

## Economic growth will come from Europe's research universities

*Professor Sir Leszek Borysiewicz is Vice-Chancellor of the University of Cambridge, and previously head of the UK's Medical Research Council. This is a summary of the keynote speech he will give at the LERU 10<sup>th</sup> Anniversary conference in Barcelona on 10 May 2012.\**

---

Economic growth is the priority of every European government, and it can't come soon enough. How can universities help?

Europe's research universities are already making a huge economic contribution: that much is obvious. We educate the future workforce, we perform research which governments, business and industry commission through research contracts, and we make discoveries and inventions which, formalised in recent years as 'technology transfer', are put directly to work by the private sector to generate economic return.

An example from my university: in 1960, a pair of Cambridge graduates formed a company called Cambridge Consultants, starting the development of a cluster of high-tech companies around the University. This was later described as 'the Cambridge Phenomenon': the process by which entrepreneurial scientists created companies to take advantage of the proximity to a great research university - and, as the cluster grew, to other companies doing similar things. Around the city we now have over 1,400 high-tech and bio-tech companies, from tiny recent 'spin-outs' from university laboratories to arms of multinational companies like Microsoft. Eleven companies which started in the Cambridge cluster are now valued at over 1 billion euro - including Autonomy whose business software is in use in every industry, and ARM, whose microchips are in your mobile phone, your car and your TV.

What is less obvious - indeed counter-intuitive - is that universities' contribution to the economy is so effective precisely because it is not our primary objective. Economic productivity is a by-product of the teaching and research that we perform for other reasons. If it were turned into a primary objective - if universities became the Research and Development branch of Big Industry - then our distinctive contribution would be lost. The 'Cambridge Phenomenon' was unplanned, and in many ways unexpected: it is hard to imagine that it would have been more successful if the University had deliberately set out to create that economic effect.

One reason for this is that the discoveries that make the biggest contribution economically tend to result from blue-skies, fundamental research, not applied, 'near-market' research. If a pharmaceutical company sets universities the task of improving the efficiency of a particular drug, for example, then the result will be economically and societally useful, but limited and maybe more effectively done within the company. However, a more fundamental question such as identifying a new target molecule is far better sited in a large multidisciplinary research intensive University. In such a circumstance, a university researcher primarily sets out, from curiosity, to discover how a fundamental biological process works, and the results can be unlimited - and transformative. This is what Francis Crick and James Watson did in Cambridge's Cavendish Laboratories in 1952: their discovery of the structure of DNA has had an effect on all our lives (and, as an example of economic benefit as a by-product, has generated uncountable billions of euro).

The two examples are of course connected: today's pharmaceutical research relies on yesterday's 'blue skies' research. Although the pipeline from one to the other is long (studies in some fields have suggested as long as 17 years) it is evident that the pipeline must not be broken - the basic research we do now will be applied by our successors in the years to come. We must not leave the cupboard bare for them.

George Porter - a former President of the Royal Society, the UK's science academy - went further, insisting that fundamental research and applied research are at heart the same thing: "there are two types of research: applied, and not-yet-applied".

Europe is fortunate to have strong, research-intensive universities which can step up to meet these challenges. Many of them are members of the League of European Research Universities (LERU) which is asking, at its 10th Anniversary Conference this year, what the research university of the future will look like. It is a timely question, since the European Union is completing the design of its next research funding framework, Horizon 2020 - a programme that will see more than 80 billion euro over 7 years directed at research and innovation in Europe. These large sums have the ability to shape how Europe's universities develop.

Should our universities focus only on fundamental, blue-skies research, and leave 'applied' research and innovation to research institutes, and private-sector R&D labs? The example of the Cambridge Phenomenon argues strongly against this: what the University of Cambridge can offer to the companies in the cluster is access to an entire spectrum of research from fundamental to applied, with the support services (technology transfer offices, science parks and incubators, seed funding) that go with it. Separating "applied" from "not-yet-applied" would certainly not be wise, and may not even be possible.

It is important, then, that universities are the location for research of all kinds - not least because universities are the last institutions able to integrate knowledge from many different sources and many different disciplines. Universities can identify interesting developments in unexpected places and combine them to produce practical solutions to big problems. We can do this because of our academic breadth, because we are autonomous, and because we give freedom to our individual researchers to follow promising scents. Although our physicists and biotechnologists might invent a new gadget with the potential for financial profit, our arts and humanities faculties - sociologists, economists, lawyers - can transform that potential into sustainable socio-economic benefit. As integrators, we can match research funding to societal problems.

In designing Horizon2020, then, the EU should recognise that it is university research, both applied and "not yet applied", that produces the sustainable, long-term growth that Europe desperately needs.

It is worth asking why universities want these onerous responsibilities. The answer lies in our mission: to serve society. If ever there was a time when academia was in contrast to the 'real world', that time is surely over. Serving society is at the core of what we do. By pursuing research in all disciplines and at all points in the spectrum, from the most direct form of applied innovation to the most fundamental inquiry into the way the world works, Europe's universities hold the key to growth in our economies - and our societies.

---

\*This statement is fully supported by the rectors of the League of European Research Universities:

Dymph van den Boom (Universiteit van Amsterdam), Dídac Ramírez i Sarrió (Universitat de Barcelona), Timothy O'Shea (University of Edinburgh), Hans-Jochen Schiewer (Albert-Ludwigs-Universität Freiburg), Jean-Dominique Vassalli (Université de Genève), Bernhard Eitel (Ruprecht-Karls-Universität Heidelberg), Thomas Wilhelmsson (University of Helsinki), Paul F. van der Heijden (Universiteit Leiden), Mark Waer (Katholieke Universiteit Leuven), Keith O'Nions (Imperial College London), Malcolm Grant (University College London), Per Eriksson (Lunds universitet), Enrico Decleva (Università degli Studi di Milano), Bernd Huber (Ludwig-Maximilians-Universität München), Andrew Hamilton (University of Oxford), Jean Chambaz (Université Pierre et Marie Curie), Guy Couarraze (Université Paris-Sud), Alain Beretz (Université de Strasbourg), Bert Van der Zwaan (Universiteit Utrecht), Andreas Fischer (Universität Zürich)

END

-----

#### About LERU

The League of European Research Universities (LERU) is an association of 21 leading research-intensive universities that share the values of high-quality teaching within an environment of internationally competitive research. Founded in 2002, LERU advocates education through an awareness of the frontiers of human understanding; the creation of new knowledge through basic research, which is the ultimate source of innovation in society; and the promotion of research across a broad front in partnership with industry and society at large.

This statement and all other LERU papers are freely available online at <http://www.leru.org>.

For questions about the statement or about LERU or to arrange an interview with a LERU representative in your country, contact Mr. Bart Valkenaers, Communications Officer, tel BE +32 16 32 09 39, [bart.valkenaers@leru.org](mailto:bart.valkenaers@leru.org).