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# Spin-out fever: Spinning out a University of Oxford company and comments on the process in other universities

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## Abstract

University spin-out companies are increasingly seen as a favoured route for commercialisation of university intellectual property. There has been criticism in the Lambert Review of Business–University Collaboration in 2003, commissioned by the UK Government in 2003, that there have been too many spin-outs of low quality and that a measure of quality is the amount of external equity they attract. This has been refuted by Dr Williams of the University of Warwick technology transfer office. Oxford University has created 42 companies with no failures. The rigorous process involved in the creation of an Oxford spin-out is given in some detail. The author then goes on to discuss his experiences of other university spin-out models. Finally, some of the tax problems that caused universities across the UK to stop spinning-out companies recently are discussed. In conclusion despite the criticisms, the author believes the process of creating companies to commercialise university R & D is critical to the overall success of UK plc in the long term.

**Keywords:** *university spin-out, Lambert Review, Oxford University, Warwick University, Isis Innovation, intellectual property, initial public offerings, academic founders, OION*

## INTRODUCTION

In recent years university spin-outs (USOs) have been an increasingly popular mechanism for exploitation of university intellectual property (IP). The reasons for this are as follows: often owing to the very early stage of the discovery, it is difficult for university technology transfer offices to attract interest from potential licensees until proof of concept has been demonstrated. Increasingly universities see the spin-out route as a means to return a higher proportion of wealth back to university in the long term, since the amount of licence fees that can be demanded for a patent at an early stage of development is comparatively small. The amount of up-front fees that can be demanded for early stage technologies varies in relation to the size of the market and the type of industry that is licensing in the technology, but the up-front fee that can be demanded from early stage licences will rarely exceed £50,000. It is the view of the author that university technology

transfer offices are beginning to find the costs of their burgeoning patent portfolio difficult to fund and so see the transfer of the IP to the spin-out as a way of reducing this financial burden. An interesting comment in support of the creation of USOs is in a report from the University of Nottingham Business School, which believes that 'university spin-outs can be a powerful force in retaining faculty inventors at the university, particularly if institutional policies are favourable to the facilitation, creation and development of university spin-out companies'.<sup>1</sup>

Not everyone believes that the large increase in the creation of USOs is a good thing. In December 2003 the Lambert Review of Business–University Collaboration was published. This review, which was commissioned by the UK Government, concluded that increased collaboration between business and university research departments will bring significant economic benefits to the UK.

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**Oxford University has the highest research spend in the UK**

There is a section in the Lambert Review with the heading 'Too little licensing and too many unsustainable spin-outs'. It goes on to state that, 'there is a widely held view in business and universities that too many spin-outs have been created in the past five years and that a large number of them will not succeed in the long term'. Furthermore, the Review states that, 'the quality of spin-outs varies widely among different universities and that the best way to judge quality is by looking at the ability of a spin-out to attract external private equity'. The Review highlights the difference between Oxford University, 'which has attracted private capital to 95% of its spin-outs since 1997, whereas almost a third of universities that created spin-outs in 2002 did not bring in external equity for any of their new companies'.<sup>2</sup>

In a recent review, Dr Ederyn Williams of Warwick Ventures<sup>3</sup> takes issue at the comments on the number and quality of spin-outs. He points out that the Lambert Review ignores the fact that some spin-out companies are so successful in starting their operations that they can fund themselves from customer payments, founder equity or bank loans. In fact the University of Warwick has three spin-out companies which are growing fast with sales in their second and third years exceeding £250,000, and have not raised any investment capital. An interesting fact pointed out in the report is that the British Venture Capital Association invested in only 0.6 per cent of the average annual number of company formations in any one year. To quote Dr Williams: 'Do we conclude that the other 99.4% of company formations were a waste of time and should never have happened? Of course not!'<sup>3</sup>

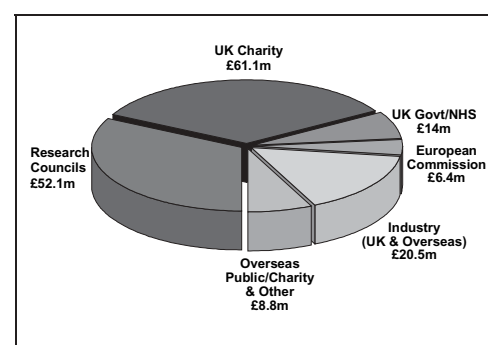
In 2005, the *Financial Times*<sup>4</sup> carried an article by Jonathan Moules which highlighted the increase in the number of university spin-outs that have listed on stock markets. In 2004 there were nine initial public offerings (IPO) by companies formed from universities, compared with one a year earlier. Although the numbers are small, they

nevertheless demonstrate that university spin-outs are making their mark and are surviving long enough to be able to float. In fact according to research commissioned by the Gatsby Charitable Foundation, which was cited in the FT report, 'survival rates amongst university spin-outs are better than the average for new technology companies. The failure rate of spin-outs from 10 universities was less than 10 per cent, compared with an average of 60–70 per cent among high-tech companies'.

