

KIT WISE

Diagnosing Interdisciplinarity

Abstract

Interdisciplinarity is accepted as a key strategy of many contemporary creative arts institutions, relevant to both its educational and research agendas. It enables multiple benefits: including enriching the student experience and their real-world problem solving abilities; allowing for more complex research outcomes; and promoting wider impact of research / practice beyond the academy. However clarity around the goals desired from interdisciplinary learning, and consequently the models adopted, is variable.

This paper will explore a range of interdisciplinary models in order to develop a 'diagnostic tool' for considering, through a case study, whether the teaching and assessment modes employed relate to the outcomes desired from interdisciplinary learning.¹

Introduction

Interdisciplinarity has become a common feature in institutional priorities of universities around the world. Discussion of theoretical approaches to this end is similarly extensive, covering some forty years from Squires' 'Interdisciplinarity: problems of teaching and research in universities' (1975); to Boyer's 'Scholarship Reconsidered: Priorities for the Professoriate' (1990); to Barrett's 'Is Interdisciplinarity Old News? A Disciplined Consideration of Interdisciplinarity' (2012), including considerable debate around the precise terms used and their meaning.² This paper attempts to explore the terminology and key gradations of interdisciplinarity through the overview found in Martin Davies and Marcia Devlin's 'Interdisciplinary Higher Education' (2010).³ As part of a research project conducted by Associate Professor Kit Wise in 2012, these gradations will be used to 'diagnose' the model of interdisciplinary pedagogy currently employed by Monash Art Design & Architecture (MADA, the Faculty of Art Design & Architecture at Monash University), in order to determine whether this matches its aspirations.

¹ This text draws upon my paper 'Hyperdisciplinarity and Beyond: The Beginning or the End? Enabling Interdisciplinarity in the Creative Arts', published in *The CALTN Papers*, Creative Arts Learning and Teaching Network, Australia, 2013.

² See: Squires, 1975; Boyer, 1990; Barrett, 2012.

³ Davies and Devlin, 2010.

The first universities consisted of just four disciplines: Medicine, Philosophy, Law and Theology. Universities have always been characterised by the evolution, splitting and reforming of disciplines such that 'routine interdisciplinarity' is a standard feature of healthy, collegiate universities, where discipline renewal is driven by emerging research challenges. Boyer acknowledged this imperative in his seminal 1990 report for the Carnegie Foundation for the Advancement of Teaching, where he introduced the notion of a 'scholarship of integration': 'the work of the scholar also means stepping back from one's investigation, looking for connections, building bridges'.⁴

This model of research through 'integration' can be related to the inquiry-based learning processes that characterise creative practice, where real-world problems are engaged in a far-reaching practice-led context. In the creative arts, as has been noted in the recent Studio Teaching Project led by the University of New South Wales, 'live' studio projects are notably successful and tend to introduce 'interdisciplinary or cross-disciplinary aspects into the studio'.⁵ There is a clear link between interdisciplinarity and 'real-world', industry engaged practice.

Important Australian case-studies include UNSW's renowned Project X and Project X2, which explored multidisciplinary design courses across three faculties. 'The results demonstrate that multidisciplinary student-led design and fabrication projects are "an exciting and viable way of achieving educational goals in both professional and non-professional degrees"'.⁶ UNSW also explored the value of interdisciplinary, real-world studio projects through a Faculty of the Built Environment project, which employed Boyer's principles to engage Architecture, Interior Architecture, Landscape Architecture and Planning and Urban Development to develop a community facility for people with schizophrenia. 'The qualitative feedback revealed a significant potential for interdisciplinary design studios to provide integrative and personally transformative learning experiences for students and community members'.⁷ Significantly however, this same team of degree programs failed at the last hurdle to generate a cross-disciplinary course, despite lengthy consultation and consensus amongst stakeholders.⁸

Why did this fail? What risks and challenges are associated with interdisciplinarity? The balance of depth versus breadth of learning is one critical issue. As will be discussed, excessive interdisciplinarity can erode discipline skill-sets and knowledge, resulting in 'hyper-specialisation', where students are equipped for one specific interdisciplinary problem but lack transferable skills or an adequate depth of knowledge to draw upon for other problems.⁹ Similarly, the erasure of studio disciplines in favour of thematic pedagogic approaches can result in homogeneity and stasis.

