

# Introduction

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## Introduction to a special issue on the assessment of interdisciplinary research

Grit Laudel and Gloria Origgi

**W**HILE BOTH interdisciplinary research and evaluations grow throughout the science system, the two meet each other with increasing frequency. More and more assessments — of manuscripts, project proposals, funding programmes, and research organisations — are confronted by interdisciplinarity, that is, by research that combines knowledge from different fields. The problem of how to assess interdisciplinary research is thus becoming more and more pressing.

The common response to this problem by evaluators is to ‘muddle through’ by slightly adapting evaluation procedures for disciplinary research. British funding agencies adapted the weight of assessment criteria for some small grant schemes aimed at encouraging interdisciplinary research by putting emphasis on the applicant’s track record and the potential impact of the interdisciplinary collaboration rather than experimental details (O’Toole, 2001). Members of the Canadian Research Council proposed the opposite, namely to put less emphasis on the track record when applicants start to work in a field that is new to them (NSERC, 2004). US funding agencies introduced a procedural solution by giving their managers leeway to put a higher priority on interdisciplinary proposals that peer reviewers seem to have unjustly overlooked (Brainard, 2002). British and Canadian funding agencies introduced

additional interdisciplinary committees (POST, 2002: 4; INST, 2002: chap. 3). This strategy not only brings competent reviewers together but also avoids direct competition between interdisciplinary and disciplinary grant proposals, because the latter are ranked separately (Brainard, 2002).

These experiments confirm that there is no consensus about the best way of assessing interdisciplinary research. What assistance can be offered by science studies? Not much. While studies on both interdisciplinary research and research evaluation (in particular of the peer-review mechanism) have a long tradition, there is hardly any study which deals with the intersection of both.

Studies on interdisciplinarity concentrated on the actual research process, often with the aim of finding conditions that promote or hinder (see for example the contributions in Weingart and Stehr, 2000), without taking the assessment of such processes into account (an exception is Hackett’s chapter in that volume).

The problem of interdisciplinarity has surfaced in studies of peer-review processes with reviewers from different fields. These studies revealed that it can be difficult to integrate different scientific perspectives of reviewers in grant review processes (eg Porter and Rossini, 1985; Travis and Collins, 1991) or in the review of journal articles (e.g. Fiske and Fogg, 1990; Mahoney, 1977). Specific precautions are necessary to make sure that interdisciplinary research is not the loser in the assessment process. Procedure matters, as it is clearly stated in the recommendations of a recent workshop on “Quality Assessment in Interdisciplinary Research and Education” of the American Association for the Advancement of Science. ‘Getting the process right’ is one of the central challenges of the evaluation of

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Grit Laudel is at the Research Evaluation and Policy Project, Research School of Social Sciences, Australian National University, Canberra ACT 02000, Australia; Email: Grit.Laudel@anu.edu.au. Gloria Origgi is at CNRS – Institut Nicod, 1bis, Ave Lowendal, 75007 Paris, France; Email: origgi@enst.fr; Tel: 01 43202250.

interdisciplinary research that is not sufficiently addressed in the literature.

Our knowledge about the criteria that are applied in the assessment of interdisciplinary research seems to be even more limited. The classical studies on peer review dealt with possible prejudices of reviewers, that is, their use of non-scientific criteria. Other studies shed light on the epistemic criteria through content analyses of referee reports. However, these studies are methodologically problematic because the criteria mentioned in the reviews need not to be the ones that were actually used by referees when they formed a judgement (Hirschauer, 2004: 70–71).

In bibliometric studies of science, differences between disciplinary practices of knowledge production are reflected in the field-specificity of indicators, which need to be normalised by field-specific averages in order to enable comparisons between fields or the aggregation of field-specific values (eg Van Raan, 1996). Bibliometrics provides tools to describe the interdisciplinary or multidisciplinary character of research (Van Raan and Van Leeuwen, 2002). How these tools and indicators are used in assessment processes is largely unknown.

This special issue aims at filling this void by providing empirical studies on the assessment of interdisciplinary research. The idea of a special issue on the assessment of interdisciplinary research emerged during a virtual seminar on *Rethinking Interdisciplinarity* organised by Christophe Heintz, Gloria Origgi and Dan Sperber and supported by the CNRS (Centre National de la Recherche Scientifique, France) programme *Society of Information* during the years 2002–2003. The aim of the seminar was to launch an interdisciplinary debate on the social, cognitive and epistemological challenges of interdisciplinary research. One of the papers open to discussion was by Veronica Boix Mansilla and Howard Gardner, a later version of which appears in this issue of *Research Evaluation*. They presented an empirical investigation in five major interdisciplinary institutions of the epistemic criteria endorsed by evaluators for assessing interdisciplinary research. The discussion forum that followed the online publication of the paper raised a number of central questions about the use of indirect criteria for the evaluation of interdisciplinary work (as number of patents, number of publications on authoritative reviews, scientists' reputations, etc).

