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Teaching and technology transfer as alternative revenue streams: A primer on the potential legal implications for UK universities

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Abstract:

Purpose: The purpose of this paper is to assess the financial and intellectual issues facing the university sector as many institutions in the United Kingdom (UK) pursue alternative revenue streams. As a consequence to the increasing financial pressures, university departments are increasingly exposed to new forms of potential litigation and also face the risk to the prestige of their university and departmental brand.

Design: A theoretical and analytical approach is adopted whereby an introduction to the topic of revenue streams is presented before a review is conducted of the two most prominent and important streams available to the higher education sector - Teaching and Technology Transfer. The paper furthers this analysis through a discussion of the accompanying legal consequences to UK universities and offers strategies to be adopted by such institutions to avoid these pitfalls.

Findings: The investigation has identified that the pursuit of additional sources of money from teaching and technology transfer pose significant risks and should only be considered after a rigorous analysis of the associated cost by institutional and departmental management structures.

Value: The paper offers an insight into the experience of litigation and the intellectual problems encountered by university departments in the United States. This evidence is utilised to consider how it may provide UK-based counterparts with a guide to avoid similar problems. It will be of relevance to practitioners, managers and strategic planners in the university sector.

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Introduction

Change within the university is a constant within the university sector, in the late 1950's and early 1960's leading American academics correctly identified some of the challenges being faced by the UK university sector today. Bereday and Lauwerys in 1959 proposed that the old definition of a university as *"a community of scholars who must guard, examine, and perpetuate knowledge."* was *"wear[ing] thin even in the Western world in which it originated and prospered."* Later in the 1962 Babbidge and Rosenzweig identified one of the key changes experienced within the university sector over the last thirty years: *"A workable twentieth century definition of institutional autonomy [is] the absence of dependence upon a single or narrow base of support."*

Given the financial challenges facing universities in the UK it is unsurprising that the process of exploring alternative revenue streams is evolving into an important facet of higher education. University departments are increasingly utilising alternative revenue streams to increase and diversify institutional funding. This avenue looks set to continue to increase in importance, (BBC News, 2002; Lambert Report, 2003) as university institutions have begun to understand that diversifying their economic base is sound policy for all economic and political conditions (Breneman, 2002; Clark, 2002; Hearn, 2003). The issue for university and departmental management structures is to endeavour to maintain a high quality and competitive standing in the face of resource constraints (Johnstone, 2002). This particular area of academic study has a well developed literature base in the US (Ikenberry, 1997; Winston, 1997; Immerwahr, 2002; Ruch, 2001) but has received scant attention in the UK and Europe. This article explores the American literature base especially the work of Hearn (2003) and subsequently analyses the consequent legal and brand issues resulting from UK universities pursuing teaching and technology transfer as alternative revenue streams.

The creeping austerity of the university sector: More students, less money

"Think back only 50 years… and you will encounter a world of higher education in which the concept of money was controversial or at least impolite. True, one expected

something called a pay check at appropriate intervals. But the idea that it was compensation for some vulgar artefact called services rendered was nearly unthinkable. In that world, the connection between work and pay had been rendered mysterious or taboo" (Johnstone, 2002). Today this work pay connection is essential to UK universities on a number of levels; Johnstone identifies the approach to economic issues in the so called "golden age" of the university. In 1946 the UK university sector accepted enhanced funding alongside greater direction from the state and subsequently between 1946 and the oil crisis of 1974 the sector experienced a golden age, when the State fully funded higher education. However, from the mid 1970's a series of monetary reductions and increases in student numbers caused financial problems. Between 1976 and 1986 the sector felt a 20% fall in the money allocated to teach each university student. As student numbers rose by 88% between 1989 and 2002, the money spent per student by the Government fell a further 37% (Woodward, 2002a; 2002b). At present it is estimated that *"about a third of the UK's higher education institutions are... running in deficit... surviving off their reserves. Overall the sector is expected to break even"* (Woodward, 2002b).

As a governmental response to the perceived economic shortfall, the Higher Education Funding Bill was drafted and subsequently won a small majority at the end of January 2004. The Bill continues to a Parliamentary Committee, which may suggest amendments, however any changes as regards fees will not take effect until 2006/07. The proposals are likely to raise an additional £1.8 billion for universities and when this is added to the commitment already made by the current Labour Government to increase public funding, it should mean that the unit of funding per student for teaching increases to the 1992 level. It is, however, generally agreed that universities need £10 to £11 billion and the extra money will not fully solve the current funding crisis (Maclean, 2004).

