



# TALKING TECHNOLOGY STIMULATING SCIENCE

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\*pic may change

## IT'S TIME TO PRY OPEN THE PUBLIC PURSE

If necessity is the mother of invention, then funding has to be the father, but is the UK putting enough cash into scientific research - especially in the regions?

According to David Clark, director for research and innovation at the Engineering and Physical Sciences Research Council (EPSRC), the public purse has yet to strengthen investment in critical subject areas. "The UK has a proud tradition of funding research, and because of that it has become a centre of excellence across a wide range of scientific fields - but it still needs to improve funding in mainstream and chemical engineering where the quality of the work is high, but the quantity is lacking."

Whilst high-tech industries naturally underpin research into improving and refining their technologies, the element of commercial risk is a natural deterrent to move too far away from the known and familiar. However, the difficulty in achieving funding for 'blue sky' research is, David Clark believes, another opportunity for the government to get its wallet out.

But for Geoffrey Piper, chief executive of the North West Business Leadership Team, funds are being wasted, not because of the nature of the research, but because of the geographical location where it is being undertaken.

"Despite the Northwest having excellent facilities, much of the research money for healthcare and medical science research, for example, is being poured into the South East," he said. "It makes absolutely no sense at all to do this. In what is the wealthiest part of the country, housing is costly and therefore scientists' wage costs are high. In the end it simply means that the money for research doesn't go as far as it could do if it were located here."

As an example Geoffrey Piper cites the Wolfson Molecular Imaging Centre, part of Manchester's Christie Hospital and currently involved in world-class research into cancer treatment. Had the same facility been located in the South East, the set-up and running costs would have been 400 per cent higher. The debacle over Daresbury further endorses the discrepancy.

"This is taxpayers' money that is being spent needlessly. There could be more research across the board if more of it were located outside the South East," he added.

And this may be about to happen. At the end of July, the Northwest Development Agency (NWDA) applauded a House of Lords Science and Technology Committee report which issued a call to government to balance their expenditure on science more fairly across the UK, which could see an extra £100 million a year of government investment in research and development within the Northwest. If adopted, of course.

The report highlights the positive impact scientific development and innovation can have on the economies of the English regions and the key role Regional Development Agencies have to play.

Bryan Gray, chairman of the Northwest Development Agency, said: "I was pleased to note that, following a visit to the region by the House of Lords Science and Technology Committee, several initiatives already in place in England's Northwest have been taken forward in the report. The NWDA is fully committed to the science agenda and will continue to invest in and exploit all opportunities within the sector for the further economic development of the region."

In fact, the NWDA itself intends to invest £130 million in major science-based projects over the next three years, including the National BioManufacturing Facility, the NW Genetics Knowledge Park, InfoLab 21, the National Microsystems Packaging Centre, and a Centre for Environmental Excellence Research and Teaching.

## DEVELOPING SKILLS AND SEXING UP THE SCIENCES

Career-wise, the sky's the limit for engineers - unless, of course, you're an aeronautical engineer, in which case you should aim a bit higher.

But the proliferation of 'soft' subjects at our universities - marketing, business, media studies and the like are proving just too tempting for our young people, leaving the UK facing a serious deficit in science and technology graduates. So how do we sex up the sciences?

Dr Michael Sanderson, chief executive of the Sector Skills Council for Science, Engineering and Technology (SEMTA), believes that environmental challenges could be one way to attract young people towards the tougher subjects.

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Ruth Turner, NESTA Talent Scout for the Northwest



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After all, it's one thing to say you want to 'help' the environment, but having the skills and knowledge to do so is definitely the better option.

"Science and engineering have a crucial role to play in solving the environmental problems of the modern world. It is our job to let young people know that there are countless exciting opportunities in our field - whether it is bringing clean water to the Third World, cleaning up the environment in the New World or exploring outer space - our sector offers a range of challenges like no other," he said.

And SEMTA is working hard to get students to see these possibilities with a range of Insight courses encouraging sixth formers to experience engineering and science at first hand.

"Last summer, we flew a party of female sixth formers down to the Alps to look at the magnificent engineering that went into making the Tignes Dam there. Each year, we fly dozens of students to spend a week at a foreign university in France, Finland and Spain to give them some idea of the international scope of science and engineering."

Another of the Sector Skills Councils, Lantra - which works with the environmental and land-based sectors - feels that getting to children young enough is paramount in the struggle to turn them on to technology. Marj Walsh, careers and recruitment development consultant for the organisation, said: "We need to get to children at primary school and demonstrate that the skills needed to actively help the environment are science and technology-based. There is a huge range of career options within the environmental conservation sector. We need to show them that a career in science doesn't mean staring down a microscope in a dusty lab all day but that they can actually choose from a wide range of careers."

For the organization charged as champion of the Northwest's environmental technology sector, Envirolink, the skills challenge is very real and very pressing. Having just completed a strategy for skills and learning, Jackie Seddon, Envirolink's chief executive, is keen to turn young people onto technology and plug some serious gaps in the region's skills base.

"Our sector is set to grow dramatically in the future but that growth could be seriously compromised if we don't have a decent supply of science and

engineering graduates emerging from our universities," she said.

