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Ivory Trade

Steven Shapin

- *MIT and the Rise of Entrepreneurial Science* by Henry Etzkowitz
- *Universities in the Marketplace: The Commercialisation of Higher Education* by Derek Bok

Here is the sort of thing that appals critics of the modern American entrepreneurial university. Members of the physics department invent an electronic gadget that looks like it might be useful in aviation guidance systems. Hearing about the technology, the university's administration, including a trustee who had been a right-wing Republican President of the United States, takes control of the intellectual property and proceeds to patent it, hoping to generate licensing income for the university, and to cut in one of the inventors for a small slice of the pie. They succeed in interesting a large engineering firm in the technology; an exclusive licence is arranged, and funds begin to flow to the university, including significant sums conditional on the physics department undertaking further work in this area. The administration is delighted with the arrangement, and offers the company privileged access to the department's personnel and resources. The administration agrees to seek the company's approval before allowing any of the university's scientists to publish findings related to the technology. Among the scientists there is a certain amount of grousing about the propriety of this arrangement and its possible effect on their careers: they need to publish to secure their academic reputations. On the other hand, the deal promises a serious expansion of research resources, and, at the beginning of the relationship, there is little angst about such things as 'academic values' or a 'conflict of interests'.

Once the company gets its foot in the door, however, it begins to assert its rights more aggressively. Corporate scientists are sent from

headquarters to work in the university physics department, and the company demands that they be given adequate assistance, thus skewing the departmental research agenda. The academic scientists want to develop their work in one direction, but the company insists that it go along avenues that promise the most rapid commercialisation and the most effective protection of their patent position. The chair of the department begins to feel queasy about this but prudently reminds himself that he who pays the piper calls the tune. He considers complaining to the university's president, but thinks better of it: 'My guess is that the president would find a way of doing most anything that would bring in money.'

The technology in this story is a microwave tube called the klystron; the university is Stanford; the former President trustee is Herbert Hoover, whose eponymous Institute on the campus was to become one of the major free-enterprise-boosting think tanks; the commercial concern is the Sperry Gyroscope Company; and two of the academic scientists involved are the Varian brothers, who went on to found a high-tech company near the university in which a number of Stanford professors held equity. By the sound of it, a typical story of the thrusting entrepreneurial 1980s or 1990s, with their radically new blurrings of the boundaries between academia and industry. But in fact the time is 1939, long before the Silicon Valley Gold Rush, and even before the postwar institutionalisation of the contract-grant system that bound the American research university so tightly to what President Eisenhower came to call 'the military-industrial complex', later appropriately expanded to the 'military-industrial-academic complex'. (The story is well told in Rebecca Lowen's *Creating the Cold War University: The Transformation of Stanford*).

The golden age of ivory towers tends always to lie in an indefinitely receding past, when universities were wholly dedicated to purity, free inquiry, open publication and intellectual autonomy. (It should be said that autonomy and openness were hardly evident in medieval universities committed to the defence of Catholic orthodoxy, or when Oxford and Cambridge were purged by Oliver Cromwell, or again in the general exclusion of Dissenters, Jews and women throughout

much of the 19th century.) Current American legend traces the loss of innocence, or the birth of relevance, to Public Law 96-517, the Patent and Trademark Law Amendments Act of 1980, more commonly known as the Bayh-Dole Act after its bipartisan Senate sponsors, which passed into law almost without dissent and with remarkably little public discussion. The compelling issue then was national commercial competitiveness, especially with Japan and the emerging Tiger economies of East Asia, and frustration that so little government-sponsored academic research had yet found its way into the marketplace, there to generate jobs (appealing to the Democrats) and corporate profits (for the Republicans). The Bayh-Dole Act allowed or mandated (depending on whose interpretation you credit) universities to patent and seek to commercialise any fruits of government-funded research that seemed to have market potential. In principle – and this contributed to its appearance as a mandate – the Federal government reserved to itself the right to 'march in' and perform these functions if a university failed to take such commercialising steps, but 'march-in' rights have rarely if ever been enforced, and American research universities enthusiastically took Bayh-Dole as an occasion to proliferate 'technology transfer' offices and to make commercialisation into a key aspect of their social and political identity. Last year, an overexcited piece in the *Economist* pronounced Bayh-Dole 'possibly the most inspired piece of legislation to be enacted in America over the past half-century' (the 1964 Civil Rights Act not, apparently, bearing comparison). 'More than anything, this single policy measure helped to reverse America's precipitous slide into industrial irrelevance,' the article said, improbably identifying Bayh-Dole as the major catalyst in the high-tech innovation explosion of the 1980s and 1990s.