This gave Grit Laudel the idea of organising a session on the assessment of interdisciplinary research at the 4S/EASST *Public Proofs — Science, Technology and Democracy* conference on science and technology studies organised in Paris in August 2004. The session raised a lot of interest, which motivated us to organise a call for papers for a special issue on the theme. The ubiquity these days of the talk on interdisciplinarity by the funding agencies and the policy-makers suggests how timely is this overview of the current state of research.

The papers gathered here approach the problems of

interdisciplinary evaluation both from the point of view of the institutional decision-making settings and of the individual and collective epistemic strategies and cognitive heuristics endorsed by the evaluators. The overall picture that emerges from these studies is that of a cluster of scattered criteria aiming at identifying 'cues' of excellence, quality and innovative potential of the interdisciplinary research. The heterogeneity of the criteria suggests that we face a topic that deserves further exploration, from both empirical and normative perspectives, in order to find shared parameters of evaluation and accountability.

Although the contributions face different aspects of interdisciplinary evaluation, some recurring themes can be isolated. First of all, the centrality of the notion of *quality* both as an explicit measure recently introduced in specific funding systems and as an intuitive parameter that orients our cognitive heuristics. *Irwin Feller* demonstrates that in spite of the political narratives on the need for interdisciplinarity, the criterion of quality can be turned into an instrument for suppressing interdisciplinary research because the established disciplinary quality standards are likely to prevail. He traces the current use of the quality argument against interdisciplinary research in three subsystems of the US national science system and attributes it to the changed budget situation, in which interdisciplinary research can no longer be financed out of the yearly budget increases. *Veronica Boix-Mansilla* investigates how academics who conduct interdisciplinary work perceive this problem, and how they respond by developing their own standards of quality for the evaluation of interdisciplinary research. The research reveals a number of epistemic criteria that are specific to the assessment of interdisciplinarity, such as *consistency* with previous research, *balance* between interdisciplinary perspectives and potential *effectiveness*.

Another central notion is that of *disciplinary perspectives* on interdisciplinary research. These perspectives are commonly regarded as limited, not grasping the specificity of interdisciplinary research and even liable to social, cognitive or disciplinary biases. Managing biases is of course a primary aim of assessment procedures. But interdisciplinarity adds a dimension to the problem because the clash of disciplinary perspectives needs to be managed, too. *Liv Langfeldt* analyses a range of peer-review processes of grant proposals and its impact on the assessment of interdisciplinary and otherwise non-conventional research. She shows that these processes have their problems: because of uncertainty due to lack of competence, evaluators tend to be more conservative and stick to their disciplinary prejudices.

The set of responses to the same problem observed by Michèle Lamont, Grégoire Mallard and Joshua Guetzkow provides an interesting contrast. The authors identify the decisions of interdisciplinary panels as strategic games. A major rule of the game, deference to disciplinary authority, compels

panellists to judge proposals from their own discipline harder than those from other fields. However, these judgements did not endanger interdisciplinarity because panellists highly value interdisciplinary innovations in their own disciplines. Grit Laudel analyses a procedure for the evaluation of interdisciplinary research networks, which strengthens the role of applicants and enforces interdisciplinary dialogues among reviewers as well as between reviewers and applicants. The procedure is considered successful by all participants in the process including those whose proposals were rejected. The last of the papers is a report by Veronica Boix-Mansilla, Irwin Feller and Howard Gardner of the already mentioned AAAS workshop, held in February 2006. It presents the current views and suggestions of both researchers and science policy practitioners.

The articles in this special issue, though important contributions to the problem of how to assess interdisciplinary research, also demonstrate how patchy our knowledge on this subject is. We know little about the criteria used, or about the suitability of specific procedures for specific types of interdisciplinary research. To answer these question requires comparative studies of assessment procedures, to identify types of interdisciplinary research and to find causal relationships between them and the success of those procedures. A methodological problem is to gain access to decision-making bodies which allow to study interdisciplinary assessment procedures *in vivo*, that is, by observations and interviews. Therefore, the contribution of science studies to the solution of this problem partly depends on the support by science policy.

How to evaluate interdisciplinary research is a long-term research programme. Confronted with such huge knowledge gaps, the special issue can offer some answers but inevitably raises more questions.

However, we hope to invite other researchers to take up work in that direction.

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