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# The 'Paradox of Interdisciplinarity' in Australian Research Governance

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**Abstract:**

This paper identifies what can be called the ‘paradox of interdisciplinarity’ (Weingart 2000) in Australian higher education research governance and explores some of its constitutive dimensions. In the Australian context, the paradox of interdisciplinarity primarily concerns the proliferation of a programmatic discourse

of interdisciplinarity in government reports and government policy and strategy documents, often tied to notions of innovation and applicability, parallel to the persistence or even reinforcement of modes of governance and associated mechanisms that almost exclusively rely on rigid discipline-based classification systems to evaluate and fund research. Two interrelated dimensions of this apparent paradox are discussed. First, the conceptions of knowledge that underpin the use of notions of disciplinarity as well as interdisciplinarity in Australian government reports and policy and strategy papers are analysed. Second, an analysis of the Australian research governance system and its underlying mechanisms is presented, as they pertain to interdisciplinary forms of research. On the basis of these analyses, it is concluded that there is a significant mismatch between the discourse of interdisciplinarity and associated conceptions of knowledge on the one hand, and current, relatively inflexible governmental research funding and evaluation practices on the other. It is finally proposed that the occurrence and perpetuation of such a mismatch in the Australian context can only be understood properly if placed in the context of a more general paradox of

research governance, where a politically charged rhetoric of innovation conflicts with the actual trend toward an increasingly diminishing scope for the self-organisation of knowledge.

Keywords: Disciplinary Knowledge – Higher Education in Australia – Innovation – Interdisciplinarity – Research Classification – Research Evaluation System – Research Governance

## **Introduction**

In a paper published in 2000, sociologist Peter Weingart speaks of the ‘paradox of interdisciplinarity’ that has been apparent in the discourse around the structure and production of academic knowledge since the 1970s. Put briefly, the paradox of interdisciplinarity manifests itself in a strange simultaneity of the proliferation and continued persistence of a programmatic discourse about interdisciplinarity on the one hand, and an ever increasing disciplinary and sub-disciplinary differentiation and specialization taking place in academic research on the other. Moreover, Weingart observes that while in the context of such discourse interdisciplinarity is often posited ‘as a programmatic value tantamount to innovation’ (2000, 26), on the level of actual research policy, only very vague and superficial policy directives and associated governance mechanisms have been implemented that actually target and aim to foster interdisciplinary research. Overall, interdisciplinarity thus appears to be widely used as a politically useful label while

in many instances having no epistemic correlate of substance in actual research practice (see Weingart 2000, 34).

This paper traces the ways in which the ‘paradox of interdisciplinarity’ is currently at play in the Australian higher education research governance system and explores two of its constitutive dimensions.

First, the conceptions concerning the framing and production of knowledge that underpin and motivate the use of notions of disciplinarity as well as interdisciplinarity in Australian government reports and policy and strategy papers are analysed. It is shown that there is a pervasive tendency to present an ultimately simplistic polarizing view of disciplinarity and interdisciplinarity and their respective role in the production of knowledge.

Second, some key elements of the current Australian governance system for university-based research are analysed as to the ways in which they provide

visibility, scope and support for interdisciplinary research. In line with the pertinent literature, a research governance system is understood here to comprise a range of formal and informal mechanisms to regulate, coordinate, and monitor publicly funded research activities, and to generate compliance and desired behavioural regularities (see, e.g., Whitley and Gläser 2007). An increasingly important operational and normative element of such governmental systems is the use of research evaluation systems, i.e., the use of ‘organised sets of procedures for assessing the merits of research undertaken in publicly-funded organisations that are implemented on a regular basis’ (Whitley 2007, 6). Our analysis shows that the Australian research governance system, despite all the rhetoric of interdisciplinarity and the associated motivations, and expectations, is characterized by the persistence and reinforcement of formalized governance mechanisms that almost exclusively rely on highly rigid discipline-based classification systems to evaluate and fund research.

On the basis of these analyses, it is concluded that there is a significant mismatch between the pervasive discourse of interdisciplinarity and associated conceptions of knowledge on the one hand, and current, relatively inflexible governmental research funding and evaluation practices on the other. It is further proposed that the occurrence and perpetuation of such a mismatch in the Australian context can only be understood properly if placed in the context of a more general paradox of research governance, where a politically charged rhetoric of innovation conflicts with the actual trend toward an increasingly diminishing scope for the self-organisation of knowledge.

