

## **Full transcript of Fire and Wire: innovation and spinouts**

### **Professor Irene Tracey**

Welcome, everybody, to the next episode of Fire and Wire. And today is all things spinout and innovation. I'm absolutely delighted that joining me this afternoon are two fabulous women. We have Mairi Gibbs, the Chief Operating Officer at Oxford University Innovation. Welcome, Mairi.

### **Dr Mairi Gibbs**

Thank you very much.

### **Irene Tracey**

And we have Lilly Bussmann, who is Principal at Oxford Science Enterprises (OSE). Welcome, Lilly.

### **Lilly Bussmann**

It's great to be here.

### **Irene Tracey**

Before we get to it, I wanted to know how you got to this place. Mairi, let's start with you. What was your journey to joining Oxford University Innovation?

### **Mairi Gibbs**

I started out as a chemist. I did my first degree here at New College and then a PhD at Bristol. And then I spent a few years in the fine chemicals industry, and then I found my way into this world of university knowledge exchange/technology transfer.

I came back to Oxford in 2002, and I've been in a whole variety of jobs, but always in this innovation space, ever since.

### **Irene Tracey**

That's 21 years pretty much of a very interesting phase of our evolution. You've been at the vanguard of it, so we're looking forward to getting into that a little bit more.

Lilly, tell me about your journey here.

### **Lilly Bussmann**

I actually grew up in Germany, but then came here for my undergraduate back in 2011 – for my sins not in the sciences – I studied PPE at Magdalen. From there, I started my career in investing in London. But when OSE was launched in 2015, I just got too tempted and moved back.

### **Irene Tracey**

Fantastic, it's brilliant to have you both join us here. As you know, this week we published the report that I've been co-chairing for the government on the role of how we can drive economic growth in Britain through our British universities and specifically through their contribution to innovation and creating spinouts, with very much a focus on the more commercial side of the spinout opportunities.

It's been a really interesting journey for me to have gone on for the past ten months to produce that report and get to meet all the stakeholders, from founders to investors to the university tech transfer offices, etc. But let me hear what you think of it, now that the report's out and published and getting good responses... as far as I've been told! Mairi, I'm keen to hear what you think of the report and where you see it presenting some opportunities for us.

### **Mairi Gibbs**

A really fantastic thing about the report is that it recognises a lot of really good practices in the UK converting our world-class science space into spinout companies. Of course, spinouts aren't solely the preserve of sciences and medical sciences. There are some social sciences and humanities as well, but the majority at this point are from the science areas.

It recognises a lot of good practice and it really affirms the importance of this route for venture creation to the UK economy as a means of generating new high-growth industry for the UK in the years to come. So that's fantastic. In a bit of technical detail, it endorses the University Spin-out Investment Terms Guide, which was prepared by a group of world-leading universities, including some from the United States and Europe, and a group of investors that set out a landing zone.

And most of Oxford's processes are already well within that. So it's really brilliant to see that affirmed as a good way to structure spinout guides. And there's calls for more proof of concept funding, which of course is always a really, really helpful step before you get to the point of forming a venture to help to de-risk that opportunity.

In short, there is loads of really positive stuff and some suggestions for some things we can do better as well, which I'm looking forward to working on.

### **Irene Tracey**

It's good to hear that, because part of the ambition was to try and see where we could share good practice and to celebrate, and I think we've been able to bust a few myths around how well we're doing – or not well, was the criticism – but actually to really put on the map just how successful British universities have been in this space. And then what further opportunities there are if we share that good practice.

In one of the media interviews I did, I was surprised to be asked 'what is a spinout?'

So, we probably should not assume that everybody listening knows what on earth we're talking about. So why don't we start with some definitions? Lilly, why don't you tell us your definition of what a spinout is, and then maybe, maybe I'll come back to you to say that, you know, what are some of the other ways that we can commercialise our activities.

### **Lilly Bussmann**

At a very basic level, a spinout is a company created around a piece of transformative research. In the case of OSE, that would be a spinout that's spun out from one of the STEM (science, technology, engineering and medicine) departments, so broadly covering Oxford University's Mathematical, Physical and Life Sciences (MPLS) and Medical Sciences divisions.

### **Irene Tracey**

So, some sort of intellectual property that we then realise that we could maybe commercialise and we create a company from. Maybe that's not the only thing that we do, though, when we commercialise our intellectual property.