### THE OXFORD SPIN-OUT MODEL

The University of Oxford has an international reputation and the highest research spend in the UK (Figure 1).

It is therefore hardly surprising that the university has a spun-out a large number of companies. However the creation of a spin-out is not necessarily the first choice for commercialisation of university technology. It is interesting that when it comes to licensing v spin-out, Isis Innovation, a company wholly owned by the university to help researchers commercialise the results of their research, has found that it is often difficult to license early stage science to the pharmaceutical industry, which is probably why a very large percentage of spin-out companies are based upon technology with a medical application. Tom Hockaday, who is a director of Isis Innovation, was interviewed as part of the



**Figure 1:** University of Oxford research funding

**Oxford University  
has spun-out 42  
companies to date**

research conducted on USO companies. He stated to the author, 'that licensing is always hard work and should not be considered as the soft option to the creation of a USO'.

So far the University of Oxford has spun-out 42 companies, and so far none of the companies has failed – although a few are just surviving (Table 1). A total of £186m of external investment has been raised, £26m from business angels and £160m from venture capital. Seven Oxford spin-outs have gone public with a total valuation of £1,208m. The most recent was VastOx, which spun-out late in 2004 on the Alternative Investment Market (AIM) at a valuation of £45m. It is evident that the rigor of the process

used to spin-out a company ensures that only the most solid, commercially orientated technologies end up being spun-out in a company from the university.

The process usually starts with the academic approaching Isis Innovation to discuss the filing of a patent on the technology. The Research Services Office of the University determines ownership of the IP. This can be a complex and troublesome task, since increasingly university research is funded from a variety of sources, all of which must be checked for ownership of the IP. The consideration of whether to spin-out a company takes place through a team consisting of the Isis project manager,

**Table 1:** Oxford spin-out companies

Date spun-out	Company	Main business	Date spun-out	Company	Main business
1959	Oxford Instruments	Scientific Instruments	2000	PharmDM	Drug design
1977	Oxford Lasers	Lasers	2001	OxLoc	GPS/GSM tracking
1988	Oxford Glycosciences	Glycobiology	2001	Oxford Bee Company	Pollination
1989	Oxford Molecular	Drug design	2001	Oxford Ancestors	Genealogy
1992	Oxford Asymmetry	Chemistry	2001	Novarc	Press tooling
1994	PowderJect	Drug delivery	2001	Oxford ArchDigital	Digital archaeology
1995	Oxford Gene Technology	Gene chips	2001	NaturalMotion	Neural networks
1996	Oxford BioMedica	Gene therapy	2001	Inhibibox	Drug searching
1997	Oxagen	Gene Discovery	2002	Pharminox	Cancer drugs
1998	Opsys	Optical displays	2002	Minervation	Health information
1998	Synaptica	Neuro-degeneration	2002	Spinox	Artificial silk
1998	Prolysis	Antibiotics	2002	Zyentia	Protein structures
1998	Celoxica	IT	2002	Oxitec	Insect pest control
1998	Sense Therapeutics	Pharmaceuticals	2002	Oxford Immunotec	TB Diagnostics
1999	Avidex Pharmaceuticals	Pharmaceuticals	2002	ORRA	Risk analysis
1999	Oxxon Pharmaceuticals	Pharmaceuticals	2002	Glycoform	Cancer drug development
1999	Dash Technologies	IT	2002	BioAnaLab	Specialist CRO
1999	Oxonica	Nanotechnologies	2003	VASTOx	Pharmascreeing
1999	Abington Sensors	Sensors	2003	ReOx	Drug discovery
1999	Oxford Medical Imaging	Image analysis	2003	Riotech	Hepatitis drug development
2000	Third Phase	Clinical trial management	2003	OCSI	Social inclusion
2000	Mindweavers	Sensory development	2004	Oxford Medical Diagnostics	Breath analysis
2000	Oxford Biosignals	Vigilance monitoring	2004	G-Nostics	Anti-smoking tests
2000	ToleRX	Immunology	2004	Surface Therapeutics	Drug development
2000	OXIVA	Medical software	2004	EKB Technology	Bioprocess engineering

research services and, of course, the academics themselves. Some of the factors that are considered are whether the IP can be protected, the size and opportunity in the market and the route to market. Isis will point out to the academic that a USO company will involve him or her in a lot of work, increased risks, ownership of shares and the responsibilities of being a director of his or her own company. If the academic still shows enthusiasm to spin-out a company, then the Isis project manager will assist in writing a business plan. Here of course is where it will start to become apparent as to whether there is indeed a business opportunity that warrants starting up a company to address that opportunity.