Universities as a direct response to the creeping austerity of the sector are taking it upon themselves to create revenue to make up for the potential, perceived or actual, monetary shortfalls. The limits on the types of alternative revenue streams pursued by UK universities are likely to be internally moderated as the *"Government does not have an identifiable higher education policy: it has broad public policies... it imposes*

fewer constraints on the sector" (Shattock, 2002). It is therefore essential that university policy makers are aware of the potential litigation and brand risks.

Key points that threaten longstanding assumptions about institutions assured market positions

(i) Lowered funding from traditional sources.
(ii) Increased governmental expectations for self sufficiency.
(iii) New providers (for profit and not-for-profit competitors).
(v) New technologies altering the current higher education business model.
(vi) Social utility costs have been rising, such as health and emergency services provision.
(vii) Endowments and charitable giving to the university sector is decreasing.

This article will deal with two important areas of current revenue diversification: First, teaching and instruction and secondly research and analysis.

Teaching and instruction

Teaching and instruction in the form of lectures and seminars is an integral facet of a university's core mission and usually provides revenue from the conventional lines of government money according to numbers of undergraduate and post-graduate students taught, and the success/quality of the research being carried out in the particular institution through the distribution of Research Assessment Exercise (RAE) and grant funding. These traditional sources are not wholly sufficient to sustain many of the current universities and in response many universities are utilising various new pedagogical forms and also new technologies in the pursuit of increased revenue from teaching and instruction. Some examples of the expansion of the teaching and instruction undertaken by UK universities include:

(i) Corporate learners from the private sector paying for professional enhancement learning;
(ii) Council mechanisms being nurtured to stimulate workforce training and development;

(iii) Occasional students who attend for brief periods, often part time. (Such students often attend to upgrade employment skills but sometimes attend for purely vocational reasons e.g. courses taken by retirees (Kerr, 2002));
(iv) Special versions of high demand courses at high tuition levels;
(v) Offering through commercial corporate partnerships or for profit subsidiaries. Whereby a third party resells an institution's courses aggressively in new markets (Hearn, 2003);
(vi) Summer courses and short courses;
(vii) Online courses (Levine, 2000a; Collis, 2002);
(e) Credentialing programs in areas demanded by the labour forces;
(f) Offering abroad and external consultation.

By moving away from the traditional and established teaching structures and recruiting large numbers of students can play undue stresses on both the administrative and academic structures within a university. Unbridled and unsupported expansion of teaching can have severe litigation and brand risks to UK universities.

Litigation risks: Fighting the degree mill mindset

The litigation concerning the provision of teaching to date has been found predominantly in the US, and whilst not always successful, a significant number of cases have been held against US universities:

"Ex-Student James M. Houston sues Northern Arizona University after receiving a Ph.D. with distinction in educational leadership… He is suing… in a state court for $1 million in punitive damages. Dr. Houston says the faculty has a diploma mill mindset and poor teaching skills. He hardly studied, spent little time on his class work, but still managed to earn a 4.0 grade-point average" (May, 1996).

Recently the UK has seen litigation along similar lines. In 2002, Mike Austin, 54, a retired airline pilot representing himself was awarded £30,000 from Wolverhampton University. After three court hearings, the University of Wolverhampton settled out of court in response to his allegations of poor teaching and inadequate facilities (BBC News, 2002). Among Mr Austen's complaints were:

(i) Errors in exam papers*: "The exams were appalling... we were set an exam where twice the invigilator had to interrupt to clarify what the paper actually meant"* (BBC News, 2002);
(ii) Cheating in exams;
(iii) 60 students trying to cram into seminar rooms designed to hold 15 and lecture halls being overcrowded;
(iv) Certain modules were outlined but were subsequently unavailable;
(iv) The course had failed to live up to the "inflated" picture it gave of itself in its prospectus*.*

With students now contributing a proportion to their tuition fees, it has been suggested that students want their educational experiences to be similar to their experiences with other commercial institutions, providing features such as high quality, low cost, service orientation, access online and no requirement to pay for services or goods not received (Hearn, 2003). Trachtenberg in his 1999 paper describes this change: *"They pay us tuition for an education we promise them and describe in detail in our publications. And if they don't like what we are seeing, they can hand it right back and buy their education someplace else."* Universities that increase student numbers without strengthening the administrative, technological, academic structures place themselves at significant risk in this increasingly litigious sector.