Our study is based on an analysis of government reports, strategy documents and policies, and arises out of an ongoing ARC-funded project examining knowledge building and policy practices and effects in Australian educational institutions.<sup>1</sup>

## **A brief excursus about classification and its epistemic use**

Questions concerning disciplinarity and interdisciplinarity of necessity cannot be considered disparate from questions concerning the nature and function of classification systems: To the present day, the disciplines are the most significant classificatory frames for the production, communication and validation of academic knowledge.

It is commonly accepted that classification systems – that is, formal or informal sets of distinct categories that enable the sorting of objects into groups (see Sokal 1974, 1116) – play a crucial role in reducing the complexity of a particular domain of knowledge, which in turn helps to make cognition more economical (Rosch 1978, 29). A striking example of this useful reduction is the ways in which systems of classification help to ‘achieve economy of memory’ through grouping and summarizing information in a manner that makes search and retrieval more

efficient (Sokal 1974, 1116). At the same time, however, classification systems, for example the academic disciplines, shape the formation of new knowledge, including modern scientific knowledge, and in this process make it possible that certain things and aspects become visible and in this sense ‘real’, while others are rendered invisible (see Bowker and Starr 1999).

Interestingly, a similar dialectic of visibility and invisibility seems to apply to the classification systems themselves and to their role as memory structures. In institutional settings and elsewhere, the epistemic functioning of classification systems as memory structures often is accompanied by a peculiar form of forgetfulness: These systems’ own historical genesis often tends to be forgotten by those who are using them, as are the practical politics that motivated the formation of a specific classification system in the first place (see Bowker and Star 1999, 45).

This form of forgetfulness, as a result of which classifications tend to be internalized and thus taken for granted as if they were objective facts, may potentially have a limiting influence on knowledge-practices and their scope.

Closely related to this, an irresolvable ambiguity as to epistemic function may also be directly attributed to the disciplines and their classificatory role. The disciplines, in providing a crucial framework for the acquisition and dissemination of knowledge (see Abbott 2001, 130-131), also entail a ‘continuous sedimentation of knowledge’ (Weingart 2000, 30) into specific, established classifications. While this process of sedimentation is indeed indispensable for the progression of scientific thought, it may also make novel and unorthodox lines of enquiry and their findings appear deviant, counterintuitive, and ultimately errant.

## **The Discourse of Disciplinarity and Interdisciplinarity**

Over the course of the last few decades a concerted effort has been made by sociologists and others to understand the social, epistemic and historical dimensions of academic disciplines and the differences between them (e.g., Abbott 2001; Stichweh 1992; Swoboda 1979). What has evolved from these discussions are a number of multi-dimensional models and descriptions of the disciplines.

While the allocation of disciplines to these is acceptable at a broad level of analysis, it proves problematic when subjected to a more detailed investigation.

One problem is that established disciplines, while always being stabilised by their plural scientific, educational, administrative and professional functions, are never structurally static but subject to processes of differentiation and dedifferentiation (see Stichweh 1992). Another related problem is that in reality boundaries between disciplines are often blurred, and there are also disciplines that fail to fit

comfortably within existing disciplinary categorisations, such as economics or cognitive science.

At the same time, much of the discussion of interdisciplinarity rests on the assumption that it is inherently different from or an alternative to disciplinarity (see for pertinent discussions, e.g., Moore 2010; Jacobs and Frickel 2009; Abbott 2001; Klein 1996a; Gibbons et al. 1994). In line with this polarising understanding, studies of interdisciplinarity often assume that there is little diffusion of ideas across disciplinary boundaries (see for critical discussions Jacobs and Frickel 2009, 49-51; also Moore 2010). Yet there have been a number of studies that demonstrate how ideas, methods and theories successfully transit across entrenched disciplinary boundaries (e.g., Jacobs and Frickel 2009; Van Leeuwen and Tijssen 2000). Such research reveals how active researchers are in seeking ideas and methods from outside of their own discipline, behaviour which at times has led to the creation of novel, interdisciplinary research areas such as biochemistry or cognitive science. Such novel research areas, once established,

often become disciplines in their own right, with their own social and epistemological dimensions and domains (Klein 1996a).

