Horse or cart? Designer creativity and personality

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ABSTRACT
This paper is a reflection on designer creativity in the context of the sector of art and design.

It is shown that, though there is a rich literature on creativity, and on comparisons between art and science, few studies are specific to design. The paper focuses on links between personality characteristics and creativity, and demonstrates the strong nature of intuition led design thinking, both in novice designers and eminent professionals.

It is proposed that research into creativity in design should be conducted from within the sector. This will help us in understanding the special nature of designer creativity relative to others, to improve pedagogy, and produce designers who can think about their thinking.

INTRODUCTION
Creativity in humans has been thought about since Plato and is still the subject of philosophical speculations, but it is only in the past 50 years or so that the subject has been investigated scientifically. The latter part of the 20th century saw a considerable literature from psychology on problem solving ability and the rise of psychometric tools to facilitate such measurements, as well as studies of exceptional performance and related personality traits thought to contribute to creativity. Outside of psychology, studies were often conducted in the context of business and management studies, where the potential for enhancement of problem solving performance was a prime consideration. By comparison, there is not a rich literature of systematic investigation which has arisen from within the sector of art and design.

Given that we are part of the creative industry — design is a creative business — and creativity is central to what we do and what we teach, it is perhaps curious to note that so few studies of creativity have emanated from our sector. We are however of considerable interest to others. For example, many studies in psychology have compared artistic creativity with scientific creativity.

Traditional studio based teaching, with its emphasis on the student acquiring enhanced creative skills through practical understanding of the design process, has perhaps avoided formal declarations of creativity. It is rare to find explorations of creativity — in a general sense — in the undergraduate curriculum. It is as if we understand some directly applicable aspects of creativity tacitly as a significant part of designing, yet do not wish to engage in its investigation. A better understanding may help us in teaching core aspects of what it is to be a designer, and also help us in developing tools for the improvement of professional practice.
And yet, is creativity simply an innate talent that is nurtured in the design studio, or does creativity spring from a particular way of looking at the world rooted more in an individual’s personality. Which comes first, which is most important, or are they equally important in the context of design education?

Creativity is a big subject. I have therefore limited the scope of this paper to an overview of some historical findings about creativity, studies related to design, and discussion of future directions for research in this subject area.

The position established by this paper is that there are clear ‘designerly’ personality characteristics linked with creativity. I will attempt to show that these could be better understood by designers, and that the teaching of a better awareness of the roots of creativity will be of benefit to students of design.

The purpose of this paper is therefore to:

• explain some aspects of creativity relevant to design
• explore links between creativity and designer personality
• come to some conclusions about the need for, and scope of, future research

CREATIVITY

Creativity is of prime importance both at the level of the individual and at the level of society. For the individual, creativity is important in solving problems in daily life as well as in the workplace. For society, creativity can lead to new movements in art and design, inventions, and new scientific findings. In recent years several reports commissioned by the UK government have brought creativity to the fore as being vital to the creation of new jobs and products, and therefore vital to the economic well being and future development of the country’s economy (DfEE 1999: section 2.23; DfES 2003).

There are clearly many kinds of creative output, some of which differ widely. For example, a criterion of creativity in engineering may be predicated on there being some functional improvement, that is a product may be made cheaper or stronger, or perform better, or have additional functions. This is not the case for all creative domains. For example, in fashion design, criteria for originality may include being different for its own sake — this is associated more with a perceived basic human need for change. Some creativity is therefore a systematic affair with serious implications for failure - for example in civil or aerospace engineering - whereas the ephemerality of other designs may not impact on safety or have longer term considerations. In discussing the generality of creative endeavour, it is therefore not always possible to separate functional improvement from difference, the eccentric, and the frivolous.

Creativity is the ability to produce work that is both novel and appropriate. This has sometimes been described as the ability to create work that is unexpected or original (Hudson 1966), or that is useful or worthwhile in its context (Taylor & Barron 1963). Creative endeavour has also been seen as simply an act that produces effective surprise (Bruner 1962). An important and persistent feature of all creativity is the ability to set aside established conventions and procedures (Guilford 1950: 444-454).

STUDIES IN CREATIVITY

Early considerations of creativity were often associated with mystical beliefs. Some still talk today of having their Muse or Daemon that fills the creative empty vessel with inspiration. Indeed, the current non-refereed literature is full of proposed links between creativity and spirituality. Systematic inquiry occurred from the 1950s onwards, aimed towards a more fundamental understanding of human creativity.
Psychometric approaches to the study of creativity have tended to concentrate on everyday people with paper and pencil type tasks. These have typically used divergent thinking tasks — such as the ‘many uses for a brick’ — as a means of measuring individuals against each other. Later tests have used verbal and figural tasks that measure other, more flexible problem solving skills. Some critics felt that, generally, brief tests of this kind did not adequately address the full richness of creative endeavour (Sternberg 1986).