Technology transfer: Research and analysis

One of the other potential sources of alternative revenue streams available to UK universities is the commercial exploitation of intellectual property (namely patents) through university technology transfer offices. These offices, in theory, can generate significant amounts of money. Although hailed by Etkowitz *et al* (1998) as the second academic revolution, the rise of technology transfer poses significant questions to UK universities, as the rationales for technology transfer offices are increasingly oriented to financial returns (Feller, 1997). Significant ethical and legal concerns surround appropriate use of intellectual property as any new revenue-generating activity poses legal issues and institutions must consider their potential liabilities in court. An unfavourable judicial decision concerning the proper appropriation of intellectual

property could derail an institution's hopes of substantial new net revenues (Teitel, 1989; Hearn, 2003). Public institutions have already been challenged in court on the grounds that technology transfer activities compete unfairly with private sector business (Nicklin, 1992).

To create extra revenue from the exploitation of intellectual property many universities are repackaging and reorganising their research and analysis capabilities, prominent initiatives include:

(i) Business incubators (where the university facilitates and nurtures the development of business projects and income generation);
(ii) Technology transfer offices;
(iii) Research and technology centres and parks;
(iv) Small business development centres;
(v) Research collaborations with private industry and the Government (Kozeracki, 1998);
(vi) E-commerce where the Internet is used for selling institutional research and analysis services. As Wellman and Phipps (2001) note, e-commerce can be a risky enterprise for corporations as well as institutions, and it raises significant questions of institutional mission, governance and cost effectiveness.

It is also be risky to hold technology transfer offices to stiff financial expectations. Universities across the world are finding it problematic to balance the expensive running costs of technology transfer offices filled with legally skilled staff with the amount of revenue created from patent portfolios. Feller (1997), Press and Washburn (2000) and Geiger (2002) all find it doubtful that many technology offices break even, much less return net revenue to their home institutions as such efforts can cost hundreds of thousands of pounds. Indeed, the evidence is mixed overall for the new revenue generation efforts relating to research and analysis, however it seems that technology transfer offices pay off when core expertise is present, but are less cost effective otherwise.

Historically, universities have carried out pure non-commercial scientific research and have not attempted to profit from patentable knowledge preferring a broad

dissemination approach to patentable and non-patentable discoveries. The experimental use exemption (a facet of patent law that limits the scope of a patent monopoly) has, for the most part, been used to exempt academic scientists from the rigours of the patent system. The move towards the commercialisation of university scientific research through the use of technology transfer offices may reduce the scope of the research exemption in the UK and Europe and increase the likelihood of litigation against universities, along similar lines to that seen in the recent *Madey v. Duke University* (307 F.3d 1351 (Fed. Cir. 2002)) [2002] decision in the US.

Patent infringement exemption legislation

The UK law regarding this area is set out in the Patent Act [1977] and mirrored in the Community Patent Convention (CPC). Although the CPC is yet to be enacted, several European jurisdictions have used the proposed CPC to distinguish between experimental use and commercial use. The US Congress has also used the distinctions in its failed attempt to codify the law on the experiment use exemption. Two general types of exemptions are found in UK patent law: 1) The private use exemption; and 2) the experimental use exemption.

1) The private use exemption

The first of the general exemptions covers uses which are deemed to be acts done privately and for purposes which are not commercial (Patent Act [1977] S. 60(5)(a) (see below) and also the CPC Article 27(a)).

"An act which, apart from this subsection, would constitute an infringement of a patent for and invention shall not do so if - (a) it is done privately <u>and</u> for purposes which are not commercial."

The word "and" linking the private / commercial qualifications ensures that most of the activities of governmental, educational and charitable organisations are excluded from this particular exemption. These organisations may not be commercial but they are unlikely to be private. Private use is justified on the basis that this kind of use may increase scientific knowledge and thus be socially beneficial; also private non-

commercial uses do not pose a significant threat to the patent monopoly. Where the infringing activity has both commercial and non-commercial benefits, at present, the subjective intention of the user must be established. If they are deemed to be non-commercial, the defendant can rely on the exemption even if the resulting information has a commercial benefit (*SKF Laboratories v. Evans Medical* (FSR 513, 518) [1989] and *McDonald v. Graham* (PRC 407) [1994]. This approach received significant academic criticism in the UK, EU and the US, based on two main issues. First, an inquiry into the alleged intent of an individual, group of individuals, or an institution is a difficult concept to resolve. Secondly, with regard to the legislation, intention is not deemed to be relevant to the determination of liability, the *mens rea* only playing a role in the determination of remedies (S. 60(1)(a) Patent Act [1977]). One of the most common remedies in patent infringement cases is an award of damages (S. 61(1)(c) Patent Act [1977]), however in certain cases damages will not be available where the defendant's infringement was innocent. Damages will not be awarded where the defendant proves at the date of the alleged infringement they were not aware and had no reasonable grounds for supposing that the patent existed (S. 62(1) Patent Act [1977]).

