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A Short Guide to Designing Interdisciplinary Research for Policy and Practice

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A focus on knowledge exchange

Increasingly, in this era of the “knowledge economy”, governments seek return on their investments in research. While those public funding bodies that support research in the natural and physical sciences and engineering may find it more straightforward to point to tangible impacts in terms of intellectual property generated or indeed to the economic contributions of spinout companies, the impacts that social science research (as well as the arts and humanities) may have on public policy or professional practice is often harder to track². Yet, basing public policy and practice upon sound research and evidence is frequently cited as a desirable social good – one toward which research funding bodies, researchers, policymakers and practitioners should aspire³.

Policy analysis has traditionally been dominated by the linear, “stages model” whereby policy-making is seen as a sequential process: identification of a policy problem, policy initiation and formulation, legislation, implementation, evaluation, and iteration. This often assumes that problems can be broken down into discrete elements mapping onto distinct disciplines whereas many policy issues transcend disciplines or indeed lie at the boundaries between them.

While research can have a direct or “instrumental” impact on policy and practice decisions – where a specific piece of research is used in making a specific decision or in defining the solution to a specific problem – far more common is the “conceptual use” or enlightenment effect comprising the complex and often diffuse ways in which research can have an impact on the knowledge, understanding and attitudes of policy makers and practitioners⁴: while such uses of research may be less demonstrable, they are not less important.

It is generally recognised that the impact of academic research is long-term and often indirect and the knowledge transfer literature emphasises the non-linear nature of such

¹ ESRC Innogen Centre, University of Edinburgh

² Meagher, L., Lyall, C., and Nutley, S., (2008), “Flows of knowledge, expertise and influence: a method for assessing policy and practice impacts from social science research”, *Research Evaluation*, 17/3: 163-173.

³ Davies, HTO, Nutley, SM and Smith PC (2000) *What works? Evidence-based policy and practice in public services* (Policy Press, Bristol).

⁴ Nutley, S., Walter, I. and Davies, H. (2007), *Using Evidence. How Research can Inform Public Services* (Policy Press, Bristol).

research impacts. Indeed, the very term “knowledge transfer” conjures up the image of a one-way flow of knowledge. In the light of this, the alternative term of “knowledge exchange” is increasingly favoured.

A role for interdisciplinary research

There are growing calls for more interdisciplinary approaches to societal problems, along with encouragement for greater collaboration and networking among institutions and researchers. Pressure to encourage interdisciplinary research often comes from the need to solve complex socio-scientific problems, where one discipline on its own cannot provide an answer.

Effective interdisciplinary research often requires new modes of thinking by researchers and cuts across the traditional discipline-based academic structures and systems of reward and resource allocation that are found in most universities. Gibbons et al.⁵ developed a typology contrasting Mode 1 and Mode 2 research; the former corresponding broadly to the traditional academic mode of knowledge production which is generally organised along homogeneous, single discipline lines and is typically curiosity driven research without a specific end goal in mind, and the latter referring to a ‘new production of knowledge’ that cuts across disciplinary boundaries in order to create knowledge for a specific purpose.

The goals and problems of interdisciplinary research differ and we have adapted this well-known terminology⁶ to draw a parallel distinction, within interdisciplinary research, between:

Academically-oriented Interdisciplinary Research which brings together researchers from different disciplines in order to overcome a blockage to further development within a discipline, or to enable the discipline to move into new and productive areas of research. In the long run, it furthers the expertise and competence of academic disciplines, for example through developments in methodology and instrumentation, and may even lead to the formation of new disciplines or sub-disciplines. Academically-oriented interdisciplinary research is thus one of the primary engines of the evolution of disciplines. Although in this sense it supports, rather than challenges the discipline-based structure of academic and research institutions, in the short-term (e.g. the timescale of an individual project) it can nevertheless meet resistance from existing academic structures, although for different reasons from problem-focused interdisciplinary research. Overall, the academic barriers to the former are not as strong as for the latter and there are fewer difficulties in evaluating and administering projects.

Problem-focused Interdisciplinary Research which addresses issues of social, technical and/or policy relevance where the primary aim is problem-oriented and discipline-related outputs are less central to the project design. The relevant mix of disciplines tends to be project specific. Researchers who develop a career working on such projects build up expertise on the integration of disciplines in a range of contexts and the management of other researchers from different disciplines working together, skills which are not highly valued in an academic context. Problem-focused interdisciplinary research is thus often regarded as undermining academic research, taking its evolution in a direction with which many academics are uncomfortable and is often seen by discipline based researchers as at best irrelevant and at worst threatening. The barriers to this type of interdisciplinary research are correspondingly greater, as are the difficulties of evaluating and managing it.

Interdisciplinary research can therefore happen in a number of different ways, for example⁷:

⁵ Gibbons et al. (1994), *New Production of Knowledge*, Sage.

