that the technologies are not doing very well. In such a culture as ours a

'demand-led' system will not, it seems, produce the technologists the country needs. It is reckoned that by 1986 we shall need 12,000 graduates in electrical engineering and computer sciences to meet the needs of the electronics industry; as things stand at present we shall have only 4,000 such graduates.

There is a mismatch between the objectives of the state on the one hand and the objectives of the young on the other. In opting for status and high remuneration in such areas as accountancy, law and medicine the young are pursuing their own individualistic BREAD, whereas the nation desperately needs technologists in order to pursue its NATIONAL BREAD.

A recent document 'Competence and Competition' produced by the Institute of Manpower Studies for the MSC and the National Economic Development Council emphasised that our competitiveness will be crucial to Britain's economic recovery and the growth of the economy in the years ahead. Its authors pointed out that our competitors the United States, Japan and Germany see a clear link between competitive success and investment in education and training, whereas Britain has consistently under-invested in human capital. As Britain slips further and further down the league table of performance it is

possible that our administration is haunted by the memory of our earlier 19th century failure and its concern with the need to be competitive has perhaps been influenced by that failure. It explains why universities may be urged, if not indeed forced, to shift as far and as fast as they can towards science, technological and vocational courses. This desire to improve our economy gains a ready sympathy; but whilst not taking issue with the end,one deplores the means adopted, for the shift within universities is being made against a background of ever-scarcer resources rather than through vastly increased resources. Such a shift can only be effected at the expense of other areas of university life and hence is potentially damaging to universities.

Throughout the evening I have been trying to emphasise that what universities do cannot be divorced from the cultural milieu that surrounds them at a particular time. In Russia, for instance, according to a past Minister of Higher Education, 'all work in the institutions of higher learning must be subordinated to one task - education in the spirit of communist morality'(24) and in China 'higher education must serve proletarian politics.'(25) Cultural and other influences are rather more subtle in this country but they nevertheless exert a powerful effect. At present it is our economic situation which is again the determining

factor in shaping the universities. The position we are in can be summarised in the following words:

> 'We have entered upon the most serious struggle for existence to which the country was ever committed. The latter years of the century promise to see us in an industrial and commercial war of far more serious import than the military wars of its opening years ... We must be careful to organise for victory ... Our sole chance of succeeding in a competition which can constantly become more and more severe, is that our people shall not only have the knowledge and the skill that are required, but that they shall have the will and the energy and the honesty, without which neither honesty nor skill can be of any permanent avail.'(26)

These words may have a familiar ring to you and you might assume they were spoken by some present-day industrialist or politician. In reality they were spoken by Thomas Huxley in an address at Manchester in 1887. In looking at our present economic ills one has a distinct feeling of Déjà Vu. Our industrial malaise, or what has become known as the British Disease is not a novelty of the past ten or twenty years, but a phenomenon dating back more than a century.

I began with the Great Exhibition of 1851. In ending let me return to it. This was the visible manifestation of the Industrial Revolution which gave birth to the idea of Progress through Industry summed up in the words of a French philosopher Marc Seguin:

> 'To increase the well-being and enjoyment of material life', he wrote in 1839, 'is today the dominant idea of civilized nations. All their efforts are turned to industry because it is from that alone that one can expect progress. It is industry that gives birth to and develops in mankind new needs and gives them the means to satisfy them.' (27)

Ten years earlier in 1829, John Stuart Mill had already complained of the English worship of the idol 'production'. He conceded that the emphasis on economic growth was a necessary stage out of mass poverty and barbarism, necessary, but preliminary only, to the new age of gold when minds ceased to be engrossed by the "art of getting on".

There are many who claim that the British industrialist in the late nineteenth century did cease to be engrossed by the art of getting on in a purely

industrial sense. One such advocate is Professor Martin Wiener of Rice University who puts this claim in a provocatively and brilliantly written work 'English Culture and the Decline of the Industrial Spirit'. Wiener's thesis is that English society was essentially anti-industry, that making money was rather sordid. The industrialist, he claimed, was seduced by aristocratic and gentrified values belonging to a pre-industrial society: thus the acquistion of social status through purchase of land and fine country houses and through marrying into good families became more important than the pursuit of capital or industrial achievement - a process which he describes as 'the gentrification of the industrialist".

There were some industrialists of whom this may have been true but there was a more fundamental objection to industry - one which relates to its impact on human values. It soon became apparent that there was a human price to pay for industrial success. Mill, Ruskin, Dickens and Arnold all recoiled with varying degrees of intensity from the commerial and industrial society that had arisen in their generation. They were in the vanguard of what Wiener describes as a "counter-revolution of values".