2) The experimental use exemption

The second general exemption deals with acts done for experimental purposes relating to the subject matter of the invention and is set out in S. 60(5)(b) Patent Act [1977] (see below) and Article 27(b) of the CPC.

"An act which, apart from this subsection, would constitute an infringement of a patent for and invention shall not do so if - (b) it is done for experimental purposes relating to the subject matter of the invention."

This exception has proved controversial in connection with patents over pharmaceutical and research tool products, however the experimental or research exemption has traditionally protected the non-commercial activities of the research scientist in a university or governmental laboratory. The difficulties inherent in this exemption arise from the interpretation of what is deemed to be an "exempted experimental purpose." This definition is resolved by analysing the commercial

aspects of the research. The commercial / non-commercial criterion has a tendency to arbitrarily exclude from exemption all experimentation occurring in commercial settings. Academic commentators have advanced the argument that there is scant policy justification for this as socially valuable research can take place.

Academic institutions are increasingly marketing their research, meanwhile biotechnology and pharmaceutical industries are performing increasing amounts of basic research, which in the early stages has little commercial application. Universities are litigating to protect their portfolios from the public sector and *Madey v. Duke University* demonstrates that the private sector no longer regards universities as hallowed ground where patent litigation is forbidden.

Litigation risks: The university sector litigates against the private sector...

With the Government promoting university innovation and capital creation, universities in the UK use technology transfer offices to manage their patent portfolios and this in turn has encouraged research activity and patent applications by the UK university sector to increase. University patent infringement claims could follow a similar progression to that found in the US, where it is commonplace to use university technology transfer offices offensively. In 1999, in the first major case was brought by an educational institution where the University of California obtained a $200 million settlement from Genetech, Inc. for alleged patent infringement. Again in 1999, the University of Minnesota claimed patent infringement against a large pharmaceutical company based on their alleged breach of a licensing agreement. As part of a settlement, the pharmaceutical company paid the university $300 million in damages from royalty profits.

It is clear that academic institutions in the US are pursuing patent infringement claims seriously and are vigilantly protecting their patent portfolios. The UK has not yet reached this level of litigation however a 300 million dollar settlement is a big incentive to protect important patents. It must be noted however that US technology transfer offices are well developed from the passage of the Bayh-Dole Act of 1980, which forced universities who received federal funding to establish technology transfer offices.

...and the private sector litigates against the university sector: Madey v Duke University

The litigation between the public sector and private sector is not unidirectional. The controversial decision in *Madey v. Duke University* on the 3rd of October 2002 has focused attention towards the societal role universities play within the US. In the mid-1980s Madey was a tenured research professor at Stanford University. At Stanford, he had overall responsibility for a high profile and highly regarded laser research program. In 1988, Madey left Stanford University to assume a position as professor in Duke's physics department. To accommodate Madey and his group, Duke University built an addition to its physics building in order to house a Free Electron Laser (FEL) lab. Contained in the lab were several pieces of equipment that used the patents owned by Madey: U.S. Patent No. 4,641,103 (the 103 patent), which covers a "Microwave Electron Gun" and U.S. Patent No., 5,130,994 (the 994 patent) titled "Free-Electron Laser Oscillator For Simultaneous Narrow Spectral Resolution And Fast Time Resolution Spectroscopy." Madey worked at Duke for nearly a decade but resigned in 1998 after being removed as lab director. Madey claimed that his removal was predicated on his refusal to use the *"lab's equipment for research areas outside the allocated scope of certain government funding.*" Despite Madey's removal from the lab, Duke continued to use some of the lab's equipment, including the equipment embodying Madey's patents. Because of this unauthorized use of Madey's patents, Madey sued Duke University for patent infringement. Duke University defended on the grounds that the work it was doing was the subject of government licenses and that it was protected by the experimental use exception.

It is the first time a court has specifically applied the exemption in a university setting: The Federal Circuit Court of Appeal held that in regard to the experimental use defence it is inconsequential whether or not a university has infringed a patent for pure commercial gain. The judgment reiterated and perhaps furthered the position taken in earlier cases (*Warner-Jenkinson Co. v. Hilton Davis Chem Co.* (520 U.S. 17) [1997], *Embrex v. Service Engineering Inc.* (216 F.3d 1343 (Fed. Cir. 2000)) [2000]), and stated that if the infringement furthers the university's legitimate business and is not

solely for amusement, to satisfy idle curiosity, or for strict philosophical inquiry, the infringement will not qualify for the very narrow experimental use defence.

