

Response to the Lambert Review.

University of East Anglia,
University Plain,
Norwich,
NR4 7TJ.

This response addresses the consultation questions as posed by Richard Lambert in his letter of 5th February 2003.

I. Examples of Best Practice in Business-HEI collaboration.

This section encompasses both generic observations and exemplars from UEA.

a) Industry monitoring of academic outputs.

Many large/multi-national corporate businesses have developed excellent mechanisms for “scouting” for relevant technologies and expertise from academia. Specific University Business Development or Technology Acquisition or Alliance Management posts exist in many companies such as Unilever, Astra Zeneca and Proctor and Gamble. These offices draw on identification of relevant technologies or research outputs from a combination of personal contacts, peer-reviewed literature and University web sites to identify institutions of potential significance to them. Frequently working via the technology transfer offices, they gain access both to the relevant academic staff, but also to the “out-reach” or marketing /events programmes of the institution, thereby getting an early view of emerging technologies.

Technology transfer offices are keen to foster such relationships, not only because of the tangible benefits of sponsored research or licenses which may ensue, but also from the industry insight to the market that discussions with such individuals can provide. Gaining such an insider view of industrial goals or technical barriers, can assist universities in getting “ahead of the curve” in developing technologies which will walk off the shelf into a receptive industrial market. Such close and well developed relationships between academic or tech transfer staff and industry have also opened a channel whereby IPR that the corporate party no longer wishes to develop can be offered back to the University. Given the increasing capacity of the university sector to carry out effective business development, this represents a way in which value can potentially be captured from IPR portfolios which industry would otherwise not develop due to altered priorities or lack of an internal champion (a pre-requisite for industrial IPR development as much as it is in academia). More should be done to facilitate this process, as in the US, where there are tax advantages to corporate entities who gift IPR to academic institutions. This would expand the IPR portfolios of academic institutions and increase the chances of building IPR platforms capable of sustaining high capital growth companies.

b) Joint Ventures between Universities and Business – the growth of the “spin-in” culture.

The development of new ventures as a result of business and university partnership has many advantages and in general only one significant down side. The advantages may be drawn in a crude analogy with the film industry – to make a good movie, one needs talent, money and management. In the classical “Spin-out” model of such joint ventures, the IPR providing the foundation of a commercial opportunity would be generated by curiosity driven research of academic researchers (the “talent”), and a

suitable industrial co-venturer would provide the “money and management” skills to take the technology quickly and efficiently to market. Overcoming the barriers to fund raising and locating an appropriate management team normally associated with academic spin-out companies, this model appears to represent an ideal route to rapid exploitation of University derived innovation. The problem appears when one now imagines that the film star, the producer and the investor come from different countries and have no common language or culture – the chances of a blockbuster movie recedes very rapidly into the distance. The single biggest cause of failure of joint ventures of any kind is incompatibility of culture between the partners – this is never more evident than when the partners are industry and academe. This is not an insurmountable obstacle however, and the most effective solution is one of stringent management of expectations – a role which is an intrinsic function of technology transfer offices. It is about communicating between the partners, their respective needs in terms of timescales, standards of operation and nature of deliverables, and seeking a compromise on issues of commercial need for confidentiality and academic requirements to publish. Failure to address such issues before starting a venture will determine its inevitable failure. However, as tech transfer professionals become more skilled at managing such interfaces, and business and academia become more accustomed and sensitive to each others operating environments and drivers, the potential benefits of such joint ventures will be more successfully captured.

Indeed, the testament to evidence of this cultural change is never more clearly seen than in the growth of the “spin-in” joint venture. In contrast to the previous model, which was driven by spontaneous academic innovation, there are growing numbers of JV’s driven by industry or entrepreneurs who have “spotted a market opportunity” and seek to work with researchers and tech transfer offices in Universities in order to realise that opportunity. Historically, the industrial partner would simply have “purchased” the research needed to generate the required innovation, but there is growing recognition of the value of getting academic “buy in” to the venture, to fuel a subsequent development pipeline, and also of the university’s ability to assist in the generation of a subsidised research base, on the basis of their expertise in gaining CASE awards, TCS, LINK, and EU awards, for example.

c) Networks of contacts.

