Creativity and design: an educational dilemma

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ABSTRACT: This paper explores the issue of creativity in design and considers its educational implications and in particular as it relates to assessment. The paper forms part of an ongoing Australian Learning and Teaching Council (ALTC) research project entitled Assessing Creativity: Strategies and Tools to Support Teaching and Learning in Architecture and Design, which rose from the 2008 ALTC Discipline Based Initiative (DBI) study into the architectural discipline across Australasia (Ostwald and Williams 2008a; 2008b). In the DBI study, Ostwald and Williams found that there is widespread confusion and disagreement surrounding assessment practices for design, in particular as they relate to creativity. The current study addresses this ambiguity and aims to arrive at a model of creativity and a set of strategies for assessing creativity in design education that may bridge theoretical and practical approaches to design creativity. This paper forms part of this process and reports on data collected during a symposium with Australian design academics and practitioners who met to discuss their perceptions and experiences of creativity and assessment of design students' creative works.

Conference theme: Design education
Keywords: design, creativity, assessment, architectural education

INTRODUCTION

During a recent symposium held in relation to the ALTC Project Assessing Creativity: Strategies and Tools to Support Teaching and Learning in Architecture and Design, one of the participants described design as a discipline ‘where there is a need and an expectation to do things differently’ (emphasis added). As explained by the participant, this refers to an embodied understanding of disciplinary requirements and a particular set of attitudes towards design developed through practice within the disciplinary field. The assertion points to the essential role of original and divergent thinking and practice; that is, the essential role of what is often described as creativity (Amabile et al. 1996; Casakin 2007; Elton 2006; Mayer 1999; Paulus & Nijstad 2003; Sternberg & Lubart 1999). Moreover, it suggests that understanding what constitutes originality and divergence within the field of design is an acquired knowledge that is beyond the reach of novice designers. This has vast consequences for design education and design educators. Firstly, it points to the necessity of acknowledging the critical role that creativity plays in design education; both as an educational outcome and as an educational tool. Secondly, it suggests a schism between design students and design educators/practitioners in their understanding of creativity as a domain specific requirement. Thirdly, it implies an inert, tacit and, to a degree, subjective understanding of design creativity; and understanding that may be beyond the realms of written curricula and course outlines. But, if this is so, how can students ensure learning and adopt successful learning strategies? How do students develop a clear understanding of the subject and its requirements?

If it is true that design is a discipline that requires and anticipates the production of new and different outcomes, or creative products, then this requirement and expectation must be translated into the educational sphere. It is, however, unclear exactly what creativity means in the context of education and the position and role it attains within design education. Answering the questions above and addressing the void within design education, a better understanding of what creativity means in relation to design more generally is required. This paper explores the issue of creativity in design and considers its educational implications and its role in assessment. The research presented here is founded upon an extensive literature review, as well as information gathered at the abovementioned symposium with leading design academics and practitioners. The paper is divided into three main parts: firstly, it considers the concept of creativity as it forms part of the design literature; secondly, it presents primary data that illustrates how creativity is perceived and theorised by design academics; and, thirdly, it explores some of the educational implications that result from what will be argued is a wide range of divergent opinions about the concept.

1. CREATIVITY AND DESIGN

McLaughlin (1993:43) states that:

[a]n implicit objective of much design activity is the development of a creative outcome. The highest achievements of most design disciplines are those products acknowledged to be creative.

Creativity is generally perceived as the raison d’etre of design. Nonetheless, disciplinary research on the phenomenon of creativity and discussions of the concept are limited and engagement with the extensive body of
The responses received illustrate a diverse range of opinions about, and understandings of, creativity and the 44th Annual Conference of the Architectural Science Association, ANZAScA 2010, Unitec Institute of Technology

In June 2010, following Human Ethics approval, the authors invited 22 senior design academics (see Table 1) to a symposium on defining and assessing creativity in design. Increasingly aware of the theoretical complexity outlined above, an underpinning goal of the symposium was to uncover whether a similar divergence and multiplicity of opinions would be displayed in practice, as suggested by design academics’ perceptions, opinions and ideas about creativity.

The academics were asked to consider five questions about creativity and assessment, and to present a short position statement on the topic. As the speakers were all experts, ethics approval was sought to name participants under certain conditions as part of the reporting and analysis process. The five questions were:

1. What is ‘creativity’?
2. How does creativity present itself in your discipline?
3. What role does creativity play in design?
4. What makes a person’s actions or the products of their actions creative?
5. Can creativity be assessed and, if so, how?