Yet, as the klystron story indicates, Bayh-Dole represented not the origin but only the standardisation, systematisation and political legitimisation of academic concern with commercial intellectual property and technology transfer. American universities had been at this game for many years. In 1918 – the year after Max Weber's lecture 'Science as a Vocation' warned against the Americanisation of German universities – Thorstein Veblen's *The Higher Learning in America* sounded an alarm about the 'conduct of universities by

businessmen': 'The graver issues of academic policy which now tax the discretion of the directive powers reduce themselves in the main to a question between the claims of science and scholarship on the one hand and those of business principles and pecuniary gain on the other.' And, while some shared Veblen's nervousness about university faculty doing 'applied research' at all, much of his criticism was directed towards the routine teaching functions which made such demands on academics' time that research of any kind was impracticable. The proper business of universities wasn't imparting technical information, the formation of character, football or turning knowledge to practical benefit: 'Within the university precincts,' Veblen wrote, 'any aim or interest other than those of irresponsible science and scholarship . . . are to be rated as interlopers.' True, Veblen didn't like the influence of businessmen on university affairs, but neither technology transfer nor the distortion of research agendas by the intrusion of industry's concerns was then on his mind. In the early 20th century, while some academic scientists might aim to do applied research, what went on in university laboratories was, in general, of little interest to American industry.

This situation gradually changed and, with it, American academia's relations with the world of commerce. In the first decades of the 20th century, those rare university scientists who secured patents on the results of their research often found academic administrations to be wary of getting involved in the ownership or management of intellectual property. That reluctance, however, stemmed not so much from an ingrained sense of incompatible 'values' as from a lack of familiarity with the complicated process of securing, managing and protecting intellectual property; from fear that universities would endanger their major bases of political and economic support if they were seen to be engaged in monopolistic commercial practices; and, to an extent, from the encouragement industry itself gave to universities to stick to what they did best – fundamental inquiry and the training of flexibly skilled people for the labour force. For a series of practical reasons, it was thought better, on the whole, to keep commercial things at arm's length if you could. So, academically generated patent rights were either assigned to those few individual inventors to do with what they liked, or to various semi-independent

patent-holding bodies set up visibly to disengage the university from trade. Such university involvement as there was tended to be justified by public-service concerns: ensuring that exclusively licensed products were manufactured to proper standards, while generating income to support further fundamental academic research in an era when both government and corporate funds for these purposes were scarce.

Here, as in many things, MIT most clearly envisaged a future in which academia and industry marched in lock-step. Founded in 1862 as one of the Federal 'land-grant' institutions, it was designed to train industrial leaders – as Henry Etzkowitz puts it, men 'who would become top executives rather than end up working for Harvard graduates' – and produce the sort of large-scale innovations that would spawn entirely new technology-based industries for the Boston region. A self-consciously hybrid creation, combining elements of research university, polytechnic and (last and least) liberal arts teaching college, MIT was not unique among 19th-century American institutions of higher education in combining such forms and purposes. In what is still the most acute, prescient and eloquent book about the nature of the modern American research university, *The Uses of the University* (1964), Clark Kerr traced the hybridity of the mid-20th-century institution to three conflicting genealogies: the Platonic academy devoted to knowledge for its own sake and inspiring students to a life of inquiry; the Sophists (so despised by Plato) who aimed to impart skills useful for worldly public action; and the Baconian vision of a state-sponsored research institute devoted to producing the sort of knowledge that would extend man's dominion over nature and augment the power of the state. MIT just tipped the balance further to the last of these than any other institution. It saw High Modernity coming; it embraced it; and it did more than any other American educational institution to hurry it into being. In the process, it became the first entrepreneurial university and a model for others, notably Stanford, to follow.