Much emphasis is placed on the development of contact networks by tech transfer professionals, and it is undoubtedly true that this is one of the most valuable assets that experienced business development staff bring to their roles. However, it is increasingly true that entrepreneurial and industrially focussed academic staff have an excellent, and in some instances extensive, network of industrial contacts, such that they are effectively a hub in the centre of a network of related industries. This is never more true than for clinical academic staff and for some branches of engineering, where the persons specialism in eg clinical and academic research around a certain form of cancer or development of environmental controls for cars, mean that they work with a large section of the pharma and automotive industries respectively. From this privileged position, they may well see synergies between corporate goals of their respective collaborators, and with all parties permission can actually be in a position to effect positive introductions that may lead to corporate joint ventures.

d) IP Leveraged Research Income.

The nature of technology development and commercialisation, particularly in fields such as pharmaceuticals, is by necessity a lengthy process, with substantial financial returns often following many years behind the timing of the initial deal. However, one of the more immediate benefits of out-licensing technologies occurs where the licensee company chooses to outsource some of the development work or related research back into the originating academic laboratory. Such research income, which would not have arisen but for the associated IP transaction, provides an early return on effort for the inventors research laboratory. Clearly tax incentives to support such research investment are a welcome development in this area.

e) UEA examples of Best Practice.

- The Environmental Management System Club, a training format developed and delivered by the School of Environmental Sciences at UEA, is an example of academia transferring knowledge of an area of expertise to support industry and business in developing a bespoke Environmental management system for their respective companies. The latter is a cost effective route to both achieving regulatory compliance, and to enhancing the reputation of the company.
- The same department has also obtained funding for a Community Carbon Reduction Project (CRed), the main remit being the identification and overcoming of obstacles that industry and commerce face in the adoption of low carbon practices. This project is a partnership between academia, industry, regional government and education authorities, and other research institutions and public bodies. CRed will provide a strong integrating mechanism, for a plethora of schemes in the energy efficiency/sustainable energy area, locally, regionally and nationally. The role of the University has been warmly welcomed in this regard, as an institution with the credibility and objectivity to make the connections and provide this focus.
- Founded on a partnership of 10 regional HEI's, the Regional Innovation Infrastructure project, of which UEA is a participant, is a programme of measures to promote mechanisms via which the resources contained in a substantial part of the regions academic base can be more readily accessed by industry. This extends from the physical resource of lab space or specialist equipment, through expertise, training and consultancy, to technologies available for acquisition or co-development. The programme is specifically aimed at removing barriers to more extensive interaction between HEI's and industry, by effecting the cultural and policy changes needed to facilitate this, as well as the infrastructure building required to support and institutionalise such interaction on a pan-regional basis.

2) Identify Barriers to Industrial-Academic Relationships.

Barriers to industrial partnership and technology transfer are diverse in nature and range from cultural attitudes, through transparency and access issues to operational procedures and policy. Taking these in turn:

a) Cultural mismatch.

Whilst there has already been a substantial shift in the attitudes of many academics towards a positive view of business partnership and technology transfer, there is still a large part of the academic body who see research and teaching as their only core missions. This is undoubtedly reinforced by the increasing pressure to raise the quality of research outputs, and time spent on commercially related matters which divert efforts from the production of high impact factor publications, is inevitably seen as a potentially damaging distraction by some researchers. Whilst the government, research councils and charitable research funders are all keen to see the outputs of academic research commercialised, there is no clear mechanism whereby achievement in this sphere can be acknowledged and rewarded in any research assessment exercise, and yet without substantial commitment of time and effort by academic staff, such reach out or tech transfer activities will not succeed.

On a related note, it is important to recognise that the business of Universities is the conduct of high calibre research. As the role of Universities in wealth creation grows, it is important not to lose sight of this fact, and to badge them as “service providers” to industry. There are examples where inappropriate promotion of Business-University partnerships have led to industry – in particular the SME sector – expecting Universities to undertake routine analyses or small scale development with little or no research component. Whilst it is true that some departments do offer analytical services via spin out companies or embedded commercial units, such work is not the core mission of the institutions per se and the industrial sector needs to recognise this.

Where significant cultural compromise is evident, is around the confidentiality/publication conflict in industrially funded research. There is growing mutual effort around this area which has led to the acceptance by academia that industrial sponsors need to protect their IPR, and the adoption of appropriate working practices to facilitate this. Similarly, industrial sponsors are increasingly flexible about allowing full publication of research outputs from the projects they fund, thereby addressing some of the concerns about publication record mentioned above.