In view of the transgression of established disciplinary boundaries that often originates from within discipline-based research contexts, it has been suggested that it is more apt to conceive of interdisciplinarity not as being opposed to but as inherent to or at least structurally coupled to disciplinarity (Abbott 2001; also Klein 2000). For example, Abbott argues that interdisciplinarity functions as the other side of the coin of disciplinarity, reflecting the latter's dynamics of knowledge. This is why for Abbott interdisciplinarity does not break with disciplinarity but itself presupposes disciplinarity in the process of developing novel methods and theories (Abbott 2001, 131-136).

With regard to interdisciplinarity there exist a considerable number of definitions including a range of alternative terms such as multi- and trans-disciplinarity that hint at various degrees of integration of disciplinary knowledge. The emphasis on

integration aligns with the literature and discourse around interdisciplinarity, where integration of knowledge domains is seen as one of the ultimate aims in interdisciplinary work (see Klein 1996a). However, one of the difficulties when talking about integration is that the concept refers to a dynamic and complex epistemic and social process that is by its very nature difficult to map and define. There is evidence to show that interdisciplinary projects not only vary in their levels of integration but that such levels can also change over time (Klein 1990, 65). Moreover, there is considerable variation in the literature as to the semantics of integration. According to many often cited definitions of interdisciplinarity, such as the one put forward in 2006 by a group of American researchers and administrators (see Mansilla, Feller and Gardner 2006, 70), disciplines that draw on knowledge from other disciplines can be considered interdisciplinary. This form of inter/disciplinarity is not however the form of interdisciplinarity that is generally promoted. Rather the term ‘integration’ is often taken to equate to synthesis and collaboration that occurs external to a single disciplinary setting – possibly mirroring the tendency to prioritize exogenous (directed toward addressing real-

world problems) over endogenous (directed toward the internal building of knowledge) forms of interdisciplinarity (OECD 1982, 130).

This leads us to the question concerning the justification for interdisciplinarity.

Justification for interdisciplinarity generally comes in one of two forms,

epistemological or instrumental, and it is the latter instrumental form that has

become increasingly dominant in the policy discourse around interdisciplinarity.

As the legitimating idea for public universities is increasingly framed, in some

countries more overtly than in others, in terms of higher education being an

“industry” rather than a “social institution” (Gumport 2000), and as universities are

increasingly made accountable to government and civil society through the

practices of ‘new public management’ (see, e.g., Whitley, Gläser and Engwall

2010), there has been increasing pressure on university-based researchers to tailor

their research to make it more ‘relevant’ and marketable, and to be able to report

on outcomes, impact and socioeconomic benefits. The associated shift in research

practice has commonly yet also somewhat simplistically been linked to the notion

of a transition from mode 1 to mode 2 knowledge production proposed by Gibbons et al. (1994). As is well known, mode 1 is associated with traditional discipline-based forms of research, while mode 2 is associated with interdisciplinary modes of knowledge production that are perceived as being problem-based and end-focused, and which occur under conditions where research is subjected to external accountabilities (Gibbons et al. 1994; also Nowotny, Scott and Gibbons 2001).

The notion of a move from mode 1 to mode 2 knowledge production has been criticised for lacking both precision and novelty on historical, epistemological, or sociological grounds (e.g., Edqvist 2003; Weingart 1997), and also for supposedly advocating an attack on traditional academic ideals. At the same time, it has however been taken up enthusiastically by some particular groups – among them, as some of the authors of the original book on the mode 1 to mode 2 transition point out in a subsequent article, by ‘politicians and civil servants struggling to create better mechanisms to link science with innovation’ (Nowotny, Scott and Gibbons 2003, 179). This observation can be substantiated in the case of Australia.

Here, Gibbons et al.'s conception of mode 1 and mode 2 knowledge production is referred to repeatedly in a range of government reports and commissioned discussion papers on research and innovation from around the late 1990s – a period that also sees a sudden proliferation of and emphasis on the notion of the ‘national innovation system’ in government documents (see Larkins 2011, chapter 3).