From early in the 20th century, MIT's faculty functioned as industrial consultants – the present one-consulting-day-a-week convention to forestall potential 'conflicts of commitment' was devised in the early

1930s – and, when fed up with the heavy demands of teaching and meagre research resources, they sometimes left MIT for careers in the new industrial laboratories founded by technologically innovative companies such as General Electric. For the right price, MIT offered companies privileged access to its faculty's research, whether or not they were acting as consultants. If industry wanted custom research done at MIT, that, too, could be arranged 'for a fee mutually agreed on by both parties'. In the 1930s, MIT's industry-university links became substantial enough for it to establish a Division of Industrial Co-operation to negotiate contract research; it was the first US university to institutionalise this kind of activity. The administrators had few worries about conflicts of interest since MIT saw itself as dedicated to public service, and the best way to serve the public was to get the knowledge into the factory and then onto the market. And if it were objected that universities ought not to get into the business of patenting intellectual property and granting exclusive licences to that property, then it could be pointed out that public benefit would otherwise be unlikely, since, as the capitalist economist's proverb has it: 'Everybody's business is nobody's business.' Capitalism was the only game in town.

Die Gedanken sind frei, but if you wanted saleable technology to flow from academic thoughts, then you had to price them and control rights to them. After all, between academic 'purity' and more effective anti-cancer drugs, what was the clear moral choice? Besides, the obvious alternative to patenting was secrecy, and no academic could offer a principled defence of intellectual secrecy. A few MIT professors still objected, however. An engineering professor quoted one annoyed industrialist in 1931 as saying: 'If Tech is going into competition with Industry, perhaps Industry will not be interested to continue its financial support.' That was a significant threat, since industry's subventions of MIT were then informed not so much by expectations of the material benefits pure research would yield, as by privileged access to the services of MIT's faculty and to the recruitment of its graduate students. But the following year, MIT's administration accepted the propriety of institutionally patenting and licensing its own intellectual property. Indeed, MIT soon recognised that it had other concerns with industry besides securing the

licensing deal that yielded the highest returns to the university. When, in 1946, the independent patent-managing agency with which MIT had contracted was trying to cut an aggressive deal with IBM over licensing fees for a magnetic core memory patent, it was called off by the university's administration. IBM had over the years supported MIT's research on a huge scale, and must not be offended by being squeezed over licensing revenues. Better to settle for a low fee and keep IBM sweet.

The idea of public service ('helping the economy', as Etzkowitz blandly puts it) and academic contributions to IBM's corporate bottom line here, as elsewhere, seemed remarkably coincident. Just a few years ago, a visiting group of vice-chancellors of British universities were struck by the persistence and prevalence of this attitude in American research universities. As the vice-chancellors' report put it: 'They were adamant that they engaged in technology transfer primarily in order to meet their public service mission. This was illustrated by enthusiasm to get research products to market quickly . . . Income was welcome and desirable, but it was not seen as the sole or a sufficient measure of effective technology transfer.' At the University of California, San Diego – where I teach, and whose entrepreneurial practices left the vice-chancellors smitten with admiration – the then dean of the Engineering School (he has since left to become a venture capitalist) gave a smooth presentation identifying the university's traditional 'key missions' as education and research, but then asserted a new 'key mission': 'to ensure the effective transfer of research results and discoveries to the sectors of our society, usually the private sector, that can translate such discoveries into products and services for the benefit of society as a whole'. In plain language, the transfer of technology to profit-seeking companies was said to have exactly the same status among academic goals as teaching and the 'search for truth'.