To Dickens, the creation of wealth and economic growth as social goals increasingly appeared to be a moral

cancer, claiming - and promising - ever more of life, poisoning natural and essential human values.

Ruskin denounced the desire for wealth, mobility and advancement. He decried the 'gospel of whatever we've got, to get more' and 'wherever we are to go somewhere else.' He saw modern life as a 'struggle between man and machine' which was 'a grave danger to civilization' for 'it produces an unthinking exultation in mechanical achievement. Man's glory is not in his "going" but in his "being".'

Arnold turned his steely gaze on the philistine middle classes. 'Your middle class man', he wrote, 'thinks it is the highest pitch of development and civilization when his letters are carried twelve times a day from Islington to Camberwell and from Camberwell to Islington, and if railway trains run to and fro between them every quarter of an hour. He thinks it is nothing that the trains only carry him from an illiberal, dismal life at Islington to an illiberal, dismal life at Camberwell, and the letters only tell him such is the life there.'(28)

Such sentiments, as those of Dickens and Ruskin of course, are not unfamiliar today. one does not have to be a follower of Ivan Illich to heed his words in his book

The Convivial Society where he argues that we impose inhumanities on ourselves in the name of growth, efficiency and progress. He writes of addiction to growth, withdrawal from which will be painful. Human relationships are being eroded, he claims, and we must seek to create an alternative society, in which human relationships will be strengthened and enhanced.

Professor John MacMurray in his book Religion, Art and Science wrote that

> 'To exploit power is to do something because it is possible, not because one has a good reason for doing it. The systematic exploitation of a continuously expanding technological capacity means that as new possibilities of action arise, we use them because we now have them and not for any good to be attained by their use. The use of the new power has become a new value in itself. Means has become end.'(29)

In its recent report 'A Strategy for Higher Education into the 1990s' the UGC in arguing the case for continuing education stated that 'there is a need for continuing education in order to facilitate adjustment to social, economic and technological change.'(30)

On first reading, this statement appears as an eminently sensible and worthy one but it does contain within it a seed of doubt for its emphasis is on facilitating adjustment to technological change. It highlights the fact that we tend now to no longer question technology which is almost tantamount to heresy. Is it now a case of merely helping people to adjust to changing technologies rather than harnessing technology to human ends?

A century ago men put their faith in industry. Where now are the iron and copper industries of South Wales? Today we put our faith in HIGH TECHNOLOGY. It is a dangerous delusion to believe that the salvation of society lies SIMPLY in more and better technology. Certainly, better technology for us can put Japanese car workers out of work and ensure employment for ours but is that the answer for societies on a global scale?

Science and technology have brought us to the point at which mankind can annhilate itself several times over and achieve wonders in outer space which would have been beyond belief only thirty years ago. Yet on the other side of the coin we have our Ethiopias. I believe it was Toynbee who argued that Man had evolved to such an extent that he had become an intellectual GIANT, but that he remained morally a DWARF.

David Holbrook, an English don at Cambridge writing in the journal New Society in 1966 argued that

> 'The future of society depends upon something deeper and more crucial than scientific and technological development ... It depends (rather) on the quality of imagination ... on a psyche which is capable of asking WHAT FOR?'

Imagination was an aspect touched on too by Professor Herbert Butterfield when he wrote 'one of the defects of educational policy in a technological age is the failure to do justice to the imagination'.(31)

We need high technology but equally we have to get our philosophy right. Universities must cater for both bread and knowledge for without either there can be no freedom; but the balance must be right.

Ultimately, universities are bound up with a system of values. They are now caught up in the dilemma facing societies - a dilemma which was triggered off by the first Industrial Revolution - is it, as Ruskin warned, to be Man or the Machine which determines the future of society?

But to whom do the universities belong? Are they to be the mere servants or also the critics of society? Are they to be mirrors reflecting ever-changing technologies and society's immediate needs or beacons pointing a better way? What is at stake, the freedom of the universities or the freedom of societies?

In his maiden speech to the House of Lords at the age of 90 The Earl of Stockton (formerly the Rt. Hon. Harold Macmillan) observed that whilst we were witnessing a new industrial revolution based on the computer and the microchip what was urgently needed was a moral and spiritual revolution. What should the role of the universities be in that revolution? At the very least they can make a contribution by continuing to be involved in the movement for the education of adults. In justifying that claim I can do no better than quote from the report of the Committee under Sir Lionel Russell which, in 1973, produced the definitive statement on adult education for the late twentieth century.

> 'The value of adult education', the Committee said 'is not solely to be measured by direct increases in earning power or productive

> capacity or by any other materialistic yardstick, but by the quality of life it inspires in the individual and generates in the community at large. It is an agent changing and improving our society.'(32)

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