Science, Research and Innovation Funding Priorities

The British Academy welcomes the opportunity to respond to the invitation from Sir John O’Reilly (Director General, Knowledge and Innovation) for advice on key priorities and challenges for the science and research budget. Our advice set out in the present document develops the common concerns that we emphasised both in the recent joint statement from all four national academies (Academy of Medical Sciences, British Academy, Royal Academy of Engineering, and Royal Society) of 22 April, and in the subsequent joint letter from all four academies of 17 May to Sir John O’Reilly. We wholeheartedly support these joint documents, including their central proposition that the spending decisions for financial year 2015-16 provide an important opportunity to strengthen the role of research. The advice below serves to provide further detail and illustration, with a particular focus on the circumstances of UK humanities and social science research, and on how these areas of research contribute to the UK’s ability to maintain its comparative advantages and respond to national and international challenges.

Summary

The British Academy believes that the prioritisation of science and research funding in FY 15/16 should be based on the following principles:

- **Focus on quality.** A focus on excellence must be the primary consideration when investing in research. The high international reputation of UK research, including in the social sciences and humanities, has owed much to its traditionally strong emphasis on quality within a framework of competitive bidding for research funds. Only excellent research will ensure the UK maintains its place in the world, and impact must always derive from a starting point of excellence.

- **Develop a long-term framework to sustain a healthy research base.** Excellent research is a long-term undertaking, which depends on stable funding. It is therefore essential that the UK develops a sustained and sustainable framework, which will enable universities to nurture and retain leading researchers from this country and also attract the best from elsewhere in the world. For FY 2015/16, the aim should be to roll forward existing priorities, but with proper allowance for the effects of inflation on research.

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1 Joint Statement (from the Academy of Medical Sciences, British Academy, Royal Academy of Engineering and the Royal Society), (April 2013), Fuelling Prosperity: Research and Innovation as drivers of UK growth and competitiveness Available from: http://www.britac.ac.uk/news/news.cfm/newsid/911
2 Joint letter (from the Academy of Medical Sciences, British Academy, Royal Academy of Engineering and the Royal Society) to Sir John O’Reilly, Director-General for Knowledge and Innovation, on Science, Research and Innovation Funding Priorities (May 2013), available from www.britac.ac.uk
funding in recent years, in the expectation that there will then be a more fundamental review for the next four-year period from 2016. Given the nature of long-term funding for research, it is unwise to even attempt to “turn the tap off and on” over a 12 month cycle.

- **Maintain a broad research base.** The breadth of the UK research base is one of its great strengths and the source of its international competitiveness and attractiveness. As so many of the challenges facing society today and in the future require expertise drawn from across the humanities, social sciences and sciences, continued support for multidisciplinary research (which is underpinned by a broad research base) remains essential.

**Comments on the four key priorities identified in 2010 for the research base**

The British Academy (together with the Academy of Medical Sciences, the Royal Academy of Engineering and the Royal Society) welcomes the four key criteria identified by Sir John O’Reilly (see joint letter of 17 May). We take the opportunity here to develop the comments made by all four national academies on these four criteria by providing some examples and illustrations from the humanities and social sciences.

1) **Ensuring excellence with impact, sustaining our national capability and international competitiveness**

The British Academy commended the settlement for research in the Government’s 2010 Spending Review and the maintenance of the ring-fenced science and research budget at £4.6bn a year. This decision recognised that the UK’s research base - the most productive and efficient in the G8 and one of the areas where the UK is a world leader - plays a vital role in fostering innovation and growth, in positioning the UK so it can compete successfully with other leading countries, and in enabling the UK to respond to the national and global challenges that it faces now and in the future. Maintaining the ring-fence has enabled the research community to make strategic plans to enhance the research base, and has facilitated the development of long-term collaborations and partnerships.

The British Academy was also pleased that the 2010 Spending Review outcome recognised the importance of the dual support system. This system has contributed to the success of UK research. This success owes much to the balance between two funding streams – institutional QR (quality related) funding and project funding, principally allocated by the research councils. QR supplies a large share of total funding available for H&SS: it is of particular importance in these disciplines where much research is carried out by individual scholars, and does not need the same degree of strategically organised major project funding as are common in other disciplines. It is essential that we retain and build on the mechanisms that have enabled the UK to be effective at exploiting its investment in research. The British Academy strongly advises that the current balance between QR funding and project funding for both the humanities and the social sciences should be sustained.