Preceding this proliferation was the transition from a Labor to a coalition-led government following the Australian federal elections in March 1996.

In a report from 1998 commissioned by the Evaluation and Investigations Programme of the Australian Department of Employment, Education, Training and Youth Affairs (DEETYA), the transition from mode 1 to mode 2 knowledge is firmly situated within the context of the emergence of a global economy that is ‘based on the production, distribution and use of knowledge’ (Johnston 1998, 2).

Related to this, the same report, titled *Changing nature and forms of knowledge: A review*, also establishes a link between the shift to mode 2 knowledge production and the development of the ‘national innovation system’ referred to above. In the

broader context of such an emergence of a ‘knowledge economy’ and related shifts, it is claimed in this report, knowledge itself has undergone a change: Whereas the pursuit of knowledge for its own sake (i.e., mode 1 knowledge production) has become increasingly outdated and susceptible to attack, it is at the same time that ‘the effective production and application of knowledge is being seen as a crucial basis of economic competitiveness, and essential for the effective operation of a modern economy and society’ (Johnston 1998, 7).

Against this backdrop, the transition to (interdisciplinary) mode 2 knowledge production is posited in quasi-evolutionary terms as an unavoidable process of adaption. In place of the traditional (discipline-based) knowledge system (mode 1) which supposedly was ‘fairly immune from changes in the external environment’ (Johnston 1998, 15), a more dynamic and context-sensitive, trans- or interdisciplinary system of knowledge production is required where ‘problems are substantially set and solved in the context of application’ (Johnston 1998, 16; see similarly p. 19). Such an interdisciplinary system, it is claimed, requires

collaborative work of ‘*heterogeneous*’ research teams that change as requirements evolve’, and will result in ‘communication, and hence diffusion, of results, directly to stakeholders’ (Johnston 1998, 16; see similarly 19).

Mirroring these sentiments, a Department of Education, Training and Youth Affairs (DETYA) commissioned report from 1999 titled *Academic work in the Twenty-first century: Changing roles and policies* takes as its point of departure apparent tensions ‘arising from the conflict between traditional academic work and contemporary demands’ (Coaldrake and Stedman 1999, 1). In direct reference to Gibbons et al. (1994), traditional academic work is referred to as being characterised by ‘a high degree of specialisation and development of knowledge within narrow disciplinary domains’ (Coaldrake and Stedman 1999, 5). The same report alleges that disciplinary forms of knowledge and knowledge-production are somewhat outdated in view of the changing and apparently more practical needs of external stakeholders such as business and government, which rather call for a new ‘synthesis’ of knowledge (1999, 5). On this basis, it is claimed that universities

will need to `restructure fundamentally their approaches to research', placing a greater emphasis on collaborative and problem-based research and on economic and social impact (1999, 5). This report again paints a quasi-evolutionary scenario wherein the shift to mode 2 knowledge production is an unavoidable one for universities to make if they want to retain their relevance to society (1999, 5).

To a lesser degree, in 1999, the mode 1 to mode 2 transition model was also taken up in three further government publications. The first is an Australian Research Council (ARC) commissioned report on *Cross-disciplinary research* (Grigg 1999) comprehensively discussing the issues associated with the ARC's assessment of interdisciplinary research projects. While this report likewise insists that interdisciplinary research is indispensable for tackling 'important problems' (Grigg 1999, xi), it also offers more nuanced views. Not only does it state that 'cross-disciplinarity does not offer the epistemological or political panacea much research and science policy seems to imply' (1999, xix), but it also relativises the 'blanket association of trans- and inter-disciplinarity with innovation' (56). The second

government publication is a discussion paper authored by the then DETYA Minister Dr David Kemp (1999a) and is titled *New knowledge, new opportunities*. Outlining strategic directions for the Australian higher education sector, including research and research training, this paper tends to portray interdisciplinary research as a source of innovation (Kemp 1999a, 22), and, referencing Gibbons et al. 1994, considers interdisciplinary research to be necessary to tackle important problems (2). Finally, in a more implicit manner, the mode 1 mode 2 argumentation also features in a policy statement released in December 1999 by Minister Kemp. In this policy statement titled *Knowledge and innovation* it is claimed that (mode 1) university-based research is “too often disconnected from the national innovation system” (Kemp 1999b, 2) and generally lacks a “culture of entrepreneurship” (5).