Isis Innovation endeavour to find an experienced business person to work with the academics at this stage. This individual helps to focus the business plan on real commercial goals and can help with the financials in the plan. This individual is crucial to the success of an Oxford spin-out, since it this person who is principally involved in trying to raise the finance required. Venture capital investors often state that they invest in a management team with relevant business experience, and are therefore very wary of investing in companies where only the academic founders are part of the management team.

Another reason for Oxford's success is that sufficient funds must be raised in order to meet a key milestone before the company is allowed to spin-out. This invariably means that the company will have two years of money at spin-out. Once investment is pledged the legal process will start to create the company, license in the IP, draw up contracts for the directors and of course the investment agreement.

The University of Oxford does not allow assignment of the IP, but issues a licence to the spin-out company. This sometimes causes problems with investors who often demand assignment of IP. Another interesting fact about Oxford spin-outs is the role of the academic

founders in the company. The university is very strict about the role of the academic founders in the company. The academic must not have a position in the company, rather a consultancy contract is drawn up, which sets out the number of days when the academic can work for the company. This is of value to both parties, since the role of the academic, who of course will become a director of the company, must be clearly established. In many universities the role of the academic in the company is allowed to be very fluid, and indeed in one spin-out company known to the author, the academic works one day per week. Another key requirement is that the spin-out must operate in premises outside the university. This has value in breaking the bond between the university and its spin-out, which should always be a separate from the university. One problem that this creates is that bioscience companies require laboratories and unless this is available in a bio-incubator space, the company will need to build laboratory space. This can be a major draw on cash in the first year, which could affect the chances of survival.

The University of Oxford usually takes 50 per cent of shares when the company is founded, with the academics taking the other 50 per cent. Some universities have different models. The University of Warwick takes a third of the shares at spin-out, leaving a third to the academic and a third for outside investors. The split is 60/40 in a University of Leeds spin-out. The author, however, is aware of other universities where the split in equity can be as bad as 70/30 in favour of the university. The amount of shares a university demands can be a source of friction between academics and the university. Of course Oxford always owns the IP, in common with most universities, although it is interesting that it is only recently that the University of Cambridge adopted this model. Previously the academics owned their own IP. The university came up against considerable opposition when it changed the rules.

**An experienced business person is crucial to the success of an Oxford spin-out**

## EXAMPLES OF TWO OXFORD SPIN-OUTS

An example of the challenges involved when trying to fund an early stage spin-out company is illustrated by the following case study of the first spin-out the author was involved with in Oxford.

Following completion of the business plan and a short presentation, a presentation was given to the Oxford Investment Opportunity Network (OION). This is Europe's most successful early stage investment network. Considerable interest was shown in the company and indeed one investor pledged a modest sum. An executive summary was sent out to the Isis investor list, which includes venture capital companies, private and specialist equity funds. A number of meetings were held but no commitment was obtained. In this case the company was never spun-out since it did not raise sufficient funds to achieve a meaningful objective. The problem here was that the research was still at a comparatively early stage of development. No proof of concept had been demonstrated and in the present investment climate investors are wary of investing in a company with early stage technology where further considerable investment will be required before demonstration of proof of concept. What is interesting is that a new business team have been recently brought in to re-write the business plan with a new strategy and are actively seeking potential investors.

The next spin-out the author was involved with was successful. This company was created out of an academic department with experience in the analysis of a new class of biological drug. The business model was to create a company offering analytical services to the pharmaceutical industry. The company successfully raised £520,000 from a local venture capital trust and from business angels through OION. This company was trading within six months from spin-out and has gone on to become a successful service company. One interesting fact about this company, called

BioAnalab, was that the academic founder took over as chief executive. This is uncommon in Oxford spin-out companies, but it soon became apparent that his knowledge of the analytical problems presented by this class of drug, and his contacts and reputation in the industry made him invaluable to the company.

## THE SPIN-OUT PROCESS IN OTHER UNIVERSITIES

The author has been involved with three other projects and it is interesting to compare experiences with different universities/research institutes.

