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FINDING COMMON GROUND – A DISCIPLINARY APPROACH TO CREATIVITY

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ABSTRACT
Centuries of research into the question of creativity in the fields of philosophy, psychology and sociology have led to multiple theories and definitions of the concept. Similarly, the more recent study of design creativity has seen a wide range of definitions emerge. In part as a result of this extensive body of past knowledge, confusion remains as to exactly what creativity means. Ambiguity and vagueness exist both in the context of the overall design discipline and in the field of design research. This ambiguity has serious implications for design education and training where there is a need to arrive at some disciplinary agreement as to what creativity is in relation to design and to develop a pedagogical framework for teaching and assessing creativity [1]. At a recent meeting with leading researchers in the field of design creativity these issues were raised, and it was suggested that much of the divergence that exists is the result of different disciplinary requirements. Furthermore, it was argued that these specific requirements inhibit any efforts of arriving at a disciplinary definition of the concept. This paper challenges this assumption and aims to illustrate how a sense of consensus exists behind the veil of linguistic complexity. The paper's ultimate purpose is to demonstrate how, despite their differences, contemporary perceptions of creativity actually provide an overarching definition of design creativity within which disciplinary variation may exist.

Keywords: Design creativity, disciplinary definition, divergence, commonality, design education

1 INTRODUCTION

Despite being one of the most celebrated concepts of the contemporary world, creativity remains both highly contested and poorly understood. Scientific theories, academic opinions, folk wisdom, stereotypes and myths overlap and intertwine, creating a complex, contingent and controversial field. Because ambiguity and confusion persist, it remains unclear exactly what constitutes 'creativity'; is it a phenomenon, a process, an act or an attribute? Is it the end result of unconscious, spontaneous or inert processes, or the outcome of rational, conscious and strategies approaches? Is it the consequence of rigorous problem solving or of play an improvisation? Is it circular or linear, dynamic or static, general or specific, subjective or objective? Is it the result of isolation or engagement, social dynamics or personal agency? These questions have serious implications for design education and training—because without some agreement, how can creativity be taught or assessed? Both academic staff and undergraduate students express frustration and feel stress in relation to the creative component of their work [2]. Hence, there is an urgent need to arrive at some disciplinary agreement as to what creativity is in relation to design and to develop a conceptual and pedagogical framework for teaching and assessing creativity. At a recent meeting with leading researchers in the field of design creativity it was, however, suggested that such a conceptual framework is beyond reach. It was argued that much of the divergence that exists is the result of different disciplinary requirements and that these specific requirements inhibit any efforts of arriving at a disciplinary definition of the concept. In this paper, we challenge this assumption and aim to demonstrate how, despite their differences, contemporary perceptions of design creativity provide an overarching definition within which disciplinary variation may exist. The paper is divided into four parts: first, it describes the overarching research project which the paper forms part of, along with the methodology underpinning the arguments presented here; second, it provides an overview of some of the divergent opinions and ideas of creativity that exist within design education; third, it looks beyond this divergence in search for commonalities; and, forth, it presents an overarching framework in which a common approach to design creativity may be found.

2 METHODOLOGY

The argument in this paper is derived from data collected for the ongoing Australian Teaching and Learning Council (ALTC) funded project *Assessing Creativity: Strategies and Tools to Support Teaching and Learning in Architecture and Design*. [1] It is informed by an extensive review of the literature on creativity and, more specifically, design creativity. The project explores the issue of creativity in design and questions how creativity forms part of design and design processes. Through an exploration of design practitioners', academics' and students' perceptions of creativity and their experiences of assessing creativity and/or having their creative work assessed, the project team aims to develop a common conceptual framework from which expected learning outcomes and appropriate assessment practices can be established. The first stage of the project was completed in December 2010, with the publication of the book *Creativity, Design and Education. Theories, Positions and Challenges* [1]. The book provides a discussion of the concept of creativity and presents short responses from 39 senior design academics and creativity researchers to five questions on creativity, design and assessment. In this paper we analyse the responses further and present a conceptual framework for discussion.

The first stage of the project consisted of a symposium held in June 2010 and short structured interviews with design academics and creativity researchers. The symposium aimed to explore senior academics' and design practitioners' perceptions of creativity, design and assessment. There were 22 participants at the symposium (excluding the project team), who were all asked to submit short responses to the following five questions:

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 symposium participants were given the opportunity to edit and revise their responses for publication, an offer 16 of the 22 participants accepted. To further inform our understanding of senior design academics' and practitioners' opinions of creativity, an invitation to contribute was extended to an additional 23 experts. The experts were asked to provide short answers (150 words) to the same five questions as the symposium participants had responded to.

