

## Emergent Creativity across and between Disciplines

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**ABSTRACT.** Creativity has been adopted as a mantra across more industries and disciplines than ever before. It crosses borders and silos and is embraced in unexpected sectors. Yet we know very little about how to foster transdisciplinary creativity across and between all the disciplines in our universities. And given predictions that more future discoveries will take place between disciplines, not simply within them, understanding the dynamics of transdisciplinary creativity becomes increasingly important. This article examines an unusual university environment that fosters transdisciplinary discovery. Specifically, it looks at the creative process involved in using a pack of ‘method cards’ written by academics from many disciplines. Emerging from this process I present three deep insights revealed through five years of observation, presented as paradoxes as they all challenge the importance we place on traditional notions of knowledge. The first insight discusses the value of the naïve perspective (important when researchers stray out of their domain of expertise in transdisciplinary research.) The second insight explores the importance of the creative leap between disciplines (the invaluable ‘trans’-cendent part of ‘trans’-disciplinary practice, where discipline becomes less relevant). And the third insight explores the importance of the person / people doing the creative leap (examining the crucial shift we must make in our universities to privilege ‘being,’ not just ‘knowing.’)

**Keywords:** transdisciplinary creativity; discipline; university; method cards; paradox

### Introduction

We live in an era when creativity is no longer restricted to the domain of the so-called creative industries – an era where every industry and every field is supporting the development of creative thinking – in problem-solving, strategy, communication, invention and organisational change, to name but a few areas of focus (May, 2017). Indeed, IBM has cited that creativity is the most valued management trait for CEOs worldwide (IBM, 2010). In this Zeitgeist, practices established in the creative industries, such as Design Thinking, have been repackaged and appropriated by the big four accountancy firms to provide a useful

and popular (albeit singular) approach to creative problem-solving. The question remains – if creativity is breaking beyond its traditional boundaries, where is it going and what new forms of interdisciplinary and transdisciplinary creativity will emerge as a result? Most importantly, how can we foster the dissemination of creative practice across every field and discipline?

Whilst creative innovation – yes the two seem to be conflated by many businesses (May, 2017) – is a commercial imperative, it is still mostly confined to specific fields, disciplines and industries. Indeed, it is still often siloed in Innovation Departments and certainly, in our universities, creative thinking and innovation is being taught within disciplines, not across and between them. As such, there is work to be done on understanding the implication of combined creative ‘intelligences’ that diverge across and between these industries, disciplines and fields.

This article examines the emergent practice of combined creativity across disciplines (inter-disciplinary and transdisciplinary creative practices). It reveals three practice-based research observations about the process of transdisciplinary creativity that may be useful for those conducting further study. These are described as paradoxes, as they go against expected wisdom. Indeed, the entire method described below is about encouraging creative practitioners – from across the disciplines – to travel beyond expected wisdom, using their ‘uncommon’ sense. The first paradox is that the naïve perspective leads to novel observations – and indeed, the naïve perspective may even be necessary in transdisciplinary creativity where individuals are transgressing into disciplines they don’t fully understand. (Whereas conventionally, we might assume that it is mostly knowledge that will lead to discovery rather than the lack of it.) The second paradox is that ‘the method cards used are not the method.’ (What is attempted here is a distinction between a method – which is not always in itself creative – versus a creative process that requires the practitioner to make a conceptual leap beyond the method itself.) The third paradox states that ‘it’s not just what you know but who you are and how you are that helps you make the conceptual leap.’ (Finally, this suggests that creativity is not just a process, but a mindset – a quality of ‘being’ not just ‘knowing.’ A notion qualified by other researchers beyond the field of transdisciplinary creativity.)

## **Introduction to the Case Study**

Insights curated for this article have emerged in the context of the Bachelor of Creative Intelligence and Innovation (BCII) at the University of Technology Sydney (UTS). More specifically, under the lens is the degree’s first subject – Problems to Possibilities – the ‘first kiss’ with transdisciplinary creativity in the four-year programme. Undergraduates combine the BCII with 25 core degrees across all seven faculties in the university – from Science, Law, Business, Health, Design, Communications and Engineering and IT. In this intensive two-week

winter school, they learn over fifty creative methods from across the disciplines, as well as innovation methodologies from industry partners. As such, our understanding and definitions of creative thinking and practice have had to be extremely broad and inclusive. What's more, we have ensured that a wide variety of academics from across all faculties at UTS are involved in the creation of the curriculum, as this type of transdisciplinary learning cannot privilege one discipline or individual as more creative or less creative than another – instead, our aim is to provide the enabling conditions for all types of creativity to take place. Being transdisciplinary, our focus is on the creative edges between and across disciplines – it's about the kind of creativity that happens when disciplines combine.