There are three standard criteria for promotion in American research universities: teaching, research and 'service'. In departments such as sociology and history, 'service' is identified with either committee membership or good works in the wider community (educational 'outreach', encouraging 'diversity'), while in engineering schools

there is agitation for 'service' to include generating commercialisable intellectual property and founding companies, and for patents to count as publications satisfying the 'research' criterion. This July's *Lambert Review of Business-University Collaboration*, which slapped Cambridge's wrist for being 'slow off the mark' in technology transfer, reported British business concern that the Research Assessment Exercise – put in place as a display of management rationality disciplining feckless university culture – was now acting as an obstacle to academic collaborations with industry: faculty, the business respondents complained, 'had much greater incentives to publish academic research that could be submitted to research assessment exercise panels than to undertake joint research with industry'. Here, again, recent developments in much admired US entrepreneurial universities offer a model.

Several years ago, the chancellor of UCSD, a physicist who had come to academia only a few years before from a career in industrial research, delivered a 'state of the campus' address in which he announced that 'as scholars, we should not seek knowledge for its own sake.' Since this comes as close as can be imagined to what you might think is impermissible academic 'hate speech', it was noteworthy that it passed practically without comment. In the UK, the Education Secretary, already on record as saying that he regards the idea of education for its own sake as 'a bit dodgy', recently expressed the view that there is no reason for the state to pay for the support of 'medieval seekers after truth'. The US still sets the pace in these things.

MIT's sense of technology-transfer as public service extended to its role in founding the first venture capital firm in 1946. The university's president, the physicist Karl Compton, had decided that the institution's role in encouraging New England's science-based industrial renaissance was being constrained by a lack of investment capital. Drawing on his contacts among Boston's banking Brahmins, with whom he was on clubby terms, Compton cobbled together a coalition with the Harvard Business School to establish American Research and Development (ARD), designed to fill the gap between MIT's academic research and new-firm formation. ARD was founded

almost solely as an 'administrative initiative', and not a lot of MIT faculty or graduate students knew that it even existed or, if they did, of MIT's role in it. Compton had made an executive decision to capitalise ARD with MIT funds and, through a network of friends, he persuaded other university presidents to pitch in. ARD 'very aggressively worked MIT', an original officer later commented: an ARD member would cruise the corridors of MIT, popping into the offices of professors who were ARD advisers: 'These gentlemen would alert us, tip us off, help us. "There is a young graduate student down the hall working on something. We think it is interesting; you have to decide if it has commercial possibilities."' The scheme worked: among early ARD-funded spin-offs from MIT was the Digital Equipment Corporation. ARD committed $300,000 to DEC, with MIT taking an equity position, and, within a few years, its investment was worth $400 million, though MIT was not in this instance clever enough to hold onto its stock long enough to realise any profits.

Periodically, from 1870 to 1920, Harvard offered to subsume MIT as its own engineering school, but MIT resisted being swallowed up, afraid that its entrepreneurial culture might be diluted. Derek Bok was president of Harvard from 1971 to 1991 and, while the two institutions continue to do much business with each other, *Universities and the Marketplace* is an indication why MIT might have been right to refuse Harvard's embrace. MIT started as an educational handmaid to industry: Harvard in 1636 as a theological seminary. The passage of time has not entirely erased those differences.

Etzkowitz's slim but unnecessarily repetitive book mixes historical accounting with frank celebration of entrepreneurialism at MIT, and at American research universities generally: 'Charges of conflict of obligation,' Etzkowitz assures us, 'have abated'; the creation of companies by academics 'has now come to be positively defined as a new badge of scientific achievement'; and 'what was once seen as a conflict should come to be regarded as a new confluence of interest.' It's all good. Etzkowitz isn't exactly an apologist for the entrepreneurial university, since he doesn't feel that any apologies are called for, but two stops down the Red Line in Cambridge, Bok is

sensibly, judiciously and presidentially concerned. He puts the commercialisation of the university into the same frame as big-time intercollegiate sport: both are unambiguous distractions from what universities are properly supposed to be about. It's too late, Bok concedes, to do much about the weird and pathological importance of sport in American universities of all types and sizes: admissions skewed to accepting under-qualified, even laughably unqualified, football, basketball and baseball players (the practice even extends to such 'minor' sports as water polo, lacrosse, volleyball and soccer); university presidents devoting major portions of their time to hiring and firing basketball coaches who make more money than they do, and adjudicating the political correctness of the football mascot; alumni enraged, and threatening to withhold donations, if it is suggested that any sport be scaled down or eliminated; the pervasive, but unjustified, belief that big-time sport is a money-spinner that supports library acquisitions and medievalists when in all but a few cases it is demonstrably a financial drain. It's impossible to explain this to a Brit who hasn't been to a Michigan-Ohio State football weekend, and once that scene has been witnessed, it's just as hard to explain that they're both pretty good universities that employ their share of medievalists.