The symposium participants and those who responded to the call for contributions were all invited to be part of the project due to their position in their respective fields. The contributors come from the different design disciplines, including architecture, design, industrial design, interior design and landscape architecture. In addition, contributions were received from a psychologist whose major research area is neuroscience and creativity, an expert in creative communication and a professor of computation and creative media. The discipline of architecture was somewhat over-represented, with 23 architectural contributions. With the aim of exploring potential for convergence across the design disciplines, there was a purposeful selection of contributors from diverse backgrounds and the five questions were deliberately left open-ended. The contributions have been analysed according to key themes identified in the literature, using five expansive systems of delineation [1: 160-9], and classified according to a series of overlapping, non-mutually exclusive, taxonomical structures.

3 AMBIGUITY AND DIVERGENCE

The immediate impression of the contributions is the breath of opinions that exist on the topic. Some contributions are of a strongly pragmatic nature, whilst others take a more theoretical approach. For example, people describe creativity as a practical ability with which designers approach problems and as a cognitive ability that is beyond the reach of the conscious mind. It is portrayed as the characteristic of processes, as a trait of individuals, as inert talent, an acquired skill, as something external to the individual, and a social construct. Some emphasise creativity as it relates to particular disciplines, whilst others focus on it as a general phenomenon. Some focus on the practical aspects of

[1] 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.

being creative or teaching students to be creative, whilst others emphasise creativity as a philosophical or ethical phenomenon [1].
The variation in the responses crosses disciplinary boundaries and divergent approaches are evident within the different sub-disciplines. This is illustrated in Table 1, which presents a list of key words present in the responses, divided by discipline. The table does not allow for statistical inference, though it illustrates the variation that exists among the design disciplines. For example, looking at the total number of responses according to the key words, only two key words are present in more than half of the responses, this being 'ability' and 'novelty, freshness' (21/39). The two words with the second highest score are 'value' and 'boundary, context' (18/39). It is surprising that neither of these words receive greater response, considering the position of these words in the creativity literature and in folk-perceptions of the phenomenon. The most common definition of creativity is: the development of novel and appropriate solutions to problems [3]. This definition also saturates much of the literature on design creativity, in which creativity is often seen in relation to the balance between form and function, originality and practicality. In design, the idea of novelty and appropriateness is evident in the aspired balance between existing realities and future opportunities, implicating the important role of present and future boundaries in the identification of a contextually dependent value [4].

Table 1. Key words by discipline

Key words	A (23)*	D (5)	Int (5)	Ind (1)#	L (2)	O (3)	Total (39)
Approach	0	0	0	0	1	1	2
Ability	9	3	4	1	2	2	21
Intelligence	3	1	0	0	1	0	5
Mastery	11	2	1	1	0	1	16
Problem solving	6	0	0	0	0	0	6
Opportunity seizing	3	2	0	0	0	0	5
Imagination	6	0	3	0	2	1	12
Originality	2	0	2	0	1	1	6
Novelty, freshness	9	5	3	0	2	2	21
Difference/relative	4	4	1	1	1	1	12
Value	10	4	2	0	1	1	18
Surprise	6	1	1	0	1	1	10
Risk	5	2	2	0	0	0	9
Play, curiosity	6	1	1	0	1	1	10
Future-oriented	4	3	0	0	1	0	8
Boundaries, context	11	3	3	0	1	0	18
Re-create	5	2	2	0	1	0	10

A = Architecture; D = Design; Int = Interior design; Ind = Industrial design; L = Landscape; O= Other

* The numbers in brackets refer to the total number of contributors from this particular discipline.

There was only one industrial designer who contributed to the book. Though the responses included here do not illustrate diversity within the sub-discipline of industrial design, it has been included here for the purpose of information.

The lack of consistency is also evident at the sub-disciplinary level. For example, with regards to architecture, the words that receive attention across the most responses are 'mastery' and 'boundary, context'. However, both these words are recorded in only 11 of the architecture responses, that being less than half. All the words, with the exception of 'approach', are noted in the architects' responses, indicating the great disciplinary variance that exists on the topic. This variance is even more evocatively illustrated in the responses from the landscape architects. Only two landscape architects contributed to the project, yet out of the 17 key words as many as 14 are represented in their contributions, with the majority of these only being present in only one of the two responses.
The variance in the responses is not surprising: firstly, it is a reflection of the diversity and complexity present in the creativity literature and, more specifically, in the design literature. In the broader research context, creativity has been explored as a psychological, neuroscientific, social, cultural,

