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A Short Guide for Funders of Interdisciplinary Research

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The changing dynamics of the natural, social and political world means that funders are increasingly called upon to generate innovative solutions to complex, multi-dimensional, policy-related problems on a regional, national or global scale. As complex problems of, for example, climate change, health or social adaptation, become more pressing the ability of funders to deliver solutions to such challenges increasingly requires integration across disciplines as well as reaching out from academia to the policy and private sectors. The number and range of programmes that mandate interdisciplinary research are likely to grow. Funders can play a truly catalytic role, for instance when problems are just beginning to coalesce, in stimulating interdisciplinary research initiatives. They also play critical roles in building capacity and ensuring long-term sustainability of interdisciplinary research.

The funder's roles in interdisciplinarity

In the UK, Research Councils constitute important drivers of interdisciplinary research and play an essential role in:

- identifying questions that need an interdisciplinary approach in order to be tackled effectively
- launching and shaping initiatives, making funding available
- establishing the architecture of an interdisciplinary programme (e.g. choice of leader, location, streams of funding, accountability)
- establishing appropriate evaluation processes
- building capacity
- facilitating emergence of longer term impacts

With such critical roles to play, funders' own structures and procedures should reflect good practice in the support of interdisciplinarity, especially when interdisciplinary programmes

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require cross-council collaboration. Multiple funders investing in the same interdisciplinary programme should model good interdisciplinary collaborative practice among themselves, with good communication, shared ownership and gradual development of a collective vision.

In addition, attention should be paid to the issue of longer-term organisational learning among funders. A great deal of tacit knowledge about management of interdisciplinary programmes can be held by Research Council officers, but unless that people-embodied knowledge is captured systematically, there can be a lack of continuity.

Funding and shaping interdisciplinary research initiatives

Decisions that funders make and the intention behind funding calls have a major impact on how interdisciplinary research is shaped, the extent of integration, and ultimately its effectiveness. Funding mechanisms, questions and research agendas, and relationships between co-funders, can all influence interdisciplinary research initiatives in different ways.

Expectations of interdisciplinary research might vary depending on perceptions of:

- what interdisciplinary work is and what it can do
- who or what interdisciplinary researchers are

The extent of integration in interdisciplinary research might vary according to:

- the many researchers and various combinations of different disciplinary backgrounds
- the range of topics addressed
- the type of research questions being asked

Interdisciplinary work might occur at different levels:

- programme level (large-scale initiatives)
- theme level (i.e. a sub-programme level, integrating topic(s) across projects)
- project level, within a project team or individual project members
- training for early career researchers

The degree to which interdisciplinarity is effective is influenced by the setting up, focus and agenda of an interdisciplinary investment. It is also influenced by the underlying institutional contexts, the type of interdisciplinarity that is being sought and an awareness of its potential disciplinary and conceptual foundations.

In practical terms, funding streams dedicated to interdisciplinary research can help to ensure that interdisciplinary work does not fall at the first review hurdle. Cross-funder programmes can provide incentives for multiple research communities to participate. Such participation can be encouraged by the provision of funds for: seed-corn support, “warm-up” activities, development of tools and visualisation for policymakers and other users, follow-on grants to fund projects and support for emerging collaborations. Incorporating flexibility into a programme’s budget allows not only evolution but also an opportunity for research leaders to develop new ways to facilitate genuine interdisciplinarity.

Reviewing and evaluating interdisciplinary research appropriately

Even as the opportunities for interdisciplinary research grow, the view persists that evaluation of interdisciplinary research urgently needs to be tailored more appropriately. Peer review processes are cited repeatedly as a serious problem for interdisciplinary proposals. Individuals do not want to be penalised for proposing interdisciplinary approaches which, by definition, are unconventional to individuals ensconced firmly in disciplines; the system is seen to work against the inclusion of even the most rigorous interdisciplinary work. By the same token, it can be harmful to standards of genuine interdisciplinarity if researchers receive interdisciplinary funding for projects that are in fact only multi-disciplinary; or if simplistic assumptions are made: for example, the inclusion of social science in a scientific research proposal does not automatically mean outputs will be policy relevant. It is important

to distinguish between the genuinely interdisciplinary and the use of interdisciplinarity as a blanket term to describe complex or multi-disciplinary research.