⁴ Boyer, 1990, p.23

⁵ Robert Zehner et al., 2010, p.3.

⁶ Carol Longbottom et al., 2007, p.5.

⁷ Linda Corkery et al., 2007, p.1.

⁸ See: Robert Zehner, 2007.

⁹ See: Rob Moore, 2011

Mandating interdisciplinarity is therefore a fraught task; consequently, clarity in 'diagnosing' what modes of interdisciplinarity are or should be employed is a worthwhile investment.

The Language of Interdisciplinarity

This paper will use the term interdisciplinarity (ID) in preference to multi-disciplinarity, cross-disciplinarity, transdisciplinarity etc. for the sake of expediency. However to ascertain the outcomes expected of this mercurial term, it is necessary to consider the range of definitions that apply to different models of disciplinary collaboration. Understanding the specific model or degree of ID aspired to is central to developing appropriate strategies for its implementation.

Martin Davies and Marcia Devlin's paper, 'Interdisciplinary Higher Education' (2010) provides a key reference in summarising the various and contested terms used to describe ID over the last twenty years. Franks et. al. also provide an excellent overview of the field in 'Interdisciplinary foundations: Reflecting on Interdisciplinarity and Three Decades of Teaching and Research at Griffith University, Australia'.¹⁰ However the spatialised gradations of ID developed by Davies and Devlin will prove more useful to the current discussion than the chronological account provided by Franks, as will be indicated .

Let us consider an account of the 'universe' of interdisciplinarity. In the beginning, there were disciplines. Fig. 1 provides a diagrammatic overview of their 'spatial' relations. The following definitions are drawn from Davies and Devlin's text.¹¹

Disciplinarity:	Disciplines are understood to be 'thought domains – quasi-stable, partially integrated, semi-autonomous, intellectual conveniences – consisting of problems, theories and methods of investigation', i.e. consist of specific histories, methods, communities and language.
Multidisciplinarity:	Disciplines contributing from their own perspective; co-existence: 'everyone does his or her own thing with little or no necessity for any one participant to be aware of the other participant's work'. For example, the development of a public art-work.
Cross-disciplinarity:	The investigation of a topic normally outside a field, without engaging with expertise relevant to that topic, i.e. dabbling. This model rarely involves the transfer of methodologies and only the topic is 'new'. For example,

¹⁰ See: Franks et al., 2007.

¹¹ Davies and Devlin, 2010, p.10-14.

	the physics of music: physics student may not learn much about music, nor musicians be able to undertake research into physics.
Interdisciplinarity:	'The emergence of insight and understanding of a problem domain through the integration or derivation of different concepts, methods and epistemologies from different disciplines in a novel way'. Key terms that arise in this definition are 'integration' and 'novel'. These qualities lead to an 'axis' of ID, depending upon their degree, as outlined in Figure 1.
Relational ID:	'Two or more disciplines... contributing their particular disciplinary knowledge on a common subject', i.e. looking at a problem through two perspectives. Unlike multidisciplinary, there is explicit acknowledgement of the other's perspective. However, the two perspectives are not integrated in a meaningful sense, but are simply listed.
Exchange ID:	'Critique and critical exchange of views between disciplines, while maintaining robust disciplinary specificity', i.e. a contested argument: strong engagement, but little willingness to integrate views or to generate anything 'novel'.
Pluridisciplinarity:	This model 'requires two or more areas to combine their expertise to jointly address an area of common concern'. Pluridisciplinarity demonstrates one of the two defining features of ID: the integration of approaches. It is cooperative and collaborative: for example, in pursuing solutions to real-world problems such as AIDS, climate change; or the developments in cognitive science, which require input from a diverse range of fields. While there is integration through collaboration, the outcomes may not be 'novel': the outlines of the contributing disciplines do not change. However this model does perhaps best describe institutional-level goals, for example those of the ARC.
Modification ID:	Disciplines are integrated as in pluridisciplinarity, but are coordinated by a higher directive such that the disciplinary sub-contributions are modified to some degree, and the individual contributions require synthesis to generate their own outcomes. For example, medical research that coordinates the collaboration of biology,

