

The National Heritage Science Forum (NHSF)¹ is pleased to submit its response to the Government's consultation on the Science and Innovation Strategy 2014. Please note that this response is on behalf of NHSF members that may also provide individual submissions. These comprise:

Birmingham Museums Trust; Bodleian Libraries, University of Oxford; Cardiff University; English Heritage; Historic Royal Palaces; Historic Scotland; Institute of Conservation; National Galleries Scotland; Natural History Museum; National Museum Wales; National Trust; Royal Armouries; Tate; The British Library; The British Museum; The National Archives; University College London. A quick link is at <http://www.heritagescienceforum.org.uk/member-institutions.php>

SUMMARY

Core principles of the science and innovation approach:

Science and research are a public good. Public funding of research is necessary where the beneficiaries of curiosity-driven or applied research are diffuse and where the private sector does not have the incentive to invest in knowledge made publicly available because it could not earn a return.

Research funding should be directed to where research actually takes place – in universities, research institutions and independent research organisations recognised by the research councils. Funding for Public Sector Research Establishments could deliver added value if research is carried out in partnership with users.

Science and innovation policy should not be capital-led. Resources are needed to fund the people, skills and projects to maximise research potential and to make best use of capital investment.

Innovation should not, in general, be seen as an "add on" phase that follows the generation of knowledge in a research project. Often the context and enablers of innovation will be fundamental to the research process itself and the processes of innovation will emerge within the research. Heritage science is a good example of the complex range of ways in which this is realised.

Role of cross-disciplinary research: In a world of increasing complexity and where societal problems require solutions that engage the efforts of different experts, barriers to cross-disciplinary research should be systematically dismantled. Heritage science is an exemplar of how recognition of the value of cross-disciplinary research by AHRC and EPSRC has led to the burgeoning of this field over the last seven years. Go to http://www.heritagescience.ac.uk/Final_event *The Science and Innovation Strategy should identify and propose steps to remove system blockages to cross-disciplinary research by promoting structural changes that identify synergies and deepen collaboration among research funders.*

Research funding: The current level of research funding is modest and should be increased. According to calculations by the National Centre for Universities and Business based on Office of National Statistics data, taxpayers only spend £3 a week for each person in the UK on science and research. *The Science and Innovation Strategy should set out a long-term, stable basis for increasing funding in research, including both a significant commitment of increased public funding and increased investment from business.*

Research skills: Tomorrow's researchers require a range of interpersonal as well as scientific skills. Since 2007, the AHRC/EPSRC Science and Heritage Programme has delivered these skills and begun to build capacity in heritage science. The world of work is no longer predictable and researchers may need to design individual and independent career paths. Therefore the need for researchers to develop business skills is urgent. The NHSF welcomes the award in 2014 of an EPSRC CDT in Science and Engineering in Arts, Heritage and Archaeology whose doctoral students will be trained to interact with heritage, industry and academic supervisors. *The Science and Innovation Strategy should ensure that heritage science initiatives are not viewed as rarities but as an emerging field that develops broad cross-disciplinary skills delivering research that leads to innovation.*

Research impact: According to the Comparative Performance of the UK Research Base (Elsevier, 2013/BIS, 2013), the UK produces 15.9% of world's most highly-cited papers; 11.6% of the world's citations; 9.5% of downloaded world publications; 4.1% of researchers; 3.2% of global research funding from 0.9% of the world's population. *Policies to support and capitalise on research impact should aim at maximising research impact in its broadest sense, embracing cultural as well as social and economic impact, in order to avoid limiting the potential societal benefit of research. The NHSF is keen to work with Government to improve heritage science metrics to evaluate research impact.*

Publicly-funded research - business collaboration: Sometimes the language around the interaction of public research and business suggests research is funded by the Research Councils while the Technology Strategy Board delivers impact and innovation. *The Science and Innovation Strategy should clearly state how curiosity-driven and applied research can deliver innovation, illustrating their statement with the example of heritage science research funded by the research councils since 2007, the AHRC/EPSRC Science and Heritage Programme.*

By 2020, heritage science will have been in the public eye (policy and research funding) for 15 years. Giving its meteoric rise to prominence and its growth potential, the NHSF recommends that heritage science is included as one of the top three priorities for the Science and Innovation Strategy post 2020.

ⁱ The NHSF provides a platform to support the policy, research and professional needs of institutions engaged in heritage science. Heritage science encompasses all technological and scientific work that can benefit the heritage sector, whether through improved management decisions, enhanced understanding of significance and cultural value or increased public engagement. The National Heritage Science Forum brings together many disciplines under the wide-ranging, interdisciplinary heritage science umbrella. Through working together, Forum members address the research and practice needs of institutions interested in or engaged with heritage science. For further information please contact the NHSF Administrator at heritagescienceforum@outlook.com