"Renewable energy is a superb example. We're about to see a series of major offshore wind farms developed along our coast which represents a huge opportunity for businesses in manufacture, construction and servicing. To grasp that opportunity and ensure that we don't simply end up importing products and services from outside the region, we are going to have to pull our finger out and start expanding our skills base dramatically."

## WANTED: ECO-ENTREPRENEURS

Inventors and investors need each other like the aristocracy needs the nouveau riche - it's a survival thing. So beefing up our environmental innovation is a sure-fire, long-term winner.

And that, according to Colin Hughes, can be a problem. "The Northwest is brimming with ideas, energy and effort on the environmental innovation front, but the reluctance of big investors to put serious money into environmental technologies for the long-term can make it difficult for some ideas to be taken through to commercial exploitation," said the deputy director of the University of Manchester's Environment Centre (UMEC), which runs the Master of Enterprise in Environmental Innovation programme in partnership with the Manchester Science Enterprise Centre.

From traffic counters which distinguish between a bus and a bicycle to a method of super-cleansing surgical instruments, the Northwest is churning out inventions by the cartload, and in the world of the eco-entrepreneur, there are a number of ways to attract seedcorn funding for great ideas. The government's SMART grants and the National Endowment for Science and Technology (NESTA) are just two routes to get start-up money. But, according to Colin Hughes, "once you've passed the proof of concept stage and develop commercially viable capacity", the task of attracting the serious money becomes much more difficult.

Ruth Turner is the Northwest talent scout for NESTA and she agrees that large sums are hard to come by but adds that it is also difficult for people to get 'pre-seedcorn' funds.

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Colin Hughes, University of Manchester Environment Centre

“Seedcorn money is achievable because the idea has been demonstrated and proven to have a commercial future, but sometimes a much smaller amount of money is needed by people who simply have a concept to test and need to do exploratory research,” she said.

“It isn’t just inventors who have ideas for ways of making our world a better place. We all at some point have an idea which would improve one aspect of our lives and it is unlocking these and taking them out of people’s heads and into development which is key to really making progress.”

Identifying this aspect of the innovation process has led NESTA to consider a National Ideas Bank - a great idea in itself - which would bring together inventors, manufacturers, investors and those members of the public who simply have an idea they think might work.

Added Ruth Turner: “It’s a mistake to think that inventors are always interested in actually manufacturing their idea, often they just want to hand the design over and get on with inventing something else. It’s also true to say that normal people may want to simply tell someone about their idea and let them do the rest. Either way, bringing all the parties together ensures that something happens.”

Another crucial stage in the process is simply getting advice about how to move forward. Many would-be inventors have discovered to their cost that

commerce is no respecter of intellectual property and whilst the idea may have been realised, the profits have gone elsewhere. In order to help people get through the confusing early stages, NESTA has developed an Inventors Handbook which can be downloaded from their website to guide the inexperienced through the tricky bits.

But is there enough incentive for inventors to turn their talents towards helping the environment? Both Ruth Turner and Colin Hughes agree that there is and, combined with environmentally-friendly changes in government legislation, it looks as though the most profitable inventions of the future will be those which pay more than lip service to the environment and sustainability.

“If you can invent something which has real sustainable benefits, then it’s inevitable that you will also make money. It’s no longer a choice between making money or being environmentally-friendly: the two go hand in hand,” said Ruth Turner.

## **FOSTERING FAITH IN SUSTAINABLE SCIENCE**

The scientific establishment has worked hard to increase public awareness of its role in society ever since the establishment of the Royal Institute in 1799.

Two centuries later, and in the wake of BSE, cloning and GM controversies, that awareness is certainly high but perhaps for the wrong reasons. Have these occurrences permanently dented science's hard won reputation and could we do more to promote better public understanding of science's beneficial side?

Chris Major from AstraZeneca, which employs around 5000 scientists in the UK, believes that the key to promoting a better public understanding of science lies not in highlighting its beneficial aspects, but rather ensuring its limitations are understood.

"The role of science within government policy-making is something we have definitely not got right," he said. "There is a fundamental difference between scientists and politicians - namely that the former deal in probabilities and the latter look for guarantees. This invariably causes misinterpretation and eventually misrepresentation."

The Office of Science & Technology (OST) has created a dedicated team to promote public engagement with science, engineering and technology, and, as well as administering grants and financial support for scientific bodies, is tasked with informing policy-making at government level.

On the side of industry, AstraZeneca houses 40 per cent of its research and development function in the UK (much of it in the Northwest) and has a vested interest in ensuring that public awareness and acceptance of science is encouraged. As well as sponsoring bursary programmes at 20 UK universities, they have established the £20m AstraZeneca Scientific Teaching Trust aimed at exciting the scientific interest of primary school children. For older secondary school pupils, the Inspiring Science project aims to promote science within 2000 secondary schools nationwide.

Chris Major added: "In the mid to long- term, the government and industry are doing a lot to promote science positively in terms of greater resourcing and a wide range of programmes to raise awareness. At the same time, science and technological advancements are becoming newsworthy and achieving more coverage in the media. But if the role of science within policy-making isn't made clear, the issue of public trust and science's reputation becomes a difficult one."