political and economical phenomenon. It has been looked at in relation to personal characteristics, contextual factors and outcomes of certain processes. Similarly, in design, creativity has been explored in relation to the design process, the designer and the design product, and it has been examined as a design methodology, as a positivist phenomenon and as reflective practice (for a detailed list of references, see: [1]). Secondly, this breakdown refers to the fine detail in the contributors' responses and many of the key words are not mutually exclusive, but overlap. For example, the words 'originality' and 'novelty' are often used interchangeably in the literature. Similarly, the idea of 'boundaries', 'value' and 'difference' refer to ideas of creativity being relative and contextual. The key words 'problem solving' and 'opportunity seizing' can be seen as interchangeable, as can the words 'ability', 'intelligence' and 'mastery'. The various words have, however, been included in the table for a purpose: these are the words used by the contributors and, as such, they reflect the linguistic diversity that forms part of the ambiguity and confusion that exist. It is important to acknowledge this linguistic diversity as the different words, in context, may refer to important details in approach and perception. There are specific disciplinary requirements that require a flexible and open approach to the question of how to engage with the concept and phenomenon of creativity. This specificity does, however, lie at a level that requires attention to specific disciplinary and project-related details. As suggested by the overlapping nature of the words, it may not exclude the opportunity for a more general, coherent approach. This will be explored in the next section.

4 COMMON GROUND

Given the breadth of opinion on the topic of design creativity, one of the ways to categorise the contributions is to classify them according to the two main historical approaches to creativity: romanticism and rationalism. Romanticism refers to the idea that creativity is the result of divine inspiration; a process of unfettered and undisciplined searching; unconscious and spontaneous; and, a reflection of innate (or divine) forces that cannot be fostered or promoted. Rationalism, on the other hand, refers to the idea that creativity is related to conscious work, rationality and deliberation. The rationalist view perceives creative agency as an attribute of the individual him- or herself, and it is attained that creativity can be promoted, fostered and assessed.

Table 2 shows the number of contributions classified according to romantic and rationalist principles. Considering the educational focus of the book it was unexpected to find that as many as 15 contributions contain romantic elements. Some responses suggest that both conscious and unconscious insights guide the creative process and that creativity might reflect an 'other' or a 'magic' element. Others point to the role of intuition, sensation and emotion or refer to the 'creative spirit' as something that surrounds us. Some participants point to creativity as exceptional acts of imagination and expression, subsequently removing creativity from the sphere of personal expression or expressive productivity. However, these romantic elements are always placed within a broader rationalist framework; in most instances, 'the romantic legacy refers to the acknowledgement of the individual actor—the person—and the way their personality, innate motivation and inert traits, can influence the creative process' [1: 27]. In fact, all the contributors acknowledge creativity as something that can be fostered, promoted and developed. They refer to creativity as the result of discipline and practice, as a meeting between the measurable and the unmeasurable, as a rational and practical phenomenon, as social validation, and as a reflection of particular environments, fields and domains.

Table 2. Overarching principles

Romantic principles	Rational principles
15	39

An example of a rationalist approach is that of Antony Radford, Professor of Architecture at The University of Adelaide. In a highly pragmatic manner, Radford argues that '[c]reativity relates to creation, to making some "thing" or idea or action. It is evident in four ways: in the creative product, the creative process, the creative person and the creative situation' [1: 115]. When relating this definition to the areas in which he teaches, he claims that '[c]reativity presents itself similarly in all three areas [architecture, urban design and digital design] as a combination of novelty and value; it is not a discipline-specific phenomenon.' This idea about an overall, more general, approach to the phenomenon of creativity resonates through the many different contributions, which together mirror

an overarching understanding of creativity based on the idea of creativity being related to person, process, product and press (environmental factors/context).

Table 3. 4Ps

Person	Process	Product	Press
31	30	25	34

As is illustrated in Table 3, the majority of the contributions make reference to creativity in relation to the 4Ps: person, process, product and press. The emphasis on the 4Ps is demonstrated in the various contributions through an emphasis on personal variables (including personal characteristics, values, attitudes, approach, knowledge, ability, skill, experience, mastery, competence and motivation); through the consideration of process in terms of problem solving and opportunity seizing, reflection on the various stages of the design process (including preparation, illumination, inspiration, incubation, verification and evaluation), through the concepts of production and development (including risk taking, curiosity and exploration), and through consideration of contextual and domain-specific influences on process; through consideration of the descriptive values of so-called creative products (such as value, appropriateness, novelty, freshness, originality, future orientation and adaptability); and, through consideration of environmental factors—press—that place restrictions upon the individual and create opportunities for creative agency. This observation allows for the development of an overarching framework for design creativity. In what follows, the idea about person, process, product and press will be explored further, and a disciplinary approach to creativity will be proposed.