In the second half of the school, students are introduced to a set of method cards that have been developed by all seven faculties at the university and beyond as a way of introducing them to the notion of transdisciplinary creativity.

The idea that a deck of cards can be used to explore novel methods is common in industry (IDEO, 2017), but the set we have developed in the BCII is perhaps the first to combine the diversity of practices within the academy. This case study serves to theorise what takes place when a combination of these methods are used – when groups of creative thinkers cross the boundaries of their traditional disciplinary silos and combine forces to explore emergent forms of transdisciplinary creativity.

## **Method Cards and How We Use Them**

First, an introduction to the method cards and how we use them in an educational context is essential. This set of around 33 cards (the numbers vary each year) are written by the academic mentors who teach into the school from the seven faculties and various industries. Academics introduce these methods briefly to the students: additionally, a book of method cards has also been collated for deeper reference. Each academic 'owner' of the method is also available for consultation on how to use 'their' method, within and outside of tutorial groups in a team teaching environment.

These methods are used in an observational context – as a way to collect information for a creative project. The site of observation varies, although each year students are taken to a problem space in the city, near the university. In the first year students were taken to Sydney's Kings Cross, an area once known as the 'Glittering Mile,' now a spot where up to 30,000 young people party on weekends – a place with a reputation for alcohol-fuelled violence and homelessness (Watson, 2016). Centrally located, Kings Cross is filled with backpacker hostels, bars and restaurants, an injection clinic, etc. Another year, students were given the challenge of the death of Oxford Street, one of Sydney's major fashion streets, experiencing a major decline in business. The year after, their location for observation was Sydney's creative precinct in Ultimo – on the university's doorstep.

To plan for their field trip, students are placed into multidisciplinary groups to create diverse perspectives and outcomes, and asked to diversify further by choosing which method cards their group will use. Moreover, we suggest that the methods they select are not the ones that they would generally use in their core degree – indeed, they should be unfamiliar, as learning is our goal. In other words, they are forced to observe through a novel lens or naïve perspective. By the end of the day, students have to submit a report of their findings.

Each method is summarised on every card under the headings WHAT? HOW? WHY? Below is the text from one of the cards that has now been used over five years.

**CARD: Interpreting the media landscape**

**WHAT?**

Reading the media landscape for a better understanding of how we are sold to, and how we are affected by the communication surrounding us.

**HOW?**

Observe the advertisements / messages you see around you. Record the language of your culture at work, noting the values, beliefs and prejudices on display. How does business define its audience and how are you implicated in the message? What are the marketing strategies and assumptions at work?

**WHY?**

Some experts claim that we're subjected to up to 5,000 advertising messages a day. A deeper understanding of the context and content of those messages helps us unpack their influences on our lives and on our society (Staff, 2017).

By designing the learning experience using these cards, we ensure that students are always 'in method' – or looking out for something in particular – whilst investigating their problem space. And so, these various disciplinary methods become the tools for the first step of the process – introducing students to the idea of a methodological approach to their enquiry. In this way, a creative response to the environment is always founded on deep insight, gained through close observation. Data is key – without this, students are simply using assumptions rather than real insight as foundation stones for their creative leaps. They are working from common sense rather than un-common sense or the lens of novelty, so essential to creative thinking.

From this first step of the creative process we have devised, there is an initial paradox that emerges about the transdisciplinary creative process – the fact that expertise can sometimes get in the way of creative discovery – or conversely, being new to a field can enhance 'uncommon' thinking.

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(BOX TEXT)

### **Paradox 1 – The Naive Perspective Leads to Novel Observations**

When encouraged to adopt an unknown method from a discipline other than their own – indeed, one they have never encountered previously – students tend to benefit from a naïve perspective. As such, they do not suffer from what has been described by researchers as the ‘curse of knowledge’ – a mindset that confines possible outcomes to what is known (Froyd & Layne, 2008). Learning is able to take place between and across fields – it’s an innocent process.

Most significantly, once students have conducted their research ‘in method’ they often gain unusual insights that an expert in the field might fail to spot, and therefore this naïve perspective can lead to a type of experience that is really helpful in any transdisciplinary creative investigation, which must by its very nature stray across the boundaries of the known. Certainly, in the context of the students described, the beginner’s mindset liberates student thinking and allows creativity to emerge. The so-called ‘beginner’s mindset’ is described as *Shoshin* by the Zen Buddhists, and by others in business as an excellent way to counteract the ‘overconfidence bias’ of experts (Oosterling, 2011).