The responses received illustrate a diverse range of opinions about, and understandings of, creativity and the assessment of creativity. The main approaches proposed by the symposium participants will be outlined in the remainder of this section.

Firstly, there was a clear divergence between those taking a largely pragmatic stance on the topic and those who adopted a theoretical approach. The pragmatists based their responses on their experience as designers and/or teachers, and presented statements that related directly to students’ creative abilities, considering questions such as: what is it; how is it presented; can it be fostered and, if so, how; and how can it be assessed? Similar questions also underpinned the theorists’ approaches, however, rather than basing their statements on the practical aspects of...
teaching courses that contain creative dimensions, they based their answer on cognitive and psychological theories of creativity.

Geoff Clark was one of those who took a largely pragmatic approach to creativity. His response to the question ‘what is creativity?’ illustrates how he places his understanding of the topic upon his practice background. He argued that:

> creativity is fairly complex, but I think it starts with, in terms of architectural design, the identification of the necessities or constrains of the problem […] creativity for me is the recognition of the opportunities that lie between those necessities and constraints.

According to Clark, creativity presents itself through the development of built responses to design problems that successfully address what any project ‘must’, ‘could’ and ‘should’ do. This practical approach to creativity is contrasted by the theoretical response of Susan Savage who argued that creativity is the result of interaction/s of various parts of the brain resulting in a productive type of thinking.

Her theoretical definition of creativity as a cognitive activity is largely founded upon neuroscientific research on the topic. She argued that creativity is essential to architecture; it represents a particular way of thinking that allows designers to handle (critically) a diverse range of variables and to order, reorder and prioritise these according to schemas that identify value and appropriateness. ‘Creativity’ is, according to Savage, the quality that allows a designer to imagine the possibilities, play around with these possibilities through recoding and decoding, reconfigure and align the various parts that relate to a problem thereby producing something of value. However, although Savage compares what she calls ‘creative thinking’ with ‘design thinking’, this definition of creativity places the phenomenon beyond the practical activities of architecture and design. As she explained: ‘[w]e don’t know the cause of creativity; we don’t know what ‘makes’ a person creative.’ Hence, when considering the questions, she concluded that:

> it is to not worry about the creativity thing, but to worry about the artefacts and the contribution of the knowledge to the discipline.

The implied rejection of ‘creativity’ in this quote was echoed by two other symposium participants. Brit Andresen argued that ‘[c]reativity is an unstable term’ that has been ‘hijacked’ by academic and commercial sectors and ‘pressed into the service of reductive thinking.’ According to Andresen, there is a need to withdraw back to the discipline and consider the ways it is being used. In fact, she argued, you could ‘event throw the term out’ and from within the discipline work up a new alternative, subsequently creating an understanding of the disciplinary foundation of the concept. Similarly, Clare Newton explained that she tries to avoid using the word ‘creativity’, replacing it with concepts such as (wicked) problem-solving, reinvention, reinterpretation, lateral thinking, divergent thinking, flexible thinking, fluid intelligence, conceptual blending, hybrid thinking, and innovation. These alternative words draw the concept of creativity back to cognitive theory. It places the individual at the centre of a creative process leading to creative products or innovations. Newton argues that a so-called ‘Eureka moment’ is present in any creative process and that it occurs after ‘really intense immersion and reflection’ around a problem. The idea of a ‘Eureka moment’ or a ‘creative leap’ was also highlighted by Richard Tucker who argued that

> [c]reativity is a two stage process, it’s the first production and second development of ideas, where production is the initiating activities a designer undertakes to inform or inspire ideas. The differentiation of design from creativity is not straightforward, a simplification can be discussed in the following terms: cognitive psychology has defined design activities as problem-solving, where the problem is ill-defined and open-ended. Creativity in this design process is often characterised by the occurrence of a significant event, a creative leap, Clare’s Eureka moment. So the most challengingly, it is often only in retrospect that the designer is able to identify a creative leap, and that identification is often unreliable.