Composition and management of review processes needs care and the following steps can offer improvements:

- providing training for Research Council programme staff, so that they are more able to distinguish genuine interdisciplinarity, and effectively deal with issues that arise
- aligning goals and criteria as stated in calls for proposals, with instructions for reviewers and panels
- selecting panel members experienced in interdisciplinarity
- taking time at the beginning of a panel meeting to develop common understanding of the programme and criteria by which interdisciplinary bids are to be judged

End-of-award evaluation of interdisciplinary large-scale investments also needs to be appropriate. While strong publications will be sought as measures of academic rigour, other less tangible indicators might suggest that added value from the interdisciplinarity is (or is not) being achieved. For further discussion of interdisciplinary quality criteria and evaluation process see Short Guide Number 9.

Building interdisciplinary capacity

Funders have a crucial role in building interdisciplinary capacity if they are to meet the challenges and demands of complex, multi-dimensional, policy-related problems:

- career paths are uncertain for interdisciplinary research and need to be addressed if capacity is to be grown e.g. through making funding available for interdisciplinary research so that researchers can 'prove' themselves
- researchers with the potential to work across disciplines may need extra encouragement and resource to play an integrative role within an interdisciplinary team
- bringing people together physically can be especially important when they are from different traditions and disciplines

Developing next-generation researchers is a key area in capacity building. Interdisciplinary PhD training is affected by, for example, breadth of PhD topic, relationship to interdisciplinary centres or schools, and exposure to different research methods, along with considerations as to context such as interdisciplinary programmatic teams or standalone studies:

- PhD students typically have to train in methods from more than one discipline, so this requires money to be available for training at intervals throughout a PhD
- beyond the training stage, the issue of career progression is vital if funders are serious about building capacity in a more long-lasting and substantive way than 'simple' production of interdisciplinary PhDs
- when considering academic careers, funders need to be aware of the constraints imposed by universities
- Research Councils (and universities) could provide more recognition for early career researchers who do interdisciplinary work, ensuring that interdisciplinary researchers are never considered 'second tier', for example, with respect to career progression

Encouraging stakeholder engagement

If policy relevance is sought, explicit acknowledgement by funders at the beginning can legitimise researchers doing things differently in terms of engaging stakeholders from the start, in order to avoid the phenomenon of 'just natural science plus communication'.

Individuals who can handle interdisciplinarity may be valuable resources for the generation of impacts, not simply because of the research problems they may choose to tackle but also because of their abilities. This ability to work with others having diverse perspectives can

bring about a whole new level of interdisciplinarity by genuinely including stakeholders and the contributions they can make.

Some would argue that the capacity to integrate across disciplines leads to a realism that is key to making a difference beyond academia, and that not only academics but other knowledge intermediaries have roles to play. This requires an approach that balances focus and flexibility and a realistic understanding of what can be achieved within the timescales of a grant-funded programme. Epistemological and methodological distances vary between disciplines and it follows that, the greater the distance, the more time may be needed to bridge gaps. Likewise, distances between researchers and stakeholders may vary. In understanding the needs of users, for example, funders need to recognise that negotiating and co-producing knowledge in a collaboration that encompasses many perspectives can require more time to achieve the genuine integration and mutual understanding in order to solve a problem effectively.

Sustainability of interdisciplinary research

Funders need to play more of a pro-active role if they want to make the future academic landscape more inclusive of interdisciplinary research. Clearly guaranteeing that funding will be available for interdisciplinary work over time would facilitate sustainability of interdisciplinary research. An increase in calls explicitly specifying interdisciplinary research would increase capacity among those who are currently established researchers. This is not to imply that individual interdisciplinary investments should be funded in perpetuity but Research Councils do need to develop more realistic expectations of the time frames within which major change can be achieved: a five-year interdisciplinary programme alone cannot provide the silver bullet to solving complex issues.

Trying to get interdisciplinary research funded in a general call for proposals is frequently seen as problematic. Channelling support explicitly to interdisciplinary work, by establishing either dedicated interdisciplinary programmes and/or a pool of money available only to highly interdisciplinary proposals can address this problem. This requires innovative thinking about structures and funding streams and we suggest some ways of developing a new vision for publicly-funded interdisciplinary research in Short Guide Number 9. Providing strategic funding over time, and structuring it appropriately will help interdisciplinary research to evolve and become established as a mainstream academic research activity.

This Short Guide draws on findings from a recent study for the Natural Environment Research Council 'QUEST: Capturing Lessons for Interdisciplinarity' (NERC grant reference: NE/H012001/1). Other notes in this series can be downloaded from www.tinyurl.com/idwiki

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