5 DEFINING DESIGN CREATIVITY – AN OVERARCHING FRAMEWORK

The four strands—person, process, product and press—do not represent a new and groundbreaking approach to creativity; the idea of an analytical scheme considering the 4Ps was introduced by Mel Rhodes as early as in 1961. In his article *An analysis of creativity*, Rhodes [5] argues that 'creativity is a noun naming the phenomenon in which a person communicates a new concept (which is the product). Mental activity (or mental process) is implicit in the definition, and of course no one could conceive of a person living or operating in a vacuum so the term *press* is also implicit.' Despite their relevance to design, Rhodes' idea of the 4Ps has remained largely unnoticed within the design disciplines, and the different strands have at large been explored and analysed in isolation. It is, however, through their interconnection that the 4Ps operate functionally.

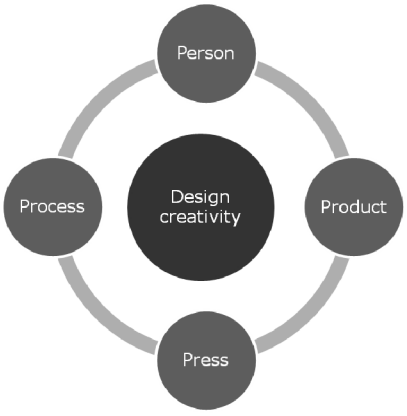


Figure 1. A multifaceted approach to design creativity

The four strands overlap and intertwine, and it is through their unity that that 'creative processes', 'creative problem solving', or 'creative play' take place; that is, as illustrated in Figure 1, through their interconnection, design creativity may emerge. None of the 4Ps are more important than the others; they are each a requirement for 'creativity' to transpire and they influence and are influenced by one another. The creative process is, for example, guided by the creative agent's (individual or group) cognitive characteristics through her/his/their divergent/convergent thinking, aesthetic taste, imagination, integration, intellectuality, decisional skills and flexibility; the creative product reflects the creative agent's orientation, technical ability and knowledge, and it is a direct outcome of the creative process; creative press underpins the agent's personality and approach through longitudinal

socialisation and engagement with particular fields, it guides the creative process through establishing the premise for creative agency, the boundaries and restrictions, and it influences the creative product through domain validation, evaluation and judgement.

This multidimensional construct does not propose a simple solution to the question of design creativity. Creativity—as a concept and as a phenomenon—is complex, and ignoring this complexity poses the danger of reducing creativity to a simple outcome of rational or relative problem-solving processes or to a characteristic of particular products. Such reductionism is problematic within heuristic disciplines, such as design, in which problems and tasks often require experience-based, project-based or problem-based approaches. The overarching framework proposed here provides a starting point through which the various aspects that form part of the creative processes and influence (the judgement of) creative products can be explored, subsequently potentially enhancing the creative agency of the individual and the quality of the creative product.

6 CONCLUSION

This paper was triggered by discussion amongst leading design researchers at an international research forum on design creativity, which suggested that it is difficult, if not impossible, to reach a disciplinary definition of creativity due different sub-disciplinary requirements and problem-specific constructs. Though it is acknowledged that there is no simple answer to the question of creativity, accepting this assertion would mean a rejection of the coherence and agreement that in fact exists within the discipline. In this paper, we have argued that the ambiguity that exists reflects a linguistic diversity resulting from detail requirements and that, at a more abstract level, a sense of consensus reigns. There is agreement amongst design practitioners and scholars that creativity is a rational phenomenon that encapsulates a range of factors, including some romantic ideals, related to person, process, product and press. Together these 4Ps form a multidimensional approach to creativity.

The multidimensional approach to creativity and the observation that there is indeed a sense of consensus have significant implications for design education and the training of future designers. As it stands, the confusion surrounding the concept, as well as the lack of defined learning outcomes and assessment practices as they relate to creativity, lead to high levels of stress, frustration and dissatisfaction [2]. Teaching and assessing creativity is reliant on the instructors' subjective and tacit understanding of what creativity is, and the difficulties in bridging lived, practical experience of creativity with abstract theories and models often lead to limited collective engagement with the concept. The role and position of creativity in relation to design and design education do, however, require a critical engagement with the concept. There is a need to confront the issue of creativity; it should not be taken for granted but rather be engaged and discussed.

By adopting a multifaceted approach to creativity and by engaging in a discussion with students about creativity, students can engage with the concept and the creative tasks they are working on. By challenging their taken-for-granted assumptions about creativity—which everybody, staff and students, carry—through critical engagement and discussion, students will learn about creativity as a phenomenon and may be encouraged to reflect on, understand and develop their own creative abilities. Creativity has to be placed on the agenda of design education, not only as an inert part of design, but as a theoretical and practical tool that can assist the students in their learning process and in their future work. By adopting a holistic approach to teaching design that reflect the multifaceted conceptualisation of design creativity, students may be introduced to and learn about the complexities of creativity, about the role of fields and domains, about the balance between form and function, and, not least, about their role in the creative process and as judges of creative work.

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