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All documents and other materials will be updated accordingly. In the meantime the remaining content of this Isis Innovation document is still valid.

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Dowling - the real issues and the future

Professor Ann Dowling published her 'Review of Business-University Research Collaborations'¹ in July 2015. The Review has been generally well received and contains much useful information and a series of recommendations.

In this article we discuss how our Technology Transfer Offices (TTOs) will try to respond to the relevant observations and recommendations expressed in the Review and also comment on the need for action from other organisations in the UK innovation community. Further, we identify a number of characteristics that make up a 'good' industry or business partner for working together with universities.

UNIVERSITIES

We have described before [<http://ouinnov.co/1N9evd8>] how universities vary in the way each organises itself internally to manage interactions with business. This is a topic of great interest to university administrators and managers but of little interest to business and outside organisations. Universities need to 'hide the wiring' and organise themselves to provide a professional interface for business. How a university manages its interactions with business whether through a single office or multiple routes is less important than the understanding of the culture and environment in which opportunities are shared, both for the good of the institution and the businesses and other organisations with which it interacts. Universities have historically been poor at recognising anyone as a customer, although there is a changing culture.

Many of the university issues identified in the Review are not matters purely for a university Research Office, its TTO or its Business/Corporate Engagement Teams, they are matters for the universities and their Vice Chancellors, Rectors, Provosts, and their Pro- colleagues to consider. Over the years, some university administration teams have been better at this than others.

Unless UK universities can finally work out how to lead and manage constructive relationships with businesses *and vice-versa* future Dowling-like Reviews will keep on making the same points and the same futile shots will bounce off the battered barricades. Professor Dowling helpfully lists the thirteen reviews prior to hers starting with the impressive Lambert 'Review of Business-University Collaboration' in 2003. Do we really need one a year? We need to stop reviewing and start addressing the issues through considered

dialogue; whilst also recognising there is no magic answer for what we all know and understand is a complex issue with multiple interests and different cultures.

It is important to distinguish between business-university relationships that are (a) based on circumstances leading to generating future arising IP, i.e. those around collaborative research arrangements, which are generally managed by a university's Research Office; and business-university relationships that (b) deal with existing IP owned within the university (technology licensing for example) which are generally managed by the university's TTO. Our view is that the concerns raised by business arise more from the negotiations around the former, than the commercial negotiations over licensing existing technologies into innovative companies.

In the Dowling Review as in many others there is a fundamental misunderstanding about what TTOs actually do; many of the discussion points mentioning TTOs are about work typically carried out by a university Research Office. Although this may be a trivial point for outsiders, it is an important misconception which resonates across the sector and needs to be corrected.

Irrespective of how Universities organise themselves internally (please see earlier article here), it is time for the leadership teams of UK universities to embrace real improvements to their approach to business. This does not mean rearranging the deck chairs in their administrations; it does involve changing the culture across the institution and we are keen to assist in that process.

1. Short-termism vs Long term view

"Universities should ensure that the overarching metric used to assess the success of TTOs is their effectiveness in supporting translational activities over the longer term, not short-term revenue generation."

The statement requires further clarity on what the real (rather than perceived) issues are in the specific context of Business-University collaborations. Not every translational collaboration results in intellectual property (IP) or revenue, and not every piece of translational research will be of interest to business. A number of factors determine the relationship and whether a TTO is involved in such a relationship:

- Whether there is IP or the likelihood of exploitable IP
- The background IP being brought by the industrial collaborator vs that being brought in or generated by the university
- The extent of 'true collaboration' in generating new IP (as opposed to arms-length 'do this and give us the data' contract research); and

- The price being paid for the research (i.e. the Full Economic Cost (FEC) rate).

Most universities expect (and are indeed expected) to cover the cost of their research. If a university asks for a financial return from a collaboration as a reward for its intellectual contribution it is generally in the form of royalties related to the company's exploitation of the IP generated by the university under such a collaboration. This is not a form of short-term return, but one of sharing the rewards of success. It aligns the industrial collaborator and the university with the risk being shared through milestone payments being paid on satisfactory progression and royalties once the product reaches market. Such milestone payments and

particularly royalties may not be seen for many years (e.g. 10-15 years + in pharma) so this can hardly be viewed as short term behaviour.