### **Mairi Gibbs**

That's right, my definition would be 'formed on the basis of Oxford research or expertise', because sometimes the intellectual property is really quite intangible, but they can still be a great basis for a business that I also include in my definition that the University has a shareholding because, of course, companies are created to exploit good business opportunities all the time.

And the defining thing about whether something is a spinout company or not is actually whether the University has an interest in it.

In Oxford, we are regularly at the top of the league tables for numbers of ventures created in the UK. This year, we celebrated our 300th company formed. Half of those have been formed in the last eight years, which is really fantastic.

### **Irene Tracey**

More broadly, there are a whole variety of different routes for achieving knowledge exchange. It doesn't have to follow an entrepreneurial pathway, and we can maybe talk a bit more about that now. We didn't always spinout. I've been here my whole career, and we would often patent things and it was very nice. It gave you a warm feeling that you had something that was patentable, but we then did absolutely nothing with it. It just sat in a drawer.

So, Lilly, tell us what really enabled us as academics here in this University start to actually realise in a significant way the ability to commercialise some of the intellectual property, or those ideas that we thought could contribute to a company or could be licensed to a big company.

### **Lilly Bussmann**

I think to have a flourishing spinout ecosystem, you need three things: top-quality science, talent and capital. I think it's totally inarguable that Oxford always had fantastic science. It's now the eighth year running the world's best research university. But I think there was a real shortage of deep pools of capital that would finance these opportunities to scale.

In 2015, the University entered a very unique partnership with OSE to raise a dedicated pool of capital. Just over £860m now exclusively focused on investing, building and spending on companies from Oxford. That's seen a really tremendous uptake in activity.

### **Irene Tracey**

It was absolutely critical, and you can see from the graphs, when you look at the growth of the companies, as you say, the 300th company just last year, 20–25 now being spun out from the University and all started from that visionary investment and having that capital. So, how do we do more?

How do we grow it? Because I sense a great entrepreneurial thirst among undergraduates, graduates, our faculty to do more of this and to create the

sort of innovation ecosystem that I can see possible in the broad region of Oxfordshire. It requires more capital. It requires more skilled workforce, and it requires the ability to grow in terms of planning and infrastructure.

And although we've been focusing a lot on STEM, you know, one of the great strengths here too – I mean, you did PPE – we've got great humanities and social sciences and terrific creative arts across Britain as well. So, if we're going to create an innovation ecosystem that's for Britain, not just a copycat Silicon Valley, so something really special that also has social enterprise and more non-governmental organization type models...

Mairi, maybe you could give your thoughts about where you see the excitement around doing that, where you see some of the challenges and what it is we need to do in order to make sure that we can fulfil that vision?

### **Mairi Gibbs**

I agree. I think the fantastic thing about Oxford's innovation ecosystem is the concentration cluster of this extraordinary breadth across so many disciplines in Oxford University. But of course, we also have our research institutes down at Harwell and Culham and elsewhere around our region.

And so there are particular strengths in space, fusion energy, race automotive, incredible life sciences, and proximity to London, so those are some ingredients that help. But, you know, as Lilly said, you need people and you need the money to help those people to execute on a great business plan. And they've got to have space to be able to actually build a company. So we're thinking quite hard about all of those different aspects.

### **Irene Tracey**

As you say, those national labs: if you look at a 50-mile radius around Oxford, it's pretty impressive what's here. And I think if we could be a bit more strategic about what we're building and where, I do believe we can create something that would be unrivalled anywhere in the world.

You were both students, right? And you've stayed and you've come back into the ecosystem, which is great, but that's quite rare. More often than not, if you don't stay in the University, you tend to leave and go to London or go abroad. It would be great if we could hold on to more of the great talent that we educate and develop here.

By creating new types of jobs, I think that's another opportunity. I also see that this is a way that we can create more what I call 'porous careers' for

academics, where you could go a little bit more in and out of your private spinout company back into the public sector university, and have joint posts. There are many different ways that we can think a bit more creatively about how we can create interesting career structures once we've built this amazing ecosystem.

### **Mairi Gibbs**

Absolutely. And if we get it right, around the Oxford area, there should be this rich tapestry of tiny growing start-ups, big companies, and maybe huge corporates. It might be obvious to think about the people who can do the really clever coding for machine learning or the incredible life sciences and technical work.