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Once students have spent a day in the city observing ‘in method,’ a synthesis of their methods and data, together with a reflection on the process, is then submitted for assessment. The following day, all tutorial groups meet to create posters of their findings and this is then shared through a plenary presentation to the entire cohort. In this way, everyone has access to all the data gathered by all tutorial groups across all method cards, for step two of the process.

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(BOX TEXT)

### **Paradox 2 – The Method Cards Are Not the Method**

Students now have a wealth of data and their own experiences and desk research to tackle the second stage of the assessment – the creative response to the problem and data they have uncovered. This will include a ‘big idea’ for the problem space, location or context that they would be willing to present to key stakeholders as a potential solution.

At this stage, we encourage wildly divergent speculative thinking. In the assessment brief we ask for a ‘straw man proposal’ rather than a concrete solution or what has been described as a more concrete ‘iron man’ solution (Taggart, 2011) – there is no need for a feasibility plan or any such reality checkpoint. A straw man proposal is simply offered to prompt discussion of possibilities and demonstrate

evidence that *a creative leap has taken place*. By this we mean a leap away from the pure data, into the ‘possibillionism’ of creative interpretation. *Data* is expected to transform first into *insight* and then into *novel idea*. Just as a bank does not initiate business, the data is simply the repository that will fund the conceptual and imaginative leaps that have to emerge and circulate across all student groups.

So, the second paradox is the fact that the actual method of the method cards is not found in the cards, but in the second stage of the work – *the conceptual leap*. After all, the method cards are still from single disciplines – it’s when they’re used as boundary objects in this second transdisciplinary phase (Star & Griesemer, 1989) that the interesting new perspectives and possibilities emerge.

In other words, the method is in the flight that takes place beyond these cards or between fields. It’s in using the data as a creative springboard for transdisciplinary dialogue and re-imagining. And just in case students use the cards to simply collect data and nothing more, there’s the following ‘fool’s card’ that encourages them to take flight and not leave their discoveries on the level of ‘found’ information.

### **CARD: Speculative and Imaginative Leaps**

#### **WHAT?**

Questioning and re-imagining the world through the ‘why should’ and ‘what if’ questions that fiction writers explore when creating surprising scenarios.

#### **HOW?**

Observe the assumptions that are built into the way we live and the conditions we accept. Then question those assumptions by asking the question: ‘why should’ things be as they are? Next, imagine a ‘what if’ scenario that follows on from your ‘why should’ question. For example, ‘why should we only walk on a bridge footpath? What if we could walk over it? (Bridge limb). Don’t limit your thinking.

#### **WHY?**

To formulate interesting questions and possibilities that circumnavigate engrained and predictable pathways towards solutions. To help explore the unexpected (Staff, 2017).

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As mentioned earlier, the method cards will get you a *report* – some interesting observations if you’re lucky. The methods are not inherently creative in their own right, but when combined and repurposed, all the disciplines can unveil profound creative potential, rich with emergent possibilities. The magical extra something that has to happen – the conceptual leap – is something that cannot be scripted or planned or predicted. The cards won’t get you the creative leap that every discipline is capable of performing. You can *observe* the problem space using a novel and interesting combinations of methods, but the ability to *create* novelty is

something that is a practice, not a method, and it is exactly this practice that we're hoping to develop in our students.

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(BOX TEXT)

### **Paradox 3 – It's Not Just What You Know but Who You Are and How You Are That Helps You Make the Conceptual Leap**

Having a set of transdisciplinary method cards and a booklet on how to use them is an incredibly useful tool and has attracted much interest from academics and industry partners alike. However, they can rarely make a creative outcome in their own right. Paradox 2 referred to a conceptual leap that had to be made – the creative flight from data to an original solution. However, we cannot expect this process to take place without considering the site of transformation – i.e. the ontological being enacting the creative process. What this person brings (or fails to bring) to the creative process (such as confidence, imagination, enthusiasm, questioning, freedom of thinking, etc) is integral.

This leads to the third paradox – the notion that it is not what you know, but who you are and how you are that contribute to the quality of the creative output. It is down to the creative thinking ability of the *person* – be they a scientist, novelist, designer, lawyer, midwife, whatever, to embody the creative solution. In other words, it is one's being that influences one's creative decision-making, problem-solving, ideation, etc. Whilst confidence and imagination have been described as creative qualities of being, Amabile also discusses the importance of motivation (another quality of being) and describes a model of creativity that allows motivation to combine with expertise (a quality of knowing) for final results (Amabile, 1998).