But it's not too late, Bok thinks, to stem the tide of commercialism. The 'public service' argument doesn't impress him very much, for the risks are not worth the promised benefits. 'In their pursuit of moneymaking ventures, universities risk compromising their essential academic values': commitment to intellectual openness undermined by the provisions of industrial sponsorship; academic scientists performing experiments on human subjects involving drugs in whose success they have a financial interest; appointments denied to or withdrawn from scientists critical of the products of a pharmaceutical company on whose money the university has come to rely; academic biomedical researchers accepting and publishing under their own names papers ghost-written for them by such companies; faculty diverted from their role as educators by the lure of lucre; graduate students set to work on topics of more commercial than scientific interest; an overall drift away from fundamental research towards whatever promises commercial potential in the

foreseeable future. If universities take many further steps along this road, Bok cautions, they will wind up forfeiting the respect of students and eroding public trust. They have been warned, and, despite Etzkowitz's boosterism, not for the only time in recent years.

Whether any of this matters, and matters enough to be undone, is not so simple a question as it might seem to some of the more naive critics of the entrepreneurial university. Compromising academic science's reputation for disinterestedness clearly matters a lot, and the editors of medical journals are seriously exercised about the problem, many of them requiring contributors to append a declaration of financial interest to reports of scientific findings – the dismaying implication being that the assessment of published findings must now take into account available information about scientists' commercial self-interest. If that is indeed the way scientists live now, it cannot be a source of much satisfaction to them or to the laity who are asked to trust their deliverances. It is now widely claimed that the biasing effects of commercial involvement in academic biomedical research findings are real and substantial, and Bok must be right to worry about an ultimate loss of public confidence. In the UK a few months ago, the Royal Society expressed alarm about a 'most unhealthy "gold rush" mentality in biology', soon perhaps to be extended to nanotechnology or device physics, and warned that the 'perceived pressure' on university administrations to patent scientific findings could inhibit the free exchange of scientific ideas, skew research away from pure science and restrict the future use of ideas. On the other hand, it is increasingly difficult to imagine what the modern academic scientific enterprise would look like stripped of its commercial sponsorship: if you can't get the resources to do the research, then worries about bias are beside the point. And, if you expect academic science to contribute to the development of new drugs to fight cancer, Aids or heart disease, that process is going to be seriously undermined without subvention from big pharmaceutical companies. Moreover, some widely expressed worries about the ill-treatment of graduate students by commercially involved faculty have to be balanced against the increasing desire of many students to be prepared for industrial careers, and their sense, in many scientific and engineering disciplines, that industry is where

the action is.

Further complicating any facile condemnation of commercialism are the revenues that come from the overheads paid on industrially-sponsored academic research (in many cases 60 per cent or more of the total grant), the equity stakes and the supposed licensing income held by universities through technology transfer, a significant portion of which typically goes to general university funds. As one of my local technology transfer officers was recently heard resentfully to remark: 'That's what pays for the fax machines in the damn sociology department.' Again, if you want to unwind these 'corrupting' ties linking academia to industry, you will have to accept that many areas of university life, and not just those that have commercial consequences, will shrink, too. If Big Science becomes Little, medieval history, and academic practices that share its non-commercial character, will probably become even smaller. Moreover, sensitivity to the problems of 'conflict of interest' and academic freedom surrounding academic commercialism has become more acute as the phenomenon itself has burgeoned. You can't say that some of the things that happened at Stanford in the 1930s could not, or do not, happen now, but you can say that in every American university I am aware of there are now rules that such behaviour would violate. That is one reason both Etzkowitz and, to a lesser extent, Bok are so confident that judicious regulation will allow research universities to combine the best features of entrepreneurialism with traditional academic autonomy.