It is interesting how little the discourse around interdisciplinarity evidenced in Australian government documents has changed in over a decade with interdisciplinarity continuing to be referred to as a relative novelty that is

tantamount to and a source of innovation, and which is necessary to tackle 'big problems'.

For instance, in *Powering ideas: An innovation agenda for the 21st century*, a Department of Innovation, Industry, Science and Research (DIISR) paper from 2009 in which the Australian government outlines its plans to foster innovation, it is stated as an explicit government objective to increase capacity in inter- or multi-disciplinary research (2009, 5; also 28) to effectively tackle increasingly complex problems (38). In the 2011 DIISR research workforce strategy document, titled *Research skills for an innovative future*, a change in research toward more collaborative and multidisciplinary endeavours is noted (DIISR 2011a, xii), and it is alleged that 'collaborative and multidisciplinary research environments are increasingly a necessity rather than an option' (22). This effectively amounts to a rehashing of the (at that particular stage seventeen year old) conception of the transition from mode 1 to mode 2 knowledge production introduced by Gibbons et al. in 1994, with this transition still being depicted as a current event. The idea that

interdisciplinarity is both inevitable and required to tackle big problems is finally also evident in a 2011 DIISR document summarising the key findings from a review of Australia's publicly funded research system (DIISR 2011b, 13).

All these reports and reviews of research from the past 15 years point to Australian governments of both persuasions believing a) that interdisciplinarity constitutes an alternative to and radical departure from disciplinarity; b) that interdisciplinary research is a necessity rather than an option in the pursuit of new knowledge and innovation; and c) that interdisciplinarity is required to tackle big problems effectively. Particularly strong is the link that is consistently drawn between interdisciplinarity and innovation, which supports Weingart's (2000, 30) observation that the discourse of 'interdisciplinarity is, in effect a discourse on innovation in knowledge production'.

## **The Australian Research Governance System and its Framing of Knowledge**

### **Production**

Having shed light on the strong programmatic nature of the discourse of interdisciplinarity pervading Australian government reports and strategy documents, we now want to provide an account of some of the key elements of the current Australian research governance system as they pertain to and effect interdisciplinary research. The primary focus in this context is on those formal governance mechanisms that concern the framing and categorization of knowledge and research in disciplinary terms.

An understanding of the current shape of the Australian research policy and governance system can only be attained by taking into account the broader transition toward a centralized and competition-based model of research funding that has taken place since the Dawkins reforms in 1987-1989 under the then

Australian Labor government. These reforms have rightfully been referred to as a “turning point” (Marginson and Considine 2000, 28) in the more recent history of Australian higher education insofar as they introduced ‘new public management’ principles and practices into the governance of universities (28-30). Likewise important is that in the Dawkins reports, higher education is also for the first time in the Australian governmental policy domain expressively regarded and treated as an industry (Marginson and Considine 2000, 30).

This introduction of ‘new public management’ principles and practices in turn has paved the way for the strong reliance and focus on formal research performance-monitoring and evaluation mechanisms that characterises the current Australian research governance system.<sup>1</sup> At the same time, in the case of Australia, this trend toward the increasing use of formal research evaluation mechanisms aligns with the move towards more exogenous forms of authority over strategic decisions concerning the setting of research objectives and priorities. Such

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<sup>1</sup> For overviews of how the trend toward the evaluation of research has played out internationally see, e.g., Whitley, Gläser and Engwall (2010) and Geuna and Martin (2003). For an instructive discussion focusing on the situation in Australia see Gläser and Laudel (2007).

*substantive* forms of control over publicly funded research activities contrast with merely *procedural* forms of control, where the main focus is on ensuring that in the conduct of research certain procedures are followed (see Whitley 2007).

One decisive step in the transition toward a centralized, competition-based mode of research funding and a more substantive form of the control of research activities was the creation of the Australian Research Council (ARC) in 1987.<sup>2</sup> The ARC system is set up in a way that ‘team-based medium-term research projects, with outcomes that can be defined in advance’ are favoured, as well as projects that can be completed in two to three years (Marginson 1993, 140). It has been noted that one of the consequences of the ARC preferences is that basic types of research as well as more open-ended, time-demanding and risky types of research have a significant disadvantage in the Australian system (Gläser and Laudel 2007).