Presumably therefore the perception of short-termism by TTOs relate to situations where Universities may ask for upfront fees or developmental milestone payments for IP assets when either licensing existing IP assets or pre-agreeing IP terms in a sponsored research contract. Again, this depends on whether the university is putting its own background IP into the collaboration and more importantly whether it has invested its own funds and or the funds of others (NHS, Wellcome Trust and other charities etc) where there will be obligations placed upon the university to secure a fair commercial return from the exploitation of that IP – something which the university is contractually obliged to do.

Many TTOs receive some financial support from a number of areas: the government's Higher Education Innovation Fund (HEIF) given to universities; from the university; and from retaining a portion of their trading income. One way or another they are expected to generate enough income to fund their activities – i.e. to cover their costs. This is no different to how other departments in the university function – by receiving government grants, generating research funding or charging tuition fees. If Dowling advocates

that TTO should aim to take a longer term view, then there needs to be financial security for those organisations over the long term (i.e. 10 years). This currently doesn't exist (for most TTOs) thus current funding streams for TTOs whether that be through HEIF, the university or cash it generates are all short term and do not align well with the desire for TTOs to support long term translational activities in universities.

TTOs are now expected to be much closely aligned to their host universities to deliver 'impact' for their respective universities. The importance of this to the university, the funding it receives and its reputation remains paramount in their deliberations. Many of the strongest examples of 'impact' include those with industrial partners and commercial businesses. The culture change to ensure TTOs will support long term translational activities is already taking place. The metrics which many TTOs will be assessed on in future are likely to develop as being similar to the REF [Research Excellence Framework 2014 see www.ref.ac.uk] impact case studies which universities submitted to REF 2015 and will be preparing to submit to forthcoming REF assessments.

TTOs already understand this; universities need to fund their TTOs accordingly to deliver REF impact and this will need to be financed out of, QR grant funding, HEIF or perhaps another HEIF-like stream.

2. Thought and practice leaders

“Universities that are confident of the performance of their TTO in supporting the establishment of collaborations should publicise statistics that highlight their efficiency and effectiveness.”

There are of course readily available metrics from the government's national HESA HEBCI survey at www.hesa.ac.uk. The TTOs in our universities all publish annual reports of activities and our universities make frequent reference to university-business interactions in their reports and broadcasts. We welcome universities taking on more responsibility centrally for reporting on and promoting the activities of their Research Offices and TTOs.

Without wanting to repeat the misconception that TTOs are the only route to establishing collaborations, it is worth reiterating this is not solely a TTO issue and goes much wider across the university. We draw attention to a recent report from Imperial Business School which clearly demonstrates that actual activity in relation to university – industry – business relationships greatly exceeds that 'known' by the university². Such relationships are already endemic and perhaps not fully documented or appreciated.

As the 6U TTOs we will lead by example, and develop joint benchmarks based on known information, recognising that business engagement and collaborations are occurring beyond the activities of the TTO to seek to generate sensible and meaningful metrics.

This is not to advocate a 'who does what best competition' nor emergence of TTO league tables comparing 'apples' and 'pears', because each TTO is different. These will not help. We propose to include not only the TTO as stipulated by this recommendation but extend to university research offices and other business engagement units to deliver a comprehensive set of performance statistics to demonstrate how the university performs as a whole across its wide ranging relationships with business.

3. Working together

“TTOs and universities should work collaboratively, across institutional boundaries, to share expertise, sector knowledge and best practice.”

We strongly agree with this and are already working across the sector through our organised networks (PraxisUNICO, ARMA, ASTP-Proton) and through many informal channels. The collaborative nature between university researchers already extends to the research support and technology transfer communities. We believe in highlighting the issues we as TTOs and our colleagues in research offices, business engagement units and similar outreach offices face and why we do things in the way we do. It is important that universities are more transparent about these issues. Equally we also aspire to seek new ways of working, recognising that universities and businesses have both different and complementary drivers and the need to be cautious of seeking 'one size fits all' over-simplistic solutions (when the reality is that each transaction, relationship, collaboration has its own nuances).