Some educationists have begun to consider the importance of shifting the focus from epistemology to ontology – from knowing to being – in a future of where knowledge is provisional and changing so rapidly it often becomes contestable. According to Ronald Barnett (2004), in these times of change and supercomplexity 'we never can come into a stable relationship with the world' and as such it is 'radically unknowable,' so 'the self has to be self-energizing and self-propelling' (Perkins, 2004). If this is the case, teaching these types of creative thinking skills become more important than ever. It is perhaps the only way to ensure that knowledge is continually 'enlivened,' contextual and relevant as our next generation workforce straddle the complexities of their continually transforming fields

Moreover, giving students agency to break beyond their disciplinary silos, albeit with an innocent perspective, enables breakthroughs in education that focus on the learner, not just the material learned, which will always change.

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## **What Do the Method Cards Tell Us about Creativity in Education More Generally?**

The disciplinary method cards, as used in the Bachelor of Creative Intelligence and Innovation, are the creative effort of a team of academic staff from all seven faculties at UTS and beyond. Interestingly, at first many staff members didn't understand how their methods might be used or even useful. Some of them didn't feel that their disciplines were creative (even with respect to the many varying definitions of creativity). This feeling of inadequacy is documented as 'the creativity myth' by the Kelley brothers. 'You might feel that architects and designers are paid to be creative thinkers, but CEOs, lawyers and doctors are not' (Kelley & Kelley, 2013).

Even if some of the academics involved felt they *were* creative, others were still concerned about teaching students from outside their disciplines. However, having a framework for teaching – the cards – as well as a structured process for using them, allowed creative confidence to emerge.

Nowadays, in a Zeitgeist that embraces creative innovation, many unexpected companies are also using creative methods (think pharmaceutical companies, superannuation funds and property developers). However, there is a dearth of literature specifically exploring transdisciplinary creativity, perhaps mitigating for the somewhat speculative nature of this article – based as it is on practice-based educational research in only one context. This is a very new field, and there are few precedents available to consult. Moreover, if one takes the more contemporary view that creativity is not to be seen 'as something happening within a person but in the relationships within a system' (Csikszentmihalyi, 1996) then one could say that there is no system in place yet to define transdisciplinary creativity. At the very least, this article might suggest that transdisciplinary creativity deserves further study – and these method cards might provide just one of many prompts to understand how creative thinking – well beyond design thinking (which privileges only design) can be applied across all disciplines.

### **Summary**

Whilst this study is limited to a single institution and its experimentation with transdisciplinary creativity, the three observations elicited from the method cards may lead to further study into the enabling conditions for transdisciplinary creativity.

The first paradox suggested that naïve perspectives might be valuable when transgressing disciplinary domains. This may be useful for researchers attempting to understand how we can create environments where students feel empowered to learn beyond their traditional disciplinary domains. It also suggests the value of breadth of knowledge rather than depth of knowledge – and the creative confidence required to 'trans-gress' domains to drive transdisciplinary discoveries. The



suggestion that transgression leads to novelty is not a new one, but it becomes ever-more important in an era that seeks to drive discovery between fields.

The second paradox – the notion that the method cards are not the method – is something of a provocation for those attempting cross-disciplinary collaboration. Perhaps this insight could even work as a caution not to be overly reliant on a known process, when transdisciplinary discovery requires a leap into the unknown (Kerwin, 1993).

The third paradox – which places the emphasis on the individual – is perhaps the most problematic in the context of traditional learning. Our educational institutions are currently debating the importance of teaching 21<sup>st</sup> century skills (privileging ‘being’ over ‘knowing’) but many other commentators would prefer to see our education systems (with their silos) remain intact, claiming that they have served us well in the past (Urban, 2018).

With the current thinking on the future of work and the predictions that today’s graduate will have to work across many fields, transdisciplinary learning becomes more important. It has also been suggested that the future of research is transdisciplinary, as advances of knowledge are more likely to take place between and across disciplines, not simply within them. As universities take up the call to work as incubation centres that forge futures for our industries, governments and society, creative transdisciplinary education will become far more important.

There are more questions to explore than ever before, but a great many of the discoveries will be of a different nature than in the past. Instead of helping us understand the individual pieces of the world, they will help us understand how those pieces interact. So, for instance, you will find engineers collaborating with biologists to understand the toughness of the conch shell and applying it to everything from tank armor to auto bodies. Or you will see oceanographers, meteorologists, geologists, physicists, chemists, and biologists collaborating to understand the effects of global warming. New discoveries, world changing discoveries, will come from the intersections of disciplines, not from within them (Johansson, 2004).

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