The first company was founded in early 2004 and is called CMP Therapeutics. It was created to commercialise IP from the MRC (Medical Research Council) Immunochemistry unit in Oxford. The academic founder, Peter Strong, had discovered that micronised chitin produced from shrimp shells could be used as an immune regulator. He had demonstrated that when prepared as a nasal spray it was effective in the treatment of respiratory allergies and was an effective adjuvant that enhanced the effectiveness of nasal vaccines.

The IP is owned by the MRC and so negotiations for a licence have been with their technology transfer office. They proposed a very flexible licence deal. They have not insisted on taking equity in the company; however if investors wish to pay a minimal up-front fee, then the rest of the fee will be taken as equity. The head of MRCT (Medical Research Council Technology), Roberto Solari, who had been involved with the venture capital business before joining MRCT, stated that investors on the whole do not welcome a major institution as a shareholder. The company has recently raised finance and is now in the pre-clinical stage of development.

Recently the author has been involved with Royal Holloway College, University of London in helping to establish a spin-out called Symvax based upon work conducted by Simon Cutting on oral

**Oxford Investment Opportunity Network (OION)**

**Investors are wary of investing in companies where considerable investment will be required prior to demonstration of proof of concept**

vaccines using bacterial spores. Before the spin-out process was started, the College had to formulate a policy with respect to ownership of IP and the equity split.

Finally, the author is a mentor for a University of Warwick spin-out called Gadametric. Here the company has been founded by Warwick Ventures and an academic from the founding department, who completed the Warwick Enterprise Fellowship Scheme, has written the business plan and is planning to raise the finance. This company has novel technology, which will help companies screen for potential antiviral drugs at a much higher throughput than the existing methods allow. The Warwick model is very flexible and is less rigid than the Oxford model. It has been successful in allowing companies to grow organically through income from sales, consultancy, awards and grants, with minimal equity investment at the spin-out stage.

## CONCLUSIONS

USOs are seen as an increasingly popular way of commercialising university IP; however, there has been criticism that too many USOs have been created and that there should be a focus on quality. This has been refuted by Dr Williams of the University of Warwick, who has pointed out that to use the amount of equity raised as a measure of quality, misses companies that are grown organically.

There are a number of issues that are important to the long-term survival of USOs. One key issue is the ability of the company to attract experienced management early in the spin-out process and the other issue is the availability of early stage finance. There is concern that there has been a surge of spin-out activity in the last few years brought about by university vice-chancellors responding to government pressure to commercialise more of their R & D; in addition universities may consider that this is a way of restoring a university's dwindling finances. The University Seed Challenge fund provided seed capital to

help fund these companies at spin-out, but at present there are huge problems when trying to find early stage investment capital, since the venture capitalists have been investing in companies at a much later stage than before. The absence of an active IPO market has not helped either, since venture capital investors have had to continue to support their existing investments. The problem in attracting follow-on finance could affect the sustainability of these companies over the next few years. During the interview with Tom Hockaday of Isis, he stated that 'the current problem of attracting early stage finance is affecting the number of spin-out companies being formed. Isis has a number of companies that are due to be spun-out but are failing to attract finance'.

Reference to Table 1 demonstrates that there has been a definite turn down in the number of Oxford spin-outs in 2003 and 2004. This has not only been due to the problems in raising early stage investment, but is also due to the uncertainties associated with the tax position of academic founders. In the Autumn 2004 issue of *Isis Innovation News*, Tim Cooke, the director of Isis, stated that, 'From August 2003 until June 2004 no new companies came out of Oxford, and most other universities due to legislation included in Part 7, Income Tax Earnings & Pensions Act 2003 (which is often referred to as the Schedule 22 problem)'. This issue has been resolved with the publication of 'New tax measures to help researchers acquiring shares in spin-out companies created with universities and research institutions', a technical note issued by the Inland Revenue on 2nd December, 2004.<sup>5</sup>

The very rigorous process that is the Isis Innovation spin-out model has resulted in 42 companies being created, none of which has failed. There has been so much interest in the Oxford model from other universities that a division has been created within Isis called Isis

**USOs seen as an increasingly popular way of commercialising university IP**

**Long-term survival of USOs**

Enterprise, which will offer consultancy and advice in technology transfer. The Warwick model is rather more flexible and enables companies to be created without having to meet such rigorous criteria, and as such allows for organic growth of companies. Every university must establish and publish clear guidelines for ownership of IP and should establish a model which academics can refer to if wishing to create a spin-out company.

Finally, the author would like to heartily endorse the concept of spinning-out companies based upon university IP. It is a way in which UK plc can harness the depth of innovative, world-beating technologies which reside within our universities.

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