Yet, despite the breast-beating rhetoric of the commercialisers, it is well to think about a few simple facts concerning some of these revenues. On the surface, the figures are deeply impressive, arguing the centrality of commercialised academic science to the nation's prosperity and to universities' coffers. In 2000 alone, US university scientists and engineers disclosed more than 13,000 inventions, on which technology transfer offices filed over 6300 patent applications, resulting in 4362 new licences and options, and giving rise to 347 new commercial products and 454 new companies. In the same year, there were more than nine thousand income-producing licences and options generating $1.26 billion for university funds. But the figures

are not quite what they seem.

First, most universities do not generate net income from their technology transfer activities, as distinguished from industrial research sponsorship, and even the glowing UK vice-chancellors' report had to concede that 80 to 90 per cent of the US offices do no better than to cover their costs, and that most actually lose money, reducing resources for the sociologists' fax machines. Even the best technology transfer offices produce revenues of only about 1 to 3 per cent of the university's overall research expenditures. Second, the whole business has many of the characteristics of a lottery. Less than 1 per cent of licensed technologies yield more than $1 million in royalties, and most universities that have done really well in generating such income have depended overwhelmingly on one, or just a few, very lucky strikes, which they are unlikely to reproduce. Columbia hit the jackpot with patents on a genetic engineering technique known as co-transformation, earning it more than $200 million over the past ten years, and putting it top of the US league table for licensing income. The relatively undistinguished Florida State University brought in $67.5 million in licensing revenues in 2000, putting it in fourth place among all US universities, yet all but $1 million of this came from patents on the anti-cancer drug Taxol. (By contrast, total licensing revenues at Cambridge exceeded £1 million for the first time in 2001.) You can be, as they say, highly 'proactive' in this area, and you can identify commercialisation as a 'key mission' for the university, but it doesn't seem that you can guarantee any significant degree of success. Third, sceptical Federal Reserve economists have recently argued that the commercially-orientated research done by universities, and encouraged by government, may not after all produce any net benefit to the economy: it just drives out research that would have been conducted anyway, and perhaps more efficiently, by the private sector. The more unambiguous benefit of identifying the public research university with its commercialising missions resides in its political symbolism. In American society, and increasingly elsewhere, higher education is valued for its economic utility, and there are real political and financial costs to be paid by any public university that visibly scorns such missions.

What about the costs of entrepreneurial conceptions of the university? Some of these are more diffuse and more difficult to quantify. It's not so good for morale when your university's top administrators let it be known that they view you as a parasite if you don't bring in the cash or produce results that generate jobs and profits for the local economy, and there's little doubt that morale among American scientific entrepreneurs is a lot better these days than it is among 'ornamental' medievalists. And, despite some appearances, this cleavage within the university is not between C.P. Snow's two cultures: a zoologist studying the reproductive behaviour of marine worms may feel pressures towards commercialisation more acutely than a Jane Austen scholar just because entrepreneurial activities are live options in the biology department while they are never thought of in the literature department. The relevant distinction is between those academic practices that have goods to sell, and commercial options, outside the academy, and those that do not.

And that distinction *is* partly amenable to quantification. Consider the salary structure of the contemporary American university. Average faculty salaries at four-year US public institutions of higher education are $53,000 for English literature scholars; slightly less than $60,000 for historians, philosophers and sociologists; $72,000 for computer and information scientists; $74,000 for economists; and $87,000 for chemical engineers. The medical, law and business schools are, of course, *hors catégorie*, and the incomes of many scientists and engineers are further supplemented by 'summer salaries' paid by their funding agencies and, occasionally, by consulting fees and their share of the royalties from whatever intellectual property they have created. But it is telling in this connection that those types of scientist whose researches are least likely to yield commercial outcomes get paid little more than their useless colleagues in the humanities, and less than the norm for economists and political scientists: mathematicians get $60,000 and chemists (as opposed to chemical engineers) $64,000. In the vocabulary that university administrators find easiest to understand, these are clear indications that American academics work in what Clark Kerr forty years ago called a 'multiversity'.