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However, the British Academy (and the three other national academies) remain concerned that the UK’s levels of investment in research are not keeping pace with that of our international competitors, which ultimately may be damaging to the foundations of long-term growth.\(^4\)

While the returns on investment in research are long-term and often difficult to quantify with precision, there are reasons to believe they are high. For example, in the arts and humanities, a study estimated that for every £1 spent on research by the AHRC (Arts and Humanities Research Council), the UK gains £10 of immediate benefit and another £15 to £20 of long-term benefit.\(^5\)

Given the global competition for excellent researchers, it is essential that the UK remains an attractive place for the most talented researchers to work, and one which is able to nurture and retain the very best researchers both from the UK and from elsewhere in the world. The best researchers will produce the best research in the future and will drive the projects targeted at national priorities. In the humanities and social sciences, the funding of excellent individuals is of especial importance when so much of the research necessarily depends on individual excellence rather than on the work of large teams. These researchers need to be resourced properly if they are to reach their full potential, and there needs to be sufficient funding and support at key stages across research careers. Funding for H&SS postgraduate research students and early career researchers is essential to ensure that there are adequate numbers of appropriately trained people both to replenish the research base and to provide the high-level analytical and communication skills that are in demand from employers.

It is also essential that the UK maintains a broad research base, spanning the full range of the natural sciences and the humanities and social sciences. This is one of the UK’s great strengths, and enhances its international competitiveness and attractiveness. The challenges facing society today require expertise drawn from across the full range of the humanities, social sciences and sciences. Four such challenges that plainly require multidisciplinary research are:

(i) Food Security which requires insights from the natural sciences as well as from the social sciences – (economists working on aspects of food trade, marketing experts, sociologists and psychologists);
(ii) Ageing which calls for researchers in a range of disciplines falling within the social sciences, natural and medical sciences;
(iii) Environmental challenges, such as climate change, requires an understanding of the scientific evidence, as well as the socio-economic effects and their interaction.
(iv) Addressing international emergencies and crises. For example, the Humanitarian and Conflict Response Institute at the University of Manchester bridges the Faculties of Humanities and Medicine in partnership with NGOs, and aims to help lead improvements in crisis-response on a global scale. It links the study of history and sociology with the medical interventions of bodies such as Médecins sans Frontières.\(^6\)

\(^4\) See Fuelling Prosperity, pages 5 -6 under the heading, “Watching out for the Competition”.
\(^6\) For more information see www.hcri.ac.uk
Project-based research funding in the humanities and social sciences tends to span several years, so for the financial year 2015/16 there is a need to sustain at the very least current funding levels, with proper taking into account of the effects of inflation, to ensure that research excellence in these disciplines is not damaged. Further, the investment in the most talented young researchers through research council studentships builds over time. Any reduction in funding in FY 2015/16 would risk damaging the opportunities for new researchers and creating further instability. For FY 2015/16, the aim should be to roll forward existing priorities in the expectation that there will then be a more fundamental review for the next four-year period from 2016. Given the nature of long-term funding for research, it is unwise to even attempt to “turn the tap off and on” over a 12 month cycle. Once centres of research expertise and excellence are lost, it takes many years to rebuild capacity and make up ground lost to competitors.

2) Maximising the contribution to UK economic growth

UK H&SS disciplines rank first in the world on publication productivity and citations relative to research and development public spend. They constitute a major national asset. The cost of H&SS research is low in proportion to that of the natural sciences. It would be hard to reduce funding for H&SS research without doing fundamental damage.

H&SS research makes direct contributions to innovation and growth in providing crucial expertise and insights for a range of sectors, including:

- the service sector, which comprises some 77% of UK GDP, and includes business services, which is the fastest growing sector in the UK, accounting for over a fifth of UK output, and 1 in 8 jobs;7
- heritage;
- the creative industries, worth more than £36 billion a year, generate £70,000 every minute for the UK economy, employ £1.5million people in the UK, and account for around £1 in every £10 of the UK’s exports;8

The cultural and service sectors will be of increasing importance for job generation in the future. Economic growth will rely heavily on the UK’s ability to exploit and commercialise research and ideas drawn from across all disciplines, and to innovate in the service sector and the creative industries. “The investments needed to make this happen range from product and service design to developing innovative skills and organisational innovation.”9

The development of Smart phones is an example of the way in which scientific and engineering advances need H&SS disciplines to inform many aspects of their design, content, and use, as well as the wider socio-economic context:

- good design is fundamental to the successful marketing of these products;

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7 See http://www.theworkfoundation.com/assets/docs/publications/287 Britains%20quiet%20success%20story
9 NESTA (November 2009), *The Innovation Index: measuring the UK’s investment in innovation and its effects*
• their content depends on a combination of technical skills and creative inputs;
• H&SS analysis on their use can inform the development of future policy initiatives, for example, analysis of the content of texts is helping educational psychologists to understand how the modern child learns to write and read;
• socio-economic research on the different roles of smart phones in different parts of the world is relevant to the development of trade, exports and the UK presence in the developing world. In large parts of Africa, for example, where the traditional infrastructures are not well developed, smart phones are becoming the medium of choice for banking and other kinds of financial transaction.10

H&SS skills, insights and research also make important contributions to international diplomacy and trade expansion – both of which are enhanced by an understanding of cultures in all their dimensions (including languages, faiths, traditions and values).