	physics and psychology. The higher directive evaluates and combines the lower-level integrations to develop them beyond their discipline boundaries.
Transdisciplinarity:	'The collapse of academic borders and the emergence of new disciplines'. This assumes that the 'parent' disciplines are re-formed and ultimately dissolved and presumably represents paradigm shifts in disciplines themselves. Transdisciplinarity may represent a purely theoretical possibility in institutional terms, although art history would suggest that the creative practices employed in art production may approach this model – e.g. the history of the <i>avant-garde</i> or the emergence of Dadaism.

In addition to Davies and Devlin's schematic overview, it is important to consider the notion of 'hyperdisciplinarity' as outlined by Rob Moore in 'Making the Break: Disciplines and Interdisciplinarity'.¹² Hyperdisciplinarity can be understood as 'the end of the university', the radical rejection of any disciplinarity; a fundamental break in the continuity of the development and engagement of disciplines from an ideological viewpoint. This model has been championed as a neoliberal approach to academia, in that it assumes a market-driven model based purely upon commercial problems and profitable outcomes. At the same time, it has been criticised as it risks 'hyperspecialisation', whereby students are equipped with highly specific, non-transferable skills sets and knowledge bases that cannot be applied more broadly. While attractive in the short-term, in a long-term knowledge economy, this model cannot be sustained. Hyperdisciplinarity and consequently hyperspecialisation must be clearly recognised as potentially adverse consequences when developing curricula based on output-driven, research/industry orientated agendas.

Diagnosing Interdisciplinarity

Within most creative arts contexts therefore, the term 'interdisciplinarity' can be expected to have a broad range of meanings for different stakeholders. While the value of ID is usually widely accepted, the processes, outcomes and perceived benefits of ID are diverse, even divergent. Identifying the 'sweet spot' in Davies and Devlin's diagram relevant to specific institutional goals is therefore central to developing effective ID strategic planning.

Let us use Davies and Devlin's diagram as a graph rather than illustration. If we consider what modes of ID activity are employed by an institution, and locate them as the X and Y-axes of the above model, we are able to diagnose or 'plot' an ID profile for an institution.

¹² See: Moore, 2011.

I will focus on the example of the existing creative arts pedagogy at MADA. In 2012, a brief survey of current curricula demonstrated that Faculty-wide ID was well established at first year. Increasingly exploratory and open-ended ID activity was apparent in subsequent year levels, but on an elective or extra-curricular basis. Markedly divergent approaches to ID activity were found at GPG & HDR levels; with neither demonstrating an engagement with the possibility for radical ID activity, such as transdisciplinarity, whereby the literature suggests the greatest innovation may occur.

In summary:

<p>Year 1 AQF Level 7</p>	<p>Within a structured framework, both first year Drawing and Theory units bring students from all three Departments into shared classes, offering Faculty-wide ID curricula and consequently a strong foundation in ID. These engage students with knowledge and content from different but related fields (often using discipline-bridging thematic approaches); as well as allowing the different course cohorts to interact. First year therefore provides students with shared knowledge, language and community: key enablers for ID.</p>	<p><i>Pluridisciplinary</i> <i>(240 student p.a.)</i></p>
<p>Years 2, 3, 4 AQF Level 7 & 8</p>	<p>ID is enabled through electives (where available), such that students are able to access other discipline skill sets through specific units.</p> <p>Study abroad programs often involve cross-disciplinary teaching opportunities as well as the chance to further engage with different cohorts.</p> <p>Specific ID projects are initiated across MADA, one per semester, in response to real-world opportunities. Students have the option to elect to undertake these, either as a credit-bearing unit or as extra-curricular activity. These target UG and Honours but can involve both UG and GPG / HDR students. These have predominantly been multidisciplinary to date.</p>	<p><i>Cross-disciplinary</i> <i>(c.120 students p.a.)</i></p> <p><i>(c.80 students p.a.)</i></p> <p><i>Multidisciplinary</i> <i>(c.40 students)</i></p>