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<sup>2</sup> In the Australian context, the ARC is responsible for providing grants for basic and applied research activities in all fields except those undertaken in medicine and dentistry.

The establishment of the ARC and its competitive schemes, and the subsequent creation and use of a range of research evaluation and performance-based funding mechanisms, the most recent of which stem from the *Excellence for Research in Australia* initiative (ERA) (2010), all entailed addressing the operational problem of how to effectively measure and evaluate university-based research activities and their outcomes. Apart from the important questions concerning the adequate basis and means for the determination of research outcomes, one of the major difficulties with the current governance model concerns the adequate determination and delineation of the domain of knowledge which is associated with the research activity that is to be measured, evaluated, and ultimately, funded. In the Australian case, such determination was from its very outset based on a rigid disciplinary matrix.

In 1993, the Australian Bureau of Statistics (ABS), after consulting with various Australian government departments as well as with the Australian Vice-Chancellors' Committee, among other bodies, released the Australian Standard

Research Classification (ASRC). Devised in accordance with the OECD's Frascati manual for the classification of R&D activities, the ASRC is presented by the ABS as a 'collective name given to a set of three related classifications designed for use in the measurement and analysis of research and experimental development (R&D) undertaken in Australia' (ABS 1993, v). Among these three sets of classifications, one directly concerns the disciplinary categorization of research activities ('Field of Research classification' or FoR).<sup>3</sup> The FoR classification is developed as 'a set of discrete categories' that distinctively identify various fields of research (ABS 1993, 9), through a numerical code. The FoR classification is itself structured in a three-level hierarchical manner, comprising, at the broadest level, 12 subdivisions, then 86 groups, and at the finest level 486 classes. Together with the two other sets of classification included in the ASRC, the FoR classification thus constitutes a formal matrix that makes possible, at least in theory, the unambiguous categorization of all research activities undertaken in Australia. At the same time, the FoR framework also simplifies the discipline-specific collection and analysis of

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<sup>3</sup> The other two sets of classification are 'type of activity' (e.g., pure basic research or applied research) and 'socio-economic objective'.

data (e.g., publication outputs), thus allowing for comparisons concerning research performances both between disciplines as well as between various institutions.

The ASRC was revised in 1998, partially to reflect developments such as the emergence of new disciplines and research programmes. FoR classifications were expanded to include 24 divisions (formerly labelled ‘subdivisions’), 139 disciplines (‘groups’), and 898 subjects (‘classes’). In 2008, the ASRC was replaced by the Australian and New Zealand Standard Research Classification (ANZSRC). The ANZSRC maintains the ASRC’s overall architecture including the FoRs, which continue to comprise three levels (‘divisions’, ‘groups’, and ‘fields’). Compared to the 1998 ASRC, the ANZSRC again modified the number of fields (from 898 up to 1238). In terms of the total number of FoR codes included in the 2008 ANZSRC, this amounts to a 143 percent increase from the 1993 ASRC system (from 584 to 1417 codes).

Such a significant increase in FoR codes over the period of 15 years may be a direct reflection of both an increasing specialization of research activities and the problem of fit, as particular codes at a given time may not adequately capture the work researchers are undertaking. While the problem of fit may apply both to ‘disciplinary’ and ‘interdisciplinary’ forms of research alike, it has been claimed that it applies in particular to interdisciplinary research: ‘The problem of interdisciplinarity is the problem of fit’ (Klein 1996b, 135).

