Insider SPARK – where education meets business

Good afternoon, ladies and gentlemen.

It's a pleasure to be here, and I would like to thank Andy Coyne and Midlands Business Insider, the premier regional business magazine, for this opportunity.

When I was invited to speak at this event, I had to accept.

This wasn’t just because it’s an important topic – though it is.

It’s because this is a “Spark day”, and there’s nothing I like better than sending a few sparks flying.

It makes life a little more interesting.

In business and in education, we need some sparks.

Whatever the fourth quarter growth figures show, we have an economy five percent smaller than at the start of the recession and many businesses still find it hard to secure loans.

The Chinese, Indian and developing economies are showing strong growth, which means that companies based in these markets will expand fast, with the funds to innovate and develop new products.

This means that British-based companies desperately need to innovate to keep up.

At the same time universities are facing major reductions in their budgets, more than £900 million over the next three years.
The Government has said that teaching and research funding will still grow between 2009/10 and 2010/11. But there’s no doubt that the prospect of overall reductions has made the higher education sector nervous. They worry that this will hamper the development of new ideas.

So we find ourselves in a world where universities face restraint on state funding and businesses find it difficult to get funding for future growth from a smaller financial sector.

This means that collaboration in research and development between education and business is no longer a “nice to have” bonus to a prosperous economy, but essential for the long term success of the country.

The match between British business and academic research seems natural.

The UK HE sector is one of Britain’s global strengths.

We are third in the world in the number of scientific papers produced\(^1\), and the UK is second only to the US in the number of citations we generate in academic journals.

As we see from awards like the Nobel Prize, British research is world leading.

Yet we often don’t take advantage of the opportunities this strength gives us.

Last year’s Nobel Prize for Physics was awarded to Charles Kao, who was working in London when he developed the technological basis for much of today’s fibre optic communication infrastructure.

Yet though he initially worked for a British company on research funded by the British government, he ended up working for ITT in the US and finished his academic career at the Chinese University of Hong Kong.

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\(^1\) DIUS “Innovation Nation white paper background analysis” P8
It is this gap between research and commercial exploitation that we need to address.

I call it the impact gap.

To close that gap we need both Universities and Business to change.

As the old saying goes “It takes two to tango”.

So how do we get both professors and businessmen on the dance floor?

First, universities need to be much more outwardly focussed.

Sometimes university leaders sound as if real world commercial impact is beneath them.

We often hear that blue sky research is what really matters.

Yet when budgets are threatened, it is the *impact* of universities on the rest of society that is the first line of defence for university pressure groups.

If university funding is reduced the Russell Group has warned of “a devastating effect not only on students and staff, but also on Britain's international competitiveness, economy and ability to recover from recession”.

That sounds like an impact assessment to me.

I agree with the Russell group’s analysis – but I also know the whole country is facing severe public spending reductions whatever political party wins the coming General Election.

So ministers will have to tighten belts in HE too.
So it is more important than ever that alternative sources of funding are explored.

Key to this will be universities adopting a new approach to industry and applied science. We need to help researchers embrace applied science by rewarding that change.

The Technology Strategy Board is the agency responsible for applied science research.

It works by using state funding to attract research investment from industry to fund applied science projects such as technology demonstrators, incubators and low-carbon research.

To achieve our economic goals we need innovation in these areas. We should be doubling, trebling, even quadrupling the money available to attract private funding.

Growth requires world class products and processes. We have a world class research infrastructure. We must make the most of it.

The Technology Strategy Board has a budget of £1 billion for the next three years for all applied research. To make a real contribution, we should be investing at least £1 billion each year.

Yet even if the funding is in place, how do we bolster the links between universities and industry?

Today the connections are there but nowhere near strong enough.
Despite the presence of outstanding research in our universities, only one per cent of British businesses say universities are of “high importance” as a source of innovation.\(^2\)

This has serious implications for our future. When I served as a young apprentice at Lucas Industries, the Birmingham group was a world leader.

Yet a lack of investment in innovation meant Lucas was very quickly overtaken by emerging companies from Germany and Japan. They are now global giants. Lucas no longer exists.

So just like universities themselves, British business needs to change.

Business leaders need to recognise the value that research adds to their business.

Managers need to understand that their future growth can come only through the development and exploitation of new ideas.

We need to make sure that managers and researchers are given the chance to research, to learn and expand their horizons as part of their career growth.