<p>Years 5, 6 (HDR)</p> <p>AQF Level 9 & 10</p>	<p>The HDR programs deliver shared coursework unit content as well as opportunities for lectures and critique seminars across the different cohorts; although discipline-specific streaming is becoming increasingly prevalent.</p> <p>MADA Coursework Masters programs are often professionally orientated and therefore generally follow discipline-specific lines.</p>	<p><i>Relational ID</i></p> <p><i>(c.40 students)</i></p> <p><i>Disciplinarity</i></p> <p><i>(c.40 students)</i></p>
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A number of conclusions can be drawn from the ID profile 'diagnosed' for MADA (fig. 2):

- The dominant ID experience for students is their foundational (first-year) studies in pluridisciplinarity, common for all students. This prioritises process-based or experiential ID: they are successful in developing shared language (a key challenge for ID activity) and prioritise common themes or content to achieve this. They advance an ID-derived learning experience and are speculative. However significantly, this is located in non-core studies (art history & theory and drawing).
- Successive year levels tend towards less integration of disciplinary knowledge, privileging cross- and multidisciplinary opportunities.
- Multidisciplinarity is arguably where specific research outcomes or problem-solving objectives are most readily achieved in the creative arts. For example, an industry-based opportunity for a public artwork may involve artists and architects collaborating through bringing their distinct skills and knowledge to a commission. However, this opportunity was provided for the smallest cohort of students (approximately 40 per year).
- There was a marked divergence in ID activity at AQF Levels 9 and 10. While shared Masters and Doctoral coursework units provided opportunity for 'benign' Relational ID, curiously this was diametrically opposed by a trend towards discipline-specific GPG content.
- The ID profile identified suggests overall that there was an increasing breadth of disciplinarity integration in early year levels, and a tendency to decreasing integration at higher levels. It also suggests that what ID activity does exist is uniformly 'benign' This would seem opposed to the current pedagogic vision of MADA, which pursues 'depth to breadth'; and, the desire to pursue innovative solutions to real-world problems.

It is important to acknowledge that, while the study of *overtly* ID activity at MADA identified the above pedagogic approaches, the nature of studio-based learning and research is such that, arguably, ID activity is *implicitly*

always already taking place. For example, the iterative, cyclical process of making and critique engages both practice and theory, therefore could be described as ID. Furthermore, the creative process itself is, at best, a fluid movement between multiple techniques of fabrication, observation, action and reflection. This has been described as 'action research'.¹³ Further investigation is required to determine whether this process in itself can be described as 'transdisciplinary': whether studio practice through action research (and consequently research-orientated learning) in the creative arts is predicated on the dissolution of discipline boundaries in the quest for innovation; and at what level of study / research this occurs. However we can safely determine that the ID profile described above should not be seen as exhaustive, but indicative.

In summary: use of the diagnostic tool outlined in this paper may enable programs to achieve greater clarity in regard to the necessary level of integration of discipline approaches relative to the novelty of the outcomes aspired to. In doing so, an improved pedagogy in the creative arts will better enable our graduates to achieve the significant cultural and social contributions they are capable of, and which the world requires.

Biographical Statement

Associate Professor Kit Wise is Associate Dean (Education) and Bachelor of Fine Art Honours Course Coordinator at MADA, the Faculty of Art Design & Architecture, Monash University, Melbourne.

Figures

Fig. 1: Various Forms of 'Disciplinarity' including Hyperdisciplinarity; adapted from Davies and Devlin, 'Interdisciplinary Higher Education' (2010). (Copyright Kit Wise)

Fig. 2: Diagnosis of MADA approaches to interdisciplinarity, after Davies and Devlin, 'Interdisciplinary Higher Education' (2010). (Copyright Kit Wise)

¹³ See: Stringer, 1999.

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