Given that the call for interdisciplinary research and collaboration commonly accompanies and reflects the increasing specialization of research (see Weingart 2000, 30), it may come as a surprise to learn that interdisciplinarity is not much of a concern in the content of any Australian governmental research classification document prior to 2008.<sup>4</sup> It is in the 2008 ANZSRC that one can find, for the first time, an explicit acknowledgement of a trend toward both ‘new interdisciplinary and multidisciplinary fields of research’ (ABS and SNZ, 13). At the same time, in

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<sup>4</sup> The term ‘interdisciplinarity’ as such appears for the first time in the 1998 ASRC in the form of various references to the ‘discipline’ of ‘interdisciplinary engineering’. In both the 1993 and 1998 ASRC documents one can further find a few references to multidisciplinary research, where such research appears to be conceived as the collaboration of various, disparate fields, without involving synthesis or integration (ABS 1993, 2; ABS 1998, 3).

the 2008 ANZSRC, it is also claimed that, in comparison to the 1998 ASRC, improvements have been made as to the framing of interdisciplinary research ‘by rigorously applying a uniform concept across the classification’ (ABS and SNZ 2008, 3). However, at least if one takes seriously the aforementioned association of interdisciplinarity with integration, then such a claim of improvement seems exaggerated given that the major recommendation with regard to the classification of interdisciplinary research follows a logic of ‘disaggregation’ (ABS and SNZ 2008, 13). What is meant by this is that those types of research that do not neatly fit into the disciplinary matrix are to be accommodated by dissecting them into their various disciplinary components, which are then ascribed their respective FoR field or classes (see ABS 1993, 11). There is only limited scope given for deviating from this logic, for example, through the use of one defined field code only, or the use of a ‘not elsewhere classified’ category at the field level (ABS and SNZ 2008, 13), and all these alternatives likewise reflect the more general ‘problem of fit’ in regard to interdisciplinarity referred to above.

The problem of fit means that interdisciplinary research is inherently difficult to evaluate (see Feller 2006; Lamont, Mallard and Guetzkow 2006) if the assessment process is informed by a rigid set of research classifications. Moreover, it has been claimed in the literature that the assessment of research on the basis of such classifications, as practiced in the UK, has in fact led to a significant reduction of the scope available for pursuing more ‘interdisciplinary’, unorthodox and non-conformist types of research (Nowotny, Scott and Gibbons 2003, 184). It is likely that similar effects are also at play in the case of the current, highly formalized and consequential Australian research evaluation system (ERA). For example, one may reasonably assume that ERA’s logic of assessment, in its strong focus on disciplines, structurally disadvantages interdisciplinary research. The crux of the matter in the context of ERA is the aforementioned use of the logic of disaggregation. This logic, if applied to interdisciplinary research output, may actually result in worse results for the university-based units of research that are evaluated. Take the example of a political science department at an Australian university that houses several academics that commonly publish research that

combines political science with economics or history. If this department reports its output as being partially in political science and partially in economics and history, it will, according to the rules of ERA, only be able to claim the political science component as its own output. As a result, ERA appears to encourage strategic behaviours on the part of universities and researchers that aim to hide rather than highlight the interdisciplinary nature of their research. In discouraging universities and researchers to report their work as interdisciplinary, ERA may also provide a marked disincentive to pursue interdisciplinary research per se, however, there currently does not exist any reliable way to unambiguously determine the extent of this effect (see Bammer 2012, 18-19).

Similar problems exist in regard to the Australian governmental research grant system. Here, using disaggregation in the labelling of interdisciplinary research grant applications that are submitted to the ARC may increase the risk that interdisciplinary research project proposals are reviewed in an inadequate manner. For instance, such proposals may be evaluated mainly by experts from the

individual disciplines listed in the application who may not have a proper understanding of those methodologies and conceptions that are borrowed from another disciplinary context. Furthermore, and as already recognised in the previously cited ARC commissioned report from 1999 by Grigg, one of the challenges with assessing interdisciplinary research is that an adequate assessment requires taking seriously the integrated whole, and not just the individual disciplinary components (Grigg 1999, 25). This 1999 report is further revealing in that it concedes that it is possible that there are ‘deficiencies within the assessment process’ of interdisciplinary proposals (Grigg 1999, xiv; also xiii).

The problems stemming from the use of a rigid and hierarchical classification system to categorise more interdisciplinary or multidisciplinary research endeavours are again openly acknowledged within the 2008 ANZSRC (e.g., ABS and SNZ 2008, 13; also 22). However, despite these acknowledgements, little effort has been made by recent Australian governments to reduce the rigidity of such systems, or to relax the guidelines concerning their application. One may

indeed assume that, on the face of it, partially dispensing with the use of highly rigid and inflexible classification systems in the funding and evaluation of research would mean to relax some of the external pressures for the persisting disciplinary classification of knowledge production at Australian universities, and thus would be politically desirable for governments that aim to foster a more interdisciplinary and supposedly ‘innovative’ research culture.