We need to offer reward packages for innovators in engineering and technology that compete with those available for financiers.

Some successful sectors of the UK economy recognise this already – like the British pharmaceutical sector.

Sir James Black's work on Beta blockers made a major contribution to British physical and economic health. Why? Because we had both a strong research

\(^2\) Innovation Nation, background analysis P10
oriented pharmaceutical industry and – in the National Health Service – a ready market for their products.

Yet the equally innovative work of George Gray and Cyril Hilsum, the pioneers of Liquid Crystal Displays, found a market not in Britain but in the companies of the Far East.

The difference between the two innovations lies as much with the approach and vision of British business leaders as it does with real world interests of university leaders.

I believe we need to spark a cultural change in the attitude of small and medium sized businesses to applied research.

We need to encourage a generation of “research entrepreneurs”

The Government’s doubling of science research funding is beginning to encourage such entrepreneurship. In 2008 Britain had 923 ‘spin out’ companies which had been in business for more than three years.

This is better than the past, but nowhere near enough. We need tens of thousands of research-based businesses in Britain, not just under one thousand.

This will require real focus and energy. To get that we need to increase the funding available for applied research and we need to make funding simpler to access.

Next, we must make it easier for universities and companies to work together to create wealth through technology.

We are a nation of committees, boards and councils. The problem with committees is they can move too slowly, and in operating by consensus, end up endorsing the lowest common denominator.
In truth, we know that some applied research, just like all research, will fail. But we need that risk of failure if we are to have any chance of success.

The danger is that impact assessment turns into a box ticking exercise, not a measure of the potential to create jobs, attract private investment or develop new products and processes.

To spark a cultural change in research we need a well funded system and a grant process that is straightforward, not a more complex version of a Kafka novel.

Late last year the Government unveiled a new framework for the future of higher education, setting out the important role universities will play in securing the country’s economic recovery and long term prosperity.

Key measures set out in the framework include giving greater priority to programmes that meet the need for high level skills and allowing business to be more engaged in the funding and design of programmes, sponsorship of students, and work placements.

The paper argues that we should be sustaining our world class research base by continuing to focus on excellence, concentrating research funding where needed to secure critical mass and impact.

These are noble goals, but we need a big shift in culture to make them happen.

Despite some progress, the sharing of innovation and success between academia and industry is too often the exception, when it needs to be the rule.

Changing that is going to take time and effort.
At Warwick Manufacturing Group, we started in 1980. Since then more than 24,000 individuals have gone through, with over 6,000 Masters degrees awarded and the close involvement of 500 UK companies.

The industrial partnerships created through the programmes have enabled the Group to develop into a major industry focussed research centre.

Last year we were named one of 21 winners of the Queen’s Anniversary Prizes for Higher and Further Education. A wonderful recognition of our record of outstanding excellence.

Our training programmes, like the Premium Automotive Skills programme, managers’ training for Network Rail and training for senior managers in Chinese state-owned enterprises have had significant impact at UK regional, national and international levels.

We have teaching and research centres in Hong Kong, India, Singapore, Malaysia and Thailand and provide expert advice to many overseas governments and companies.

This year WMG plans a programme in Supply Engineering and Logistics, targeted at the US Air Force and aerospace companies in Oklahoma. It will be delivered in partnership with Oklahoma State University at the planned Oklahoma Aerospace Institute.

But I look at this and I think there is so much more we need to do.

This is why we are now developing applied research in some surprising fields.

At WMG’s Digital Lab researchers are using digital technologies to train surgeons via virtual surgery, and to create software that will help combat child obesity.
We are working with new technology and media companies to develop “real virtuality” – with applications ranging from serious gaming to architecture and low cost house building.

These research programmes are exciting, and the businesses involved in them believe they will grow and expand.

Yet we at WMG still feel like the exception, when we should be the norm.

I have a passionate faith in the skills and expertise of the workers, researchers and scientists in Britain’s universities and businesses.

I have seen, again and again the talent, the drive and the vision of companies and academics here in the West Midlands.

If we are to grow as an economy – and as a society- we need to make it an urgent priority to bring the two together, and let the sparks fly.

Some will burn brightly, others will fizzle out.

But if we focus our funding and energy on encouraging collaboration and helping managers and smaller businesses to invest in applied research, we will all benefit from what business and academia will forge together.

Time to light the fuse!

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(words 1,917)