But these businesses need managers, cleaners, plumbers, landscape architects, accountants, lawyers, everything that's needed. And so there's a really rich variety of roles that are available. And if we can increase that employment base, that surely is a good thing for the region.

### **Irene Tracey**

Absolutely. And for our schoolchildren as well, more interesting jobs, hopefully, for them to grow into.

So, Lilly, one of the things that struck us in the review, and I've observed it in thinking this vision for Oxfordshire, we need, as Mairi says, people with all those other skills. Are there enough of those people here? I mean we've just recruited a wonderful new CEO of OSE, Ed Bussey, and he's settling in superbly well, but getting great talent like that to help run our companies is not easy. So what do you see as the challenge there, and how can we how can we mitigate that and how can the University help get that workforce here if we are going to develop and grow these companies?

### **Lilly Bussmann**

I think at different levels of a career, it's going to be different solutions. I definitely saw in my cohort of people graduating from university, there was this kind of conveyor belt of the most ambitious people: they'd move straight out to Silicon Valley and build a company. I think we really need to focus on capturing that really ambitious early-career talent to give them an opportunity and a reason to stay.

The last two decades have been very much about software, and Silicon Valley has been a big paradigm for that. But if we look forward 10 to 20

years, I think the things that people get really excited and passionate about are things that Oxford's research base is really, really good at, which are physical things in the life sciences affecting human and planetary health. So I think that's what I would say for the younger generation.

In terms of the more established career person, whether that's on the commercial side or technical side, I think it's making sure that again, they can see that they're not losing out on a career opportunity by moving their family back to the UK or moving to Oxford, which has an incredibly high quality of life, really good educational opportunities for children, and is safe and green and only 50 minutes away from London.

### **Irene Tracey**

Well, those are great plugs! And I hope anybody listening out there from our alumni base is maybe encouraged and incentivised to return back to the mothership and to the ranch, and help contribute to this next phase of our evolution, because we really do need, I think, that sort of talent pool of the people that have got skillsets to grow the companies.

My experience is academics are good at generating intellectual property and sometimes they're great at the commercialisation, but generally they want to stay in the labs or they want to stay in the departments and develop the next set of ideas. So having those people who can pick up those companies and run with them, with the academics still involved, is going to be essential to business.

And that's where the country more generally and the government needs to think about what can we do to incentivise people to come into our ecosystem and do the scaling-up phase of a company.

We spoke a little about the spinout: you've got an idea, you patent it, you spinout a company, you're up and running, but then there's 'the Valley of Death', and then there's the sort of next phase.

Could you talk me through that period, Mairi? Can you talk about what the challenges are around getting through some of the tough times of scaling up?

### **Mairi Gibbs**

If you think about the journey that a business needs to take from that tiny little startup, this may be just a two or three people in the very early days with some seed capital.

We're very fortunate in Oxford with OSE, and the availability of that seed capital is more straightforward for us here than it is in some parts of the country. But as the business grows, it's going to need to develop whatever product it is that it's taking to market into something that looks like a prototype, into something that's tested with some early customers, then they've got to think about how they're going to make it, how they're going to scale up.

Typically a spinout company would go through a series of investment rounds, seed and then Series A, Series B, then growth capital. And these are sort of steadily larger and larger amounts of money. And what we find in this country, unfortunately, is that sometimes the access to that scaling capital is not as easy as it might be. And so some businesses do fail at that stage. So some of the reforms that the government is working on hopefully will help to plug that gap.

### **Irene Tracey**

It's really striking to me. I've been to the West Coast several times just this year, and the availability of both talent to grow the companies – people with real experience of running businesses – and the capital opportunities are just enormous.

So we really do need to address this in this country if we want to realise what is an incredible pipeline of intellectual property and ideas. Lilly, anything to add about that sort of scaling-up phase and the Valley of Death?

### **Lilly Bussmann**

I think a big part of it is seeing other people doing it before you. I think Oxford Nanopore, being one of the earlier spinouts to come out of Oxford, now being listed on the London Stock Exchange, being worth several billion pounds is an incredibly big thing for people looking ahead, having maybe just raised a seed or Series A and thinking to themselves, 'you know what, we're going to take it all the way. It's not just us being crazy, but we have real evidence that we can build British champions.'

### **Irene Tracey**

You're so right. Having that visibility and those role models, we just need them to be around because they are inspiring. I know you've always been very active in training and getting the message out there and helping in that sort of cultural change. And I know particularly I've been impressed by what



you've done around the fact that we don't have good diversity in our founders.