We have already seen the TTOs of 6 major UK universities put out a number of information papers (this being one) on 'why' TTOs do things in certain ways and calling for more dialogue and solution seeking rather than 'blame' allocation. PraxisUnico and NCUB are also active in trying to foster this dialogue. We are hopeful we will see more open and constructive discussion leading to improved understanding.

We are ready to engage in constructive dialogue with all those interested in implementing these recommendations: BIS, HEFCE, Innovate UK, Catapult Centres, UK Intellectual Property Office and Business associations such as CBI, BIA.

4. Funding

i. Higher Education Innovation Fund

“Higher Education Innovation Funding (HEIF) is an important and much valued funding mechanism for supporting universities’ capacity to engage with businesses. Government should make a long-term commitment to maintaining a form of flexible funding for knowledge exchange as a means of stimulating translational activity and collaboration”

The UK is envied across Europe and beyond for the scale and consistency of the HEIF programme. We wholeheartedly agree with the Review on this point.

Given how important university-business links are across teaching and research, it is surprising that the Government’s recent Higher Education Green paper did not address university-business links, nor Knowledge Exchange or HEIF. With major changes contemplated in the teaching and research landscapes it is important that the university-business links / innovation areas does not become forgotten.

One area however that is being left behind, even with HEIF support, is proof-of-concept funding. Whilst Impact Acceleration Accounts (see below) are partially addressing this, the propensity for universities to allocate their HEIF cash to support staff salaries, means proof-of-concept would benefit from a separate specific source of funding. At present the government response is ‘use HEIF, use IAA’s’ which is entirely understandable. Dedicated proof of concept funding is an essential need to pump prime and create opportunities for achieving impact and attracting business. This needs to be financed by governments and other organisations with longer term motives because venture capital or industrial funding is rarely available to take on such early stage projects carrying high risk profiles.

ii. Impact Acceleration Accounts

“Impact Acceleration Accounts (IAAs) have also proved effective and should be offered across all the Research Councils. The approach to allocating or applying for IAAs should be common across the Research Councils.”

We support this recommendation. The strength of IAA comes from the Research Councils transferring responsibility to the universities to manage the allocation of awards within the university, close to researchers. It is the proximity of the funding pot to researchers which is vital, to encourage researchers to apply.

The importance of having funds available to support impact activities and help make research outputs recognisable to businesses as investable opportunities is enormous.

GOVERNMENT

1. Innovate UK

Half of the Recommendations in the Review involve Innovate UK; 16 out of the total of 32. Since it began in 2007 Innovate UK (originally Technology Strategy Board) has deployed £1.5bn of government funding with a 2014-15 Budget Allocation of £616m.

The government is placing increased funding and increased responsibility on Innovate UK to address many of the issues identified in the Review. With Innovate UK responsible for Catapult Centres and the highly respected Knowledge Transfer Partnerships (KTP), as well as many other functions, they have a great deal to live up to. We strongly support the principle of government making more money available to foster collaboration. We encourage more engagement between our universities, ourselves and Innovate UK, and we are looking forward to being in a position to take a positive look back at Innovate UK’s first 10 years of achievements in 2017.

2. UK Intellectual Property Office

The Review calls on UK IPO to work with BIS in a couple of ways to increase the speed and lower the temperature of negotiating university-business transactions: ‘define principles for commercial use of background IP created through publicly funded research’ and ‘explore the establishment of an independent source of advice and expertise that SMEs could call upon’. It should be noted that a significant proportion of university funding comes from non-public sources which expect to see a share of any future revenues from commercialisation (e.g. Charities).

As such any attempts to develop principles to handle such IP will need to gain the buy-in of several stakeholders beyond just public funders to be truly effective. We encourage the early involvement of the universities, TTOs and other funding stakeholders when this work gets underway.