Cognitive approaches have sought to understand the mental representations and processes underlying creative thinking. For example, the work of Finke (1992) has theorised two phases to design, the generative and the exploratory. Other studies have shown creative thinking utilising conventional cognitive processes allied with existing stored knowledge as a basic process (Weisberg 1986, 1993). Studies have also used computational simulation, especially in the development of heuristics (problem solving guidelines) with some success (f.ex. Langley et al 1987).

The psychodynamic approach (another theoretical paradigm) is based largely on Freud’s (1908/1959) idea that creativity arises from the tensions between conscious reality and unconscious drives, and that creative artists, for example, produce a publicly acceptable version of their unconscious desires. A significant weakness in this approach is that it has relied mainly on the study of eminent creators through case studies rather than experimental methods.

Pragmatic approaches to the study of creativity perhaps represent the area which has most touched upon design. For example, the work of De Bono (De Bono website) and his concept of lateral thinking are well known within design circles. Lateral thinking describes problem solving methods that, instead of meeting the problem directly (conjectured as vertical thinking) attempt to go around the problem (lateral thinking) to facilitate the exploration of new territory often through unusual associations of ideas. This seems to describe what designers do naturally. However, De Bono’s work has enjoyed considerable success commercially, and through the various books which either engage in a course of creative thinking (De Bono 1968) or conceptualise thinking tools to unblock creativity (De Bono 1973), he has offered practical approaches to problem solving which are of interest to a non design professional audience. Work such as De Bono’s is not concerned with the building of theory but directly with the improvement of practice. Similarly, other studies have been conducted with the intention of improving problem solving behaviour for business professionals, through regular conferences and publications (f.ex. Parnes 1992), and proposals for nurturing the differences between creatives and the rest (Kirton 1976).

Most studies arising directly from the domain of design have been concerned with gaining a better understanding of the design process, often through observing designers at work or in laboratory settings. For example, Lawson (1990) compared the problem solving abilities of architectural students and building science students; MacKinnon (1962) and others have produced biographic data of creative genius; Cross and Cross (1996) have provided case studies of eminent designers; Christiaans and Dorst (1992) have observed designers in action; Tovey (1992) is concerned with creativity and CAD; and Stempfle & Badke-Schaub (2002) thinking in teams.

Very few studies have as their main concern the generation of knowledge about the underlying intellectual and social drivers of creativity. Very few investigators, themselves from a design background, have undertaken studies of creativity — often, investigations have emanated from architecture, engineering, psychology, operational research, the military, production management, ergonomics, or social science. Methodologically, these studies are usually set in a hard design science context to the exclusion of other approaches. Conversely, very few empirical results have been published from the sector of art and design. There may be many reasons that have contributed to this state of affairs. In the improvement of efficiency in design practice, much effort has gone into the development of systematic design methods, a movement that began around the 1960s and continues in
some design areas. These have usually produced highly formal and reductive models of design process, often in production design or team designing contexts (e.g. Cross 1993).

However, the study of processes of design is changing rapidly. There are numerous modern examples. Whereas there was only ergonomics — itself from a human sciences model — there are emerging softer methods often being developed by designers themselves. For example, user centred designing is being developed in several forums including the Helen Hamlyn Research Centre (DesignAge), direct ways of working with users (Boess et al 2002), and the understanding of emotion in artefacts and processes (Design and Emotion). These are often characterised by a willingness to engage directly with users using appropriate methods, have an intention to improve design practice through designers being more aware of new possibilities, and take on board the social context in which the design is executed.

CREATIVE PERSONALITY

Personality studies related to creativity have generally focused on personality variables, together with the sociocultural environment within which creativity may be fostered. Researchers have noted that certain personality traits often characterise creative persons and that some aspects of personality covary with creative ability. Understanding the context of creativity through the motivations of the individual designer may help us to shape education, continuous professional development, or tools to assist in creative endeavour. Comparisons between arts and sciences have been made, with many studies of both artists (widely interpreted to include writers, performers and others) and scientists. Some of these studies throw some light on the likely disposition of designers.

It has long been thought that a certain kind of personality attends creativity. From studies reported in the 1960s it was observed that:

“it would almost seem as if the differences between science, art and literature are differences of particular skills and interests only, and that the fundamental characteristic of the creative, original person is a type of personality” (Cattell & Butcher 1968).

In a recent extensive review of the literature Feist (1999: 290) states:

“Empirical research over the past 45 years makes a rather convincing case that creative people behave consistently over time and situation in ways that distinguish them from others. The creative personality does exist and personality dispositions regularly and predictably relate to creative achievement in art and science.”