To me, it feels a little bit like where we were in academia 20 years ago and that we don't have enough women founders. And when we do, they don't have enough investment given them. They tend to be more in the social enterprise side of things, etc... Mairi, you could tell us a little bit about you have been doing to help address that this term?

### **Mairi Gibbs**

The University has launched its Enspire Hub for entrepreneurship – that's 'Inspire' with an E – and that's a fantastic programme of training events to get inspiration, build a business, to get those fundamental skills of entrepreneurship up and running. There are 'pitch at the pub' sessions and a whole manner of different things. Anybody who's interested in dipping a toe in the water, I would really encourage them to check that out, as that's a means of co-ordinating and aligning all of the different support activities that there are across the University, and OUI is really delighted and proud to be a part of that.

Alongside of that, we have the IDEA (Increasing Diversity in Enterprising Activities) programme, which is championed by Professor Kylie Vincent from Chemistry, and she's running some really interesting programmes to support female entrepreneurs as they start their journey.

We've also been doing some work to try and actually understand our data. How many women do we have in our founders? Do we see a representative proportion of women making invention disclosures? Do they have a different experience as they go through that commercialisation journey? We couldn't answer any of those questions at all. We're starting to be able to, and that's a really important part of it, because once we understand what the situation is, then we can start to design some interventions and maybe change the way that we're describing these activities to try and make them more accessible.

### **Irene Tracey**

Absolutely. I'm really 'enspired', forgive the pun, for what you're doing there. As you say, you can't mitigate the problems unless you know what they are, and have the humility to know that we're not getting it fully right. Lilly, what's been your experience? Does that match your experience in

terms of the lack of female founders coming forward, and their aspirations around what's possible for them?

### **Lilly Bussmann**

Yeah, I think we have definitely seen that. We want to make a real effort making sure that our shortlists are gender-balanced and balanced in all other criteria of diversity. It is incredibly hard just to start with the world as it is. Again, it points towards making the intervention as early as is possible. So one initiative that I think is quite worth mentioning is the Oxford Seed Fund, which is a student-led venture fund hosted out of the Saïd Business School, which we've supported with £2.5m to get students to work with other students on ideas.

That's both to encourage them to think about going onto entrepreneurship, but is also a low-stakes way to be a student who might not have thought of themselves as a future venture capitalist to play around with it and see other people like them engaging with it now.

### **Irene Tracey**

That's fantastic. It's great. And I know that you're funding PhD studentships as well, so it's really great, the investment back in. I'm glad you mentioned the Business School, because I think there's an opportunity to work across our university sector more with our business schools, which are, of course, training the next generation of business leaders, and to think about how we can maybe hold on to some of them in our local ecosystems to help contribute to some of the growth of these companies.

We talk a lot about the excitement of it, which I think we all share and what the benefits are both to the inventor and the founder, and then to the British economy and obviously to the world through what we're creating here.

But what are the benefits back to the people here – our staff and students?

### **Mairi Gibbs**

It's really important that there are benefits that flow back to all of the individuals that were involved and to the department and the broader institution, because that's what helps to keep the wheels greased for future wonderful things to come out.

But it's really important to remember that the financial returns, fantastic though they are, can't be relied upon every time. They're likely to be very

long term and quite lumpy, by which I mean there will be nothing for many years and then a big lump all at once.

When we do make a financial reward, then the flows are laid out through the University's regulations so that all of the individuals that helped to contribute to the intellectual property are rewarded.

The department has a share. The central University has a share, and that central share flows into the Strategic Research Fund so that it can go back around in this wonderful flywheel mechanism to seed new fantastic research.

### **Irene Tracey**

Lilly, let's hear the numbers about what the return on investment has been.

### **Lilly Bussmann**

In terms of Oxford's direct stakes and indirect stakes through OSE received, the total value of those holdings to the University is about £160m between 2015 and today. It's worth saying that we actually think that the maturity for these companies is going to be seen 10 to 12 years out from that, so hopefully that's going to grow a fair bit more.

Coming back to Oxford Nanopore, which obviously is older than OSE, I think today that they are one of the biggest funders of PhDs in the Chemistry department. So you can see that sponsorship coming back.

OSE is sponsoring 80 PhDs over the next five years. And then to just state the obvious, I think, you know, it's an incredibly powerful way for researchers to have impact. I think just looking at the Oxford vaccine, which I think was in the end was 3bn people having the Oxford vaccine.