Tucker’s definition produces a conceptual dualism: on the one hand, it suggests creativity as a rational process consisting of the mutually dependent processes of production and development, whilst on the other hand suggests an abstract, unconscious process or event (the creative leap). The presence of an inexplicable factor such as the ‘creative leap’ is embedded in many of the responses, though most of the participants emphasise the rational, conscious process leading up to this ‘leap’ and the real, practical nature of its outcomes. Des Smit, for example, argued that a creative person operates ‘between the measurable and the unmeasurable’. Creativity occurs at the point ‘where they [the measurable and the unmeasurable] click together.’ Smith, much like Clark quoted previously, emphasises the need to identify the requirements and possibilities of a given situation, defining creativity as:

> the intellectual and intuitive area where one senses the connections between the requirements and the possibilities of the situation, and with this one is able to embody the positive qualities of these connections within a production, whereby a new clarity is given to the situation touched by these requirements.

However, in contrast to Clark’s highly pragmatic approach, Smith proposes a philosophical approach to creativity, which draws on the romantic ideas of creativity as something external to the individual. Citing Joseph Campbell, he argues that:

> the creative spirit ranges out there in the universe[…] it happens everywhere and sometimes we check into it […] aesthetic creativity is really proffering something, which I’m sure most of you have felt it, when you draw something which is ‘on the money’, you feel like it was sort of there anyway, you kind of uncovered it.

Similarly, Mirjana Lozanovska argued that creativity is drawn from a tension between the rational and the irrational. She proposed that the physical reality to which architecture relates ensures that the rational wins. However, it is when
Wallis, for example, argued that creativity relates to Amabile (1983, 1996) and Mihaly Csikszentmihalyi (1988, 1996, 1999). It emphasises the role of the social and performance: firstly, it suggests an issue of mastery; you have to be able to master a field in order to be creative. These social and contingent elements of creativity were emphasised by a number of participants. Louise Margalit was only one of many participants who emphasised the idea of creativity as something that is socially significant and a high social good. This contextualised approach indicates a set of prerequisites to creative performance: firstly, it suggests an issue of mastery; you have to be able to master a field in order to be creative within it. This refers to both knowledge and analytical skills; the individual’s ability to be creative depends on their understanding of present conditions and realities and their ability to identify the opportunities and constraints therein. As Margalit explains in the following statement, reflecting Attiwill’s idea about the creation of difference, ‘if you’re going to be creative something different, [you need to know] what exists now?’ Moreover, there is a need for an understanding of the social, cultural, economic and political fields in which one acts. The creative output will be judged by a particular audience, and an awareness of the audience and the rules and boundaries that guide their judgements is required. Creativity occurs by challenging or bending these rules and boundaries, yet there is a need to retain a connection to the field and maintain a balance between convergence and divergence. This brings the idea of creativity back to the most common definition of creativity within the design literature; namely, creativity as the production of ideas or artefacts that are novel, yet appropriate. However, it moves away from the conventional emphasis placed upon the creative product and includes consideration of the person driving the creative act, the creative process, and the environment in which creativity occurs.

A similar perspective was proposed by Antony Radford. Radford argued that the key characteristic of creativity is ‘a combination of novelty and value.’ He emphasised the need to have both, arguing that ‘novelty by itself is not enough’. These characteristics refer to the creative product, however he also emphasised the role of the creative person, process and situation, proposing that:

‘the act of creating can refer to product, person, process and situation […] The creative person involves a state of mind, the creative process involves play, exploration, openness […] The creative situation, I’ve got relaxed but purposeful, it needs both of those to be creative, I don’t think anyone’s creative under too much pressure […] [creativity relates to] this notion of being aware of the rules, being aware of specific patterns, but not following them.

A consequence of the emphasis placed on the rules and boundaries guiding creative practice suggest that creativity is domain specific. The question about the domain specificity or generality of creativity was brought to the table by various participants, including Barbara de la Harpe who argued that:
Similarly, Kees Dorst argued that:

what you see is that [creativity] plays out differently on different levels of expertise […] We also see that between the disciplines of design and architecture, it’s professionalised differently, it takes different shapes, people do different things.