BUSINESS

1. Some recommendations

When developing industrial strategy and other long-term sectoral strategies, government and business should consult universities as key partners. Innovation should be a core component of policies aimed at promoting productivity and competitiveness, with full consideration given to its role in different sectors. University Business engagement is not a simple matter. Over 5.4m businesses are active within the UK³ and millions more

across the world. The UK has 132 universities⁴ and every university collaborates with business to some extent or other but how many of the 5.4m businesses currently contract, have potential to contract or more importantly wish to contract with a university? And how many of those 5.4m can the 132 universities realistically accommodate? Many businesses also engage with universities through recruiting graduates and postgraduates and for training

their staff. These activities are in many ways much more important to certain businesses and should not be ignored. Collaborating with universities (in a research / IP context) is not for every business and a clear understanding of this will enable dialogue with the right businesses. Each university collaborates in different ways with its community of business partners and also plays a role in its community by assisting in creating new SMEs who usually stay well connected to the university, we know SMEs not born of Universities are generally less good at interacting with universities. We think there are three areas of focus:

- Businesses must help themselves to learn and decide how to collaborate with universities. Those self-selecting to do so can then draw on the enormous resources available at each university and nationally to support them to do it.
- The recommendation from the Dowling review that Universities and TTOs should 'work collaboratively across institutional boundaries to share expertise, sector knowledge and best practice' should be extended to business and industrial partners also. The experience of universities working with industry partners differs markedly. Some companies are better than others at partnering and the public sharing of best practice between companies on industry-university engagement would be of equal value.
- Perhaps a new label, kite mark or designation is given to describe those businesses that do collaborate with universities as an endorsement or recognition could help.

To start that dialogue we set out below certain characteristics of what we would see as a 'good partner' in business or industry from a TTO perspective:

- One that appreciates the university is a charity and recognises the needs of the university to cover its costs;
- One that is looking to build a long term relationship with the university;
- One that will not bring the reputation of the university into question (or disrepute); and
- One that is aligned to develop the research from the university into beneficial products, goods and services for the betterment of society.

A good partner will also recognise:

- That as a charity the university is not able to give wide ranging warranties and is unable to take on product or commercial liability

- The university and the researchers need to publish research data
- The university has a requirement to tell the 'good stories' – through returns and submissions it is required to make to government bodies and elsewhere so it can continue to be financially supported.
- The university needs to share in the longer term financial benefits of its inventions so it can align its interests, incentivise its academics and promote its success stories and enable it to do more.
- The university has obligation to comply with conditions imposed on it by external funders, State Aid rules and others.
- The university will have developed a set of procedures which involve sharing revenue to financially reward its researchers and inventors.

Commencing negotiations with collaborators who understand those principles is an enormous benefit in concluding a successful partnership. As PraxisUnico starts offering training courses to business on business-university interactions we look forward to an era of more constructive business university interactions.

2. Business associations

We encourage a more constructive engagement from a number of business associations in this debate. For real progress to be made universities need to change (see above), but so do businesses and those who are organised to represent them. In particular we would welcome more dialogue with the BioIndustry Association, the Confederation for British Industry and the Institute of Directors all of which could engage in a more constructive, closer, less arms-length and less critical conversation with TTOs.

In particular we would like to hear more real-life examples (anonymised if necessary) of good and bad experiences rather than nebulous anecdotes referring to 'bad experiences' with IP and TTOs without any real context. This would enable us to take corrective action where required and to respond in a positive manner going forward. We can all take examples 'off the wall' in conversation based on hearsay and chit-chat. Real examples from industry detractors would help sort the lobbying from the genuine desire to exchange views and understand how to improve.

FURTHER INFORMATION & NEXT STEPS

We are all committed to listening, changing and exploring ways to make technology transfer between our universities and business more successful, more effective and reduce friction for everyone involved. We will continue to prepare additional information and FAQ sheets to explore relevant issues and challenges in more depth and welcome feedback and comment.

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