The decision in *Madey* makes clear that commercialisation will be viewed in a broader sense to include the business objectives of the university, including education and competition for research grants, students, and faculty. The decision may effectively seal the coffin on the experimental use exception for private universities in the US, as most (if not all) research could be considered to further a university's legitimate business and in addition few scientists in academia could claim that their work is solely for amusement, to satisfy idle curiosity, or for strict philosophical inquiry. The court appears to have narrowed the doctrine in the US so that its real-life applicability may be minimal.

Large well funded and resourced universities such as Massachusetts Institute of Technology, Duke and Yale have highly developed and competently staffed technology transfer offices to deal with large scale offensive and defensive patent litigation. Such university departments have had to develop positions of initiating proceedings for infringements of patents whilst also defending themselves against potential claims by other institutions / bodies. UK universities at present do not have this kind of development, either to litigate against the private sector or to defend against large scale patent infringement allegations. This inequality, in part, springs from a policy decision in the 1970's whereby Prime Minister James Callaghan (1976-79) provided centralised autonomy for universities and granted non-exclusive licences for university research protected by patents. By licensing to every interested party the policy reduced the value of patents as there was no real monopoly due to the nature of non exclusive licensing. Jimmy Carter, the US President from 1976 to 1980 provided an alternative approach by providing commercial dispersed autonomy for universities and allowing the individual universities to grant exclusive licences. The Bayh-Dole Act [1980] was passed in the US and forced universities to provide technology transfer offices to manage and exclusively licence the patents created by academic research. US universities quickly embraced this entrepreneurial step and subsequently technology transfer offices have been comprehensively staffed and funded for the last 24 years.

The line traditionally separating basic and applied research has virtually disappeared and in the UK. Universities and similar not-for-profit institutions which traditionally have been exempt from patent infringement litigation could be faced with the choice of purchasing patent licenses, potentially for every single research project, or repeatedly defending costly patent infringement lawsuits. This situation will prove to be an unfeasible use of resources for many UK universities. A section of academic opinion argues that university and non-profit research in the UK should continue to enjoy a more liberal exemption, allowing certain experiments that would constitute infringement if conducted by industrial firms to be excused. This, however, could be seen to contradict the equitable ideal that no one should achieve undue advantage from the work of others.

The experimental exception could be read in light of the purposes of patent protection which include the stimulation of further development of patented technology, this would not lead to the conclusion that purely theoretical research should enjoy a wider exemption than industrial research. This may provide some advantage to the university sector, however it would lay large discretion and responsibility at the feet of the courts. As a consequence, risk-adverse universities may well amalgamate technology transfer offices with other regional universities, or licence the management of patents out to the private sector, in order to avoid the cost and risk of running small technology transfer offices.

Conclusions

Universities within the UK are faced with funding problems and need to create extra revenue from alternative revenue streams, however, unreflective movement toward diversified revenue streams can threaten core institutional identities and missions (Bok, 2003; Johnstone, 2002; Slaughter and Leslie, 1997; Leslie et al., 2002). If institutions proceed too far down the path of commercialisation *"they will have sacrificed essential values that are all but impossible to restore"* (Bok, 2003) and threaten the *"soul of higher education"* (Breneman, 2002; Newman, 2000). Hearn proposes that *"When ideas for new revenue streams may be promising in a business sense but threatening in a cultural and organisational sense, and perhaps do not serve the public good, the best choice is to walk away"* (Hearn, 2003).

In making revenue choices, leaders need to consider whether the prospective activity to be pursued is really required by economic or political conditions, or simply holds the prospect of producing bonus revenue for the institution. Any new revenue-seeking initiative should be congruent with the existing or desired institutional mission and culture (Chaffee and Tierney, 1988; Hearn, 2003). If this guideline is flouted litigation from disgruntled students or companies may be encountered, causing economic and brand damage. Institutions considering new initiatives need to evaluate them rigorously to ascertain mission appropriateness, cultural fit, substantive quality, short- and long-term financial prospects, the risk tolerance of all involved parties, and organisational sustainability. Universities must become more flexible while remaining true to their essential traditions of self-management and intellectual achievement (Clark, 2002).

The legal warning *Caveat Emptor* (buyer beware) seems to be fully reversed in the higher education sector. The seller of higher education products may feel the full weight of litigation if teaching and technology transfer are commercialised without due consideration and a more fitting philosophy of *Vendor Emptor* may be increasingly appropriate.

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