According to Dorst’s assertion, creativity varies between domains and disciplines, as well as between levels of expertise. This argument is mirrored by the idea about mastery discussed previously; if creativity is a reflection of an individual’s understandings and experiences, then her or his creative efforts would be expressed differently depending on her or his level of expertise. This proposition provides support to the education of creative disciplines; it suggests the relevance of education in the promotion and development of individual’s creative potential. Moreover, it suggests creativity as characterised by levels of attainment whereby the creative work—in terms of process and product—will vary according to educational levels, and it justifies an expectation of heightened creative performance throughout students’ educational journeys. The idea of levels of creativity was expressed by many of the participants in their use of concepts such as ‘little c’ and ‘big C’ creativity, the ‘petit mal of creativity’ and ‘grand forms of creativity.’

There was a general consensus amongst the participants that different expectations and requirements are placed upon first year students and students in their final stages of their degree, and that there is an expectation of creative advancement throughout courses as well as full degrees.

The concern about mastery and about levels of attainment yet again draws the notion of creativity back to the individual; to the creative agent. It suggests creativity as a personal trait, an ability, which can be fostered and developed. This ability is associated with an extensive list of attributes, including: imagination, originality, risk taking and struggle, exploration, playfulness, classification, order, inventiveness, problem solving, critical thinking, the capacity to transfer (communicate) thought, inspiration and perspiration, crafting and drafting skills, abstract thinking, naivety, passion and motivation. Although only a few participants directly stated the role of innate personal traits, almost all of the participants made reference to personality traits or skills that are required when producing creative work.

The emphasis placed, directly or indirectly, upon the role of the individual does not necessarily suggest that the symposium participants supported a romantic notion of creativity; wherein creativity is considered a special trait of a particular type of person. Amongst the participants, this view was represented by Kaji-O’Grady through her discussion of the ‘person’ in education.

the proverbial elephant in the room is the nature versus nurture division, the renaissance notion of being born under the sign of Saturn that was mentioned earlier, [which] sees creativity as an innate and compelling force of character that is fated by birth. Yet the question of aptitude and innate creativity is […] at odds with an educational program which teaches creativity, and yet, […] we’ve all experienced the limits of creativity teaching, everyone of us would have had a student where we think ‘nothing is going to elicit the creative synapse in our discipline.’ […] So there is this question of whether creativity is something that comes to us and we foster, or whether it is something that can be overlayed through our educational programs […] if we think about our creative aptitude in relationships to professional success, I’d say a very small part of it. Individual’s family, economic, social class, attendance at high status architecture schools, apprenticeships with Master Architects, these things are much more accurate predictors of success in the profession.

Despite the presence of ‘the person’ in the participants’ responses, it was only Kaji-O’Grady who directly addressed the role of nurturing environments. It poses an important element when discussing creativity in relation to design education, as it emphasises the need to acknowledge the experience and understanding of creative work that students bring with them when first starting their education. The educational dilemma posed by Kaji-O’Grady with regards to aptitude also highlights a sensitive issue; namely the recognition that some people do have greater creative talent than others (independent of whether this is a result of nature or nurture). This very fact became an element of great discussion later in the symposium, when a discussion rose about the presence of ‘the person’ as an item for assessment within the creative disciplines. Responding to a presentation that suggested that within architecture, design and art, students are assessed according to process, product and person, the participants expressed surprise at, and objection to, the presence of the ‘person’. Those who found it controversial reflected an understanding of ‘the person’ as referring to ‘innate talent’ or ‘born gifts’, which, as identified by Kaji-O’Grady, is at odds with educational programs and assessment. However, ‘the person’ could refer to the student as a subject for learning, and assessment of ‘the person’ means assessment of the student’s learning. The confusion that arose about the role of the person in assessment indicates the uncertainty that surrounds the question of creativity and creative ability. But what educational implications does this disciplinary confusion – as well as the multiple understandings of creativity proposed by the symposium participants’ perceptions of the concept – impose?

3. EDUCATIONAL IMPLICATIONS

It is evident that the diverse opinions and theories that exist on the matter of creativity may cause a level of ambiguity. This ambiguity may potentially be strengthened by further complexity on the matter caused by opinions and ideas about the creativity held by students and embedded in the bureaucratic structures to which educators relate. The multiplicity of ideas is, however, not the major problem. Greater concerns are posed by the lack of a clear
understanding about the role of creativity and an unambiguous statement about the meaning of the term as it is used within particular courses or at particular institutions. For the students, the lack of clarity causes enhanced stress and frustration. This is particularly evident in relation to the assessment of students’ (creative) work, as identified by Ostwald and Williams (2008a, 2008b). Ostwald and Williams found that the lack of defined learning and assessment outcomes as they relate to ‘creativity’ lead to high levels of stress and that the difficulties experienced in relation to identifying aspired learning outcomes causes frustration and dissatisfaction.