The term picked out the lack of any single and coherent set of purposes, sensibilities or, as Americans like to say, 'values' that are shared by all of the modern university's inhabitants. It is not, Kerr said, a community with common interests, but rather conflicting ones, not an organism but an accidental historical assemblage, and that is the connection in which Kerr famously adapted the saying of Chicago's Robert Hutchins that his university was a collection of separate schools and departments held together only by a central heating system. In the case of the vast California system over which he presided, Kerr wrote that it was perhaps more appropriate to think of it 'as a series of individual faculty entrepreneurs held together by a common grievance over parking'. If there ever was an 'intellectual commons' in the university, its existence is no longer apparent. Etzkowitz and other sociologists now like to refer to the 're-norming' of the American research university: the alleged historical shift in the course of the 20th century from the embrace of traditional ideals of academic purity, disengagement and glorious inconsequence to the more or less enthusiastic acceptance of the 'key mission' to commercialise and thus 'benefit society'. But there is a more economical explanation of whatever changes have genuinely to be accounted for. Academic scientists merely adapted to changing sensibilities in American society towards the goods that science could produce; to the consequent changes in the scale and origin of resources available to do science; and to the changing character and financial requirements of science itself. And academic administrators similarly adapted to changing economic opportunities and political conditions. Talk of 'values' has tended to follow changing historical circumstances.

Kerr was not, in the main, trying to celebrate or to justify the modern research university; he was attempting that rare and difficult exercise of describing the way Homo academicus lives now, and he did it brilliantly. That is one reason it is so jarring to find in Bok's book no fewer than 51 invocations of 'academic values' ('essential', 'basic' and 'fundamental') which have to be 'upheld', 'protected' and 'defended' from the commercialisers, but which he never feels it necessary clearly to describe. That's probably because there are no such shared 'values', while Harvard is one of the few American universities whose

enormous resources allow it to do its share of entrepreneurialism while feeling free to cock a snook at many of the accommodations to commercialism that public universities find it necessary to make. It's not easy to imagine a Harvard president announcing that its faculty should not pursue 'knowledge for its own sake', and it's really wonderful what a huge endowment can do for a quite genuine sense of integrity and the purity of intellectual 'values'.

And yet there is, for all that, something basically right about Bok's view of academic commercialism, and something deeply disturbing about Etzkowitz's. Suppose it is simply conceded – alien as it may be to the sensibilities of many campus humanists to do so – that commercialisation is politically expedient, that there's nothing essentially wrong with it, and that many aspects of it deliver material goods that are widely valued, not least by humanist academics themselves when they get sick or want to communicate their critical thoughts about the entrepreneurial university to their editors thousands of miles away. Throughout history, all sorts of universities have 'served society' in all sorts of ways, and, while market opportunities are relatively novel, they do not compromise academic freedom in a way that is qualitatively distinct from the religious and political obligations that the ivory tower universities of the past owed to the powers in their societies. The point remains, however, that to establish commercialisation as a 'key mission' of the university, on an exact par with its commitment to teaching and open inquiry, is crucially to confuse centre with periphery and to misunderstand what it is that universities can do which no other institutions in our society are able to do, or to do nearly so well. Basic research and well-educated (not just well-trained) students are public goods: goods which, unlike a seat at an Arsenal home game and like the beam from a lighthouse, are not made scarce to me because you have access to them, and out of which it is, therefore, difficult to make a profit. And, as the Federal Reserve economists pointed out: 'Because these products are types of public goods, unfettered markets will fail to produce enough of them. Public universities are designed to correct this market failure by providing more education and basic research than the market would yield on its own; these are the fundamental roles of a university and the argument for government

support.' Allowing for the historical solecism of what universities 'are designed' to do, it is nevertheless a powerful argument: an expression of the kind of hard-headed but open-minded sensibility towards universities and their sustaining society that is desperately needed if academics wish their institutions' central commitment to responsible teaching and free inquiry to survive the 21st century.

From the *LRB* letters page: [23 October 2003] John Scott.

Steven Shapin teaches at Harvard and has written several books on the history of early modern science. His next will be *The Life of Science: A Moral History of a Late Modern Vocation*.

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