Appreciation of time scales is also an issue. In business, time is money and industry can expect the initiation of projects in a faster time scale that Universities are able to deliver. This is particularly true of sponsored studentships for example. Whilst the latter often represent a very cost effective way of industry sponsoring research, the ability to recruit good applicants is dependent on the phase of the academic cycle, which can cause a substantial delay to project start dates. Conversely, lack of appreciation of the time critical nature of business transactions, can often lead to universities “missing the boat” in terms of tech transfer. It is therefore imperative not only that Universities have the human resource to be responsive in negotiating deals, but that they streamline decision making processes so that transactions can be completed within a commercially acceptable time frame.

b) Access issues.

Universities are large and complex institutions, whose internal capabilities in terms of research excellence and technology offerings are often only accessible to those with personal contacts or the time to spend many days negotiating a complex web site.

Accessible business portals that showcase technology offerings or direct external enquiries to appropriate Business Development Personnel remove one barrier to access, in particular for the SME sector.

Reach-out events such as “innovation clubs” or business interface events are also good ways of showcasing technology and research portfolios and bringing industry into the University to gain a better understanding of both opportunities for collaboration, and funding schemes to support such interaction.

c) Operational procedure and policy.

For technology transfer to work effectively, it needs to happen within a framework of clear and well resourced operational procedures and policies. As mentioned above, failure to respond or make decisions within a commercially acceptable time frame is cited as one of the major reasons why deals fall apart. This is exacerbated where any deal involves more than one academic institution, and yet this frequently occurs due to staff mobility or collaboration. Until all Universities have such standards of operational delivery and certainty of policy, the ability to commercially exploit jointly owned IPR or IPR arising from consortia is extremely limited.

In terms of resourcing tech transfer offices to support the above, the governments HERO-BAC and HEIF initiatives have been hugely valuable in building both capacity and momentum, but the project funding has had two major disadvantages. Short term contracts lead to very high mobility of staff in this area, such that by the time they acquire the skills and “in reach” necessary to be effective, they are looking for another post. The value of building relationships with the academic staff with whom tech transfer professionals work should not be underestimated, and lack of continuity in tech transfer offices is cited as a barrier both from academic and industrial clients of such offices. The second problem is that there is a perceived necessity to provide “new” activities for successive bids for such funding, whereas third mission activities have reached a stage where consolidation is the required order for most institutions.

3. Measures to recruit and retain good graduates in industry.

Schemes such as TCS and CASE awards, as well as industrially sponsored PhD studentships, give industry the chance to work with individuals who they may well groom as potential employees, but on the larger scale, there needs to be better mechanisms for industry to input to curriculum design. Increased interaction of HEIs and industry should afford more opportunities to engage on issues of undergraduate and postgraduate training, as well as CPD.

4. Role of Financial Support for HE/Business links.

The problems associated with the project nature of funding for third stream activities have already been addressed. It is imperative that thought be given to the career structures of professionals working in HE in this area, as there is a growing skills shortage as this sector expands, and Universities are competing to retain professionals whose skills are valued by Venture Capitalists and high tech companies alike.

Whilst the University Challenge Funds have been a hugely valuable addition to the funding needed to add value to, and minimise commercial risk in, technologies generated by universities, many such funds have struggled to find their mission

between pump priming innovation and acting as hard edged investors. There is still an unmet need for “pre-seed” funding to reduce barriers to developing innovations.

Another serious gap is in market knowledge and funding for market analysis. The most valuable impact on industrial competitiveness will come when Universities become proactive enough to map future market needs onto their research capabilities and to use fundamental research to move towards providing solutions to the next generation of technical barriers, viz more quantum leap and less incremental improvement. However, it is only by getting a detailed knowledge from industry or the investment community of what the next big technical challenge is in a particular industrial sector, that Universities can respond accordingly and generate innovation that the market is waiting to adopt. The acquisition of such market intelligence is expensive in terms of time and money, and funding such mapping or scoping activities is hard to justify in terms of short term deliverables. The value of such exercises does need to be recognised however, as it possibly represents one of the most value delivering integrations of research and innovation strategies.