The confusion and disagreement that exist in relation to creativity and the assessment of creativity in design education is also problematic in relation to the increased demands of objectivity and transparency. There is a paradox embedded in contemporary design education; namely the contradiction between universities’ quality assurance protocols, which call for objective or transparent assessment of all students’ work, and the complex, heuristic nature of design, which require evaluation that is inevitably subjective at some level. In response to the demands of objectivity and transparency, there has been a growing regional trend to develop marking criteria for design and to adopt a complex combination of quality assurance and assessment protocols to provide a level of objectivity. These do not, however, generally respond to the issue of creativity, which often remains an unarticulated subject of assessment.

CONCLUSION

Assessing and teaching creativity first requires an understanding of what creativity is. Moreover, it requires a demystification of the concept and a clear articulation of what it entails. Only when this is in place can students engage with the concept and the creative tasks they have been set; to critically participate in a process of self- and peer-assessment and learn through such formative assessment processes. As with any other aspects of learning that are subject to assessment, students must have the opportunity to familiarise themselves with the particular (discipline-specific) concepts they relate to. This does not suggest the need for a simplistic definition of the concept; indeed, any efforts at defining the concept of creativity as it relates to the discipline of design must acknowledge the complexity at stake.

In relation to education, it is important to emphasise the scaled nature of creative performance and its progressive nature. Students are not expected to produce grand levels of creativity as exhibited by the masters of their discipline. Conversely, within the constraints of their ability, they should be expected to produce exceptional acts that show richness of imagination founded in knowledge, combined with an understanding and respect of relevant fields, domains, requirements and boundaries. The various approaches of the design literature and the divergent understandings forwarded by the design academics who participated in the symposium should, and can, be synthesised into a multifaceted conceptualisation of design creativity, which acknowledges and positions creativity relative to conventional stereotypes and academic theory. Based on discussions in the literature and the conceptualisations forwarded by the design academics, it can be argued that creativity is not solely an outcome of a linear problem-solving process, nor is it the result of individual’s skills and abilities seen in isolation. Rather, creativity results from an ongoing process of negotiation and transformation of problems and sub-problems, solutions and sub-solutions. This process is framed by the experiences, knowledge, skills and personalities brought to the problem by an individual or a group of individual, as well as by the context in which the problem is placed and to which it responds. Accordingly, understanding creativity as it relates to design and design education requires acknowledgement of process and product, as well as the social and individual aspects that guide these. Adopting such a multifaceted approach and educating students about the complexity of ‘creativity’ as a concept, as a phenomenon and as practice, may go some way to resolve the ambiguity that exist in relation to creativity in design, and, subsequently, positively inform design education and practice.

It is not the purpose of the project on which this paper is based to arrive at a final conclusion on what creativity is in relation to design or how creativity forms part of design processes. It is acknowledged that there may not be one single answer to these questions, and any attempts at defining creativity in design have to be aware of the level of variation that exists within the discipline itself. The idea about a multifaceted approach to creativity may, however, provide an umbrella under which more specific understandings and definitions related to the various sub-disciplines can be proposed. The project will continue to explore the concept of creativity in design education, with further interviews and focus groups with design academics and students to begin in September this year. The project ultimately aims to create a conceptual framework for understanding creativity, and to generate a set of shared terms and concepts and propose a set of best practice models that can be used when assessing the creative component of design students’ work.

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<tr>
<th>Name</th>
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Table 1: Symposium participants

44th Annual Conference of the Architectural Science Association, ANZAScA 2010, Unitec Institute of Technology
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<th>Name</th>
<th>Position</th>
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**ACKNOWLEDGEMENT**

Support for this paper has been provided by the Australian Learning and Teaching Council Ltd, an initiative of the Australian Government Department of Education, Employment and Workplace Relations. The views expressed in this paper do not necessarily reflect the views of the Australian Learning and Teaching Council.

The authors wish to thank all the individuals who participated in the symposium on which this paper is based and the ALTC for the support provided to the project.

The Human Research Ethics Approval Number for this project is: H-2010-1058.

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