

Meet the challenge of interdisciplinary science

Problems of modern society demand collaborative research.

29 June 2016

To tackle society's challenges through research requires the engagement of multiple disciplines. For two examples, in responding to the challenges of climate change and of social progress, see the Comment articles in this issue.

To highlight the issues that arise in such research, imagine an integrated project to determine the causes of destructive risk-taking in inner-city adolescents and to identify appropriate interventions. Such a programme might combine disciplines ranging from anthropology, sociology, psychology, law, economics and ethics to psychiatry, health systems, urban design and developmental neurobiology.

To frame the research challenge, and to design interventions that will be effective in targeted neighbourhoods, academic researchers need to work with non-academic partners to understand the needs of the community, the political context and the barriers — structural and behavioural — to applying the lessons that might be learned. The researchers would also need to learn how colleagues from other disciplines approach the issues and frame the research questions in a mutually acceptable way. They must also learn to respect what is possible in each discipline, and how insights are gained and possible implementations are made. All this is easier said than done, but it is essential.

Funders must rise to the challenge of supporting these tough research necessities. That means having enough of an overview of a project to oversee the selection of peer reviewers whose individual perspectives will inevitably be narrower than those of the project. An ideal funder would also include potential users of the project's outcome among its assessors, to ensure that the research has practical impact as well as academic weight.

The world is ill-equipped to uphold such ideals. For example, a paper published in this issue of *Nature* (R. Bromham *et al.* *Nature* **534**, 684–687; 2016) provides evidence that multidisciplinary research is less attractive to funders than single-discipline research. The work is based on an analysis of grant applications to the Australian Research Council, but there is every reason to believe that the conclusion can be generalized. The metrics of interdisciplinarity introduced by the authors can also serve as warning indicators for funders, telling them when they need to take special measures to do a project justice.

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Reporter Shamini Bundell finds out about the difficulties of funding interdisciplinary research

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The good news is that many funding agencies are aware of the challenge, and of how far they need to go to meet it. The Global Research Council (GRC) is a forum in which government funders discuss their common challenges. At its annual meeting in Delhi last month, the focus was on interdisciplinarity. The council commissioned a survey and analysis of the practices of many funders. It also issued a statement of principles on interdisciplinarity (go.nature.com/290mqqt).

The GRC is not a decision-making body. But it was evident at the meeting that the funders recognize the need for new measures. An obvious one is that grants should last long enough for interdisciplinary research to take shape. Another is that funding agencies should have a good enough grasp of the subject matter to ensure that a well-informed, multidisciplinary assessment can be conducted.

Journals, too, must face up to such challenges. *Nature* and its research journals take pride in their capacity to handle interdisciplinary research. The multidisciplinary editorial teams see it as part of their job to do so — in selecting referees from diverse disciplines, and in considering their comments within the framing of the paper under discussion, rather than that of the individual assessors. In such a

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context, it is not unknown for *Nature*'s editors to overrule all referees' recommendations against publication of a technically valid paper, and to publish it.

What is more, the Nature journals are recruiting social scientists to address our editorial goal of increasing the attention given to the societal challenges of sustainability and health. *Nature* itself will soon be recruiting social-sciences editors. In launching *Nature Climate Change* and *Nature Energy*, and as we recruit for the launch of *Nature Human Behaviour* next year, we have already learned some important lessons about the sense of professional identity of sociologists, anthropologists, economists and psychologists.

Without that developing sense of respect for diverse types of quantitative and qualitative research, progress by funders, publishers and universities in interdisciplinary research will founder.

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