⁶ Bruce A., Lyall C., Tait J. and Williams, R. (2004) “Interdisciplinary Integration in the Fifth Framework Programme”, *Futures*, 36/4, 457-470.

⁷ Bechtel (1986) cited by Klein in Weingart & Stehr (2000), *Practising Interdisciplinarity*, University of Toronto Press

- developing conceptual links using a perspective in one discipline to modify a perspective in another
- using research techniques developed in one discipline to elaborate a theoretical model in another
- modifying and extending a theoretical framework from one domain to apply in another
- developing a new theoretical framework that may reconceptualise research in separate domains as it attempts to integrate them

and there may be any number of motivations for undertaking interdisciplinary, policy- or practice-oriented research, for example:

- the nature of the object of the research may be interdisciplinary (e.g. transport, environment)
- researchers may be engaged in transferring knowledge from the laboratory to real world applications
- the research may seek to break down barriers between science and society and encourage social acceptance of technology
- the research may be user driven; either encouraging innovation by connecting technology-based businesses to market demand or involving a practice community, although not necessarily commercially oriented
- the research may be particularly relevant to policy: many strategic issues can only be effectively addressed by interdisciplinary approaches
- single discipline research may have encountered a bottle-neck and more than one discipline may be needed to make a breakthrough
- or, as we have seen above in academically-oriented interdisciplinary research, for more intellectual reasons in order to promote the emergence of new disciplines and modes of thinking.

Some design considerations for interdisciplinary policy research

Interdisciplinary research may take longer, in part because the respective contribution of different groups may not be clearly understood at the outset and there may be a need to develop shared understanding/language. In contrast, policy-makers work with multiple and shifting political agendas, often with short timeframes for action, factors which have a significant influence on their engagement with research findings. It is important to remember that these and other factors that influence impact, such as the nature and role of knowledge intermediaries and the heterogeneity of researchers and users, are not static but interact over time, giving a dynamic dimension to the process of knowledge exchange. Policy-makers may need short, sharp, timely pieces of work; a good policy message which comes along after a decision has been taken will rarely have influence.

Increasing the impact of research on policy and practice demands more than just post-hoc dissemination. It requires careful planning as part of the design process and should aim to achieve dialogue with potential research users at the earliest possible stage, possibly even involving them in the design process itself. To have a practical influence, conclusions from research must be realistic and achievable. But it may take multiple approaches and change in understanding, attitudes or behaviour may only be incremental.

While policy research may not be methodologically distinctive from more academically focused research, it may require a different style of working and perhaps a different mind

set. As noted above, it requires a willingness to engage with different audiences who may have quite different agendas and timescales from those of the academic researcher. It will require research outputs in a different format and language from traditional academic publications and an understanding – and acceptance – that research outputs are used selectively by policy-makers as dictated by political agendas and other exogenous factors. For the reasons discussed above, it will often require an interdisciplinary approach.

With the foregoing factors in mind, the following table summarises some of the design considerations for interdisciplinary research for policy and practice and contrasts them with some traditional design considerations for more theoretically focused, academic research.

	Academic/Theoretical Research	Research for Policy and Practice
Purpose	Knowledge for understanding <i>Whether</i> there is an association between variables	Knowledge for action <i>Whether</i> this association <i>matters</i>
Agenda Setting	Generates its own research questions	Takes its problems from government or the research commissioner
Role of explanation	Interested in causal processes e.g. the causes of poverty	Less interested in explanations, more interested in description and prediction - primarily concerned with social action
Political Position	Not overtly political	Political aspects cannot be ignored or suppressed.
Applicability	May only be concerned with very small groups	Results must be generalisable to wider population
Independence	Research sponsored by independent funders	Research sponsored by vested interests
Discipline	Often single discipline	Often multi- or inter-disciplinary
Validity	Judged on the basis of research <i>process</i>	Judged on the basis of research <i>outcomes</i>
Primary audience	Other social scientists	Politicians, civil servants, lobbyists, practitioners, etc also public and advocacy groups
Publication	Papers in peer reviewed journals, books	Research reports and “Grey literature” Sometimes confidential
Language	Academic language	Requires succinct, jargon free style and a good Executive Summary
Timetable	Usually longer and more flexible timescales	Strict timetable set by research commissioner

This note draws on the author’s *Research for Policy* lecture previously delivered as part of the University of Edinburgh’s graduate research design training.

Other notes in this series can be downloaded from www.rcss.ed.ac.uk/isstiwiki/ISSTI_Interdisciplinary_Wiki

- A Short Guide to Developing Interdisciplinary Research Proposals*
- A Short Guide to Reviewing Interdisciplinary Research Proposals*
- A Short Guide to Building and Managing Interdisciplinary Research Teams*
- A Short Guide for Supervisors of Interdisciplinary PhDs*
- A Short Guide to Troubleshooting some Common Interdisciplinary Research Management Challenges*

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