That there is no such relaxation to be observed may be to a large degree due to the comparatively strong procedural and substantive control that the government exercises and strives to exercise over university-based research in Australia. The crux of the matter is that partially dispensing with the use of highly rigid and inflexible research classification systems would mean weakening one of the founding elements, both in operational and normative terms, for the current Australian research governance system. As a matter of fact, it is precisely such a rigid classification system that first of all makes it possible to render highly formalized descriptions of the field of academic knowledge production, and such

descriptions cannot be dispensed with in the context of a governance system that puts a strong emphasis on institutionalized, formalizing and consequential forms of the evaluation of research. In short, in the case of the 2008 ANZSRC, Bouwkers and Starr's more general observation holds true that even when an anomaly in regard to the use of a classification system is openly acknowledged, then often nothing is done to change this system, for this would be 'too expensive – politically or bureaucratically' (1999, 12).

## **Concluding Remarks**

Our preceding discussions have explored some of the constitutive dimensions of the 'paradox of interdisciplinarity' in Australian higher education research governance. The major finding has been that there is a significant mismatch between the strong programmatic discourse of interdisciplinarity pervading

Australian governmental policy and strategy documents, and current, relatively inflexible governmental research funding and evaluation mechanisms. In the context of the former discourse, interdisciplinarity is posited as being tantamount to innovation, and is set apart from more traditional disciplinary modes of knowledge production which are considered to be more conservative. We have seen that such representation is problematic for a number of reasons. First, discipline-based modes of knowledge production cannot always be easily differentiated from interdisciplinary modes. Second, in the instance of the Australian research governance system, conservative tendencies inherent in the process of academic knowledge production are strongly encouraged and in effect are reinforced through inflexible, formal classification mechanisms which are employed by the government to facilitate centralized forms of the evaluation and funding of research.

In view of all this, it is our contention that a true understanding of the paradox of interdisciplinarity in the Australian context can only be achieved if it is considered

against the backdrop of a more general paradox: On the one hand, the attempt by the government to steer and shape the nature and direction of university-based research has been fuelled by a rhetoric of innovation, while on the other hand, it is precisely this approach that has tended to diminish the scope for the self-organisation of knowledge. Indeed, it has been argued by some that the (disciplinary) system of knowledge production requires external disturbances to move towards more trans- or interdisciplinary modes (Gibbons et al. 1994, 29). Following this logic, ‘external’ interference, in the form of targeted directives and initiatives for instance, may be considered instrumental for developing a more interdisciplinary research culture. However, taking seriously the experiences from countries other than Australia, a picture emerges that seems to be considerably more complicated.

For example, in the US, the National Science Foundation (NSF) has set aside funds for interdisciplinary fellowships and for establishing interdisciplinary research centres since 2007, complementing a range of university-led efforts to foster

interdisciplinary research (Sá 2008). The success of these centres has been reported as mixed, however, and the evidence suggesting whether such centres provide the best location for interdisciplinary research has so far been inconclusive (Rhoten 2005; Jacobs and Frickel 2009). Similarly, claims have been made that more ‘interdisciplinary’ research in Germany has often occurred within academic settings and programs that are geared towards the disciplines, rather than in those that are overtly labelled as and funded for being ‘interdisciplinary’ (Weingart 2000, 32-34).

All this would indicate that interdisciplinarity – not the political label but the epistemic practice – cannot be easily directed from above, as it often flourishes most where it is not actively encouraged through measures and incentives, but where sufficient room is given for the pursuit of more open-ended, risky and collaborative research endeavours. This would ultimately suggest that if the Australian government wants to foster more interdisciplinarity in university-based research, and arguably more innovation, then one way to achieve this would be not

so much to set aside funds to directly support such research, but rather to relax some of the static governance mechanisms that lead to a streamlining of the field of knowledge production. However, such relaxation seems unlikely in the current political environment, which suggests that the ‘paradox of interdisciplinarity’ in Australian research governance is going to persist for some time to come.

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