The Work Foundation report, Britain’s quiet success story: business services in the knowledge economy, found that this sector had created 1.8m jobs and generated roughly 38% of all growth in the UK economy since 1970, and was “a far more significant and sustainable economic driver than either financial services or the property market.” The report’s author, Andrew Sissons, has also said, “As we have argued previously, manufacturing will continue to be hugely important for the economy, but it is unwise to pin all hopes for recovery on this sector to the detriment of the UK’s greatest economic strength. Like it or not, business services have become the lifeblood of the UK’s knowledge economy and now account for twice the output of the manufacturing sector.”

Excellent H&SS research is also critical in:

• ensuring that policymakers develop effective public policy interventions – public money is wasted unless policy interventions are informed by the most robust evidence and insights;
• documenting and analysing the context of international diplomacy and trade;
• enabling the UK to exploit technological and scientific breakthroughs;
• advising the private and public sectors on innovative processes and approaches, aimed at heightening productivity;
• making key contributions to the standing of UK universities, which are in their own right a major area within the economy – larger in terms of GDP than either the pharmaceutical or air transport industries;
• developing the content of undergraduate and postgraduate H&SS education, which in turn has wider benefits for the individual and for society – a high quality H&SS education is essential if we are deliver a highly skilled workforce capable of responding to the needs of a twenty-first century society.11

3) Continuing to improve the efficiency of the research base

10 For example, see http://www.ft.com/cms/s/0/0846ab76-8c8d-11e2-8ee0-00144feabcd0.html#axzz2SWr3V2YG
11 These above points have been taken from The British Academy’s response to the White Paper: http://www.britac.ac.uk/policy/index.cfm (21 Sept 2011).
As mentioned earlier, the UK’s research base is the most productive and efficient in the G8 and one of the areas where the UK is a world leader. It is generally agreed that the UK’s distinctive and well-established system for public funding for research, focused around the dual support system (research council funding and institutional QR block grant), is central to this achievement, with the UK ranked first among OECD countries on citations per GDP and per researcher. Each leg of dual support complements the other, each directing funding towards excellence.

The research councils have increased their collaborations with each other, which take the form not only of a series of cross-cutting initiatives addressing many of the major challenges facing society today, but also a series of joint activities such as grant administration, IT, HR, finance and procurement), aimed at heightening efficiencies. While it is clear that these efforts have borne fruit and have led to notable efficiencies, there remains scope to increase joint working and co-ordinated activities. For example, it would be helpful to review the councils’ existing mechanisms to support interdisciplinary and multidisciplinary research. Consideration might also be given to ways in which the councils support high-risk innovative research, bearing in mind that (as with all high-risk initiatives) the majority of research of this nature is likely to have a low success rate in terms of eventual outcome and impact, but this should be outweighed by the rewards that flow from the ones that are successful. It is important to ensure that the balance between response-mode funding on the one hand and strategic directed funding on the other is appropriate, given that so much of the most innovative research results from response-mode funding.

Following the June 2010 report of the Task Group led by Sir William Wakeham, there is already evidence of considerable cost savings in research in UK higher education institutions across all disciplines. Indeed, the sector has already demonstrated savings of £462m against targets set for the last year in the last spending review (with total savings amounting to over £1.3 billion for the last two spending review periods).

4) Maximising the leverage from private, charitable and international funders

Government funding of the research base creates an environment that encourages private sector investment. As a report from the House of Lords Science and Technology Committee said: “Studies have shown that there is a broad correlation between levels of public and private investment in research in a particular country: a low level of Government funding is commonly associated with a comparatively low level of private investment, and public spending on research encourages private investment. This correlation has significant implications for public research funding decisions.”

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14 House of Lords Science and Technology Committee. Setting priorities for publicly funded research (April 2010), p.10.
Of external research grants and contract income for UK higher education institutions in 2011/12 (i.e. excluding recurrent funding for research through QR), 67% came from sources other than the research councils, such as UK-based charities (at 21%), followed by UK central government, local/health authorities (at 18%), and then EU funding sources (at 13%).

Business is not a major funder of university based research in the UK, and looks to government to provide investment in basic research. Business represents a relatively low proportion (at 6%) of total income from external grants and contracts for UK higher education institutions in 2011/12.

It is important that government funding is maintained to provide critical leverage for the UK research base, especially as any cuts in funding are unlikely to be compensated by an increase in income from other sources, and may indeed involve a risk of losing significant income from other sources.

Conclusion

The UK is fortunate in having the most productive research base relative to funding. This is true as much for HSS as for other subjects. For example, H&SS research is second only to the US in share of world citations. If citations are relativised to population size, the findings show that UK is “far more efficient in terms of output per researcher: of the top five research nations (based on article output in 2010: US, China, UK, Japan, Germany), UK researchers generate more articles per researcher, more citations per researcher, and more usage per article authored as measured by global downloads of UK articles.” It is essential that the UK should maintain its excellent broad research base, which is focused on excellence and is able to nurture, attract and retain the best researchers both from the UK and from overseas.

17 May 2013

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15 See Table 1, Sources of Income for UK HEIs 2011/12

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17 As reported in the International Benchmarking Study of UK Research Performance 2009, drawn up by Evidence Ltd.