I didn't think any of us were sitting here a few years back thinking that there would be one invention coming from Oxford, touching so many lives around the globe.

### **Irene Tracey**

I think that's a really important comment to make. We're focusing a bit on the commercial side because of the report, but for me it's about the impact we make on the world and for the betterment of society. As you say, we need the commercial activity because that helps provide the oil to keep the engine running.

And it's very clear that that is immediately impactful back on the University and seeding and developing more. But it's just the amazing way those companies contribute in all sorts of ways to health and wealth creation and job opportunities. And that's got to be a great thing, hasn't it, for us?

### **Mairi Gibbs**

We did a survey of all spinouts in preparation for our impact reporting this year.

Of the spinouts that responded to our survey, 90% of them are working directly towards at least one of the United Nations Sustainable Development Goals.

### **Irene Tracey**

That's a fantastic point. Mairi, you mentioned about licensing. I just want to make sure that our listeners are clear about the sort of two main routes. We've spoken obviously a lot about spinouts, but let's define licensing and where those opportunities are.

### **Mairi Gibbs**

Licensing is where you give the rights to use a piece of intellectual property to a company that's already out there existing in the world. It's sort of like hiring a car. The owner – the University in this case – retains ownership, but the person who's hiring it gets to use it. And there's some conditions associated with it, and some money changes hands.

And that was the mechanism for the university's partnership with AstraZeneca for the COVID vaccine that we've spoken about. But we do an awful lot of licensing. We have a huge portfolio of health outcomes questionnaires, for example, that are used by clinicians to monitor the stage of progression and prognosis for your dodgy knee or dodgy hip, for example.

And that's a pure licensing model based on copyright. So licensing is a really strong activity for us. There's a lot of noise about spinning out, but actually that's only one pathway out of many.

We also do a lot of consultancy work: there were 650 different contracts last year. Sometimes that's run through the department, for example, someone in the Humanities might be advising film companies on the history of art to go into something about Renaissance masterpieces.

So I do believe that it's possible for any researcher who wants to start doing that knowledge exchange to find a route that works for them.

### **Irene Tracey**

'Knowledge exchange' is a really nice phrase, isn't it? It's an umbrella term to describe the different ways by which we can make impact through our discoveries.

I'm going to end, Mairi, by asking you what your favourite example is. You've seen a lot of companies be created. Give us a couple of examples of the ones that, you know, have stood out for you.

### **Mairi Gibbs**

The thing that I really, really like and gives me more job satisfaction than anything else is when I'm going about my ordinary Oxfordshire life and see real tangible evidence of one of our companies actually doing something tangible in the world.

For example, I saw somebody in Woodstock town last week with YASA Motors across the back of their jacket. YASA was a spinout company from 2008. It got bought by Mercedes-Benz in 2021, and they manufacture fabulous electric motors. They're going into the Mercedes all-electric powertrain.

That was just a person probably walking to the shops or the pub or something. I don't know what he was doing. Maybe he was going to pick up his kids.

Maybe this thing we do can seem a bit esoteric, but actually, if you open your eyes around our area, there's all sorts of hard evidence of these things really happening.

### **Irene Tracey**

That's just wonderful to hear. I mean, that's how we can really make our presence be felt in a very positive way, I think, for our city and community, which I'm really keen that we do as a University. Lilly, what's your stand out?

### **Lilly Bussmann**

Well, I definitely can't be seen to have favourites!

### **Irene Tracey**

I know, but come on!

**Lilly Bussmann**

Well, to pick a very recent example that is very exciting: Caristo recently made the front page of The Times broadsheet paper. It's a prediction tool for heart disease, which is now being implemented across three very big NHS sites, including the Oxford University one, so getting into real patients.

**Irene Tracey**

Brilliant. Two very different examples.

Well, I can't thank you enough, Mairi and Lilly, for joining me today. I'm excited about the journey that we're on together and I'll do everything I can as Vice-Chancellor to support our collective ambitions around this space. And I think we've got a really good and exciting journey ahead of us. And for the listeners out there, thank you for your time.

I look forward to joining you next term for another exciting installation of Fire and Wire. But, for now, I will sign off.

Mairi and Lilly, thank you once again for joining me. And to everybody out there, have a wonderful festive break and I look forward to seeing you in 2024.