In terms of commonalities, it has been found that creative people — in both arts and science — tend to be “open to new experiences, less conventional and less conscientious, more self-confident, self-accepting, driven, ambitious, dominant, hostile, and impulsive.” (Feist 1999). However, it is recognised that creative people in arts and science do not share the same personality profile. For example, relative to scientists, artists, writers, and film directors were found to be more aesthetically oriented, imaginative, and intuitive when compared with their less creative peers (Pufal-Struzik 1992). Dudek et al (1991) showed artistic subjects to be high on motivation and driven more by achievement than non creative peers. Art students were found to be more impulsive and have less need for order, and artists are also reported to have a propensity toward questioning and rebelling against established norms. Generally, it can be seen from these studies that the artistically creative person appears to have a disposition toward intense affective experience, and art is seen as more of an introspective journey.
In passing, it should be noted that there are new integrative theories of personality (e.g., Five Factor Model: McCrae and John 1992), and theories of personality and creativity (e.g., Eysenck 1995), which may be of distinct interest to design, but are beyond the scope of this paper.

Feist (1999) states that many of these findings go a long way

“in demonstrating that personality as a construct and its study as a discipline offer a unique and important perspective on creativity and the creative process.”

**DESIGNER PERSONALITY**

In all the studies of creativity, very few have been conducted with representative designers. However, we can conjecture some conclusions from our experiences as educators, and from what little empirical evidence is published.

In the studio, informal observation of design students indicates that they exhibit common characteristics in the ways they think about their world. For example, in designing it can be seen that being different is a strong motivator - this is often difference for its own sake. Sometimes style will outweigh practicality, or there may be a drive for some particular aesthetic or tactile quality that must receive expression. These kinds of designers also seem to like solving new problems, and to seek radical solutions rather than producing more routine incremental change. They are given to proposing unusual associations, and they sometimes deliberately break the rules set by the tutors, for example by pushing a brief to the limit. Occasionally, they may be rebellious and difficult. They rarely work from first principles and seem happy to work with uncertain or incomplete knowledge.

It has sometimes seemed to me as if the design methods movement has passed them by - it is very rare to find a student using more than a rudimentary systematic method for designing, indeed most seem uncomfortable with the very idea. Even where systematic guidelines have been offered to aid designing, these have initially been rejected as a constraint on creativity (Russell et al 1999). It is more likely that student designers will want to work in an intuitive way (Durling 1999). They will lead with their intuition, and only later test their ideas empirically, if at all. By comparison with engineering designers, formal methods have met with little success in departments of art and design.

A number of significant differences in personality and related cognitive styles have been postulated between designers and cognate professionals such as engineers and architects, and it has been shown that these differences have implications for educators in facilitating learning (Durling, Cross & Johnson 1996a; Durling 1999). Among these differences are the extent of, or preference for, the cognitive style of convergent thinking which is marked in engineers (McCaulley 1990) whereas designers appear to major on divergent thinking.

A study utilised the MBTI (Myers & Myers 1980) with a 2D/3D design student population in typical design departments in the UK and compared these results with evidence of other vocational populations (Durling, Cross & Johnson 1996b). These designers (n=70) were all first year undergraduates therefore as yet relatively unchanged by their design education.

Two significant findings were reported from this study. Firstly, it was possible to discriminate designers both from a normal population and from cognate professionals. Secondly, the majority of the designers were classified into types having a marked preference for intuitive ways of working — 79 per cent showed a marked preference for intuition. This is in contrast to a normal population where 24 per cent has been reported. On another scale of this instrument 69 per cent of the designers showed a marked preference for openness to experience. In a normal population this trait is reported as 34 per cent. Individuals in this sample clustered in a small number of types.
Over a quarter of design students were assessed as one type, of which the manual says:

“their intuition acquires an unquestioned personal validity that no other process can approach. They will enjoy, use, and trust it most. Their lives will be so shaped as to give maximum freedom for the pursuit of intuitive goals.” (Myers & McCaulley 1985)

Perhaps it is this fundamental intuitive approach that opposes systematic design methods, and that is the reason why the design methods movement seems to have had little impact on the art and design sector? It is at least an interesting speculation.

**INTUITIVE THINKING**

In the context of personality and creativity, it may be fruitful to say a little more about intuition and intuitive ways of thinking.

Intuition (from the Latin *intueri*, to look into) is a psychological and philosophical term for immediate apprehension or perception of an actual fact, being, or relation between two terms and its result; or may be taken to be the immediate knowing or learning of something without the conscious use of reasoning. In philosophy, Intuitionism or Intuitionalism are those systems which consider intuition as the fundamental process of our knowledge, or at least give it prominence; the importance of intuition may be seen if we observe that it provides us with primary experimental data and concepts, and fundamental judgements or principles which form the foundation of every philosophical and scientific speculation.

In the study of student designers reported above (Durling, Cross, and Johnson 1996b), in the Jungian sense intuition is a mode of perception that relies primarily on meanings, patterns or possibilities. It is beyond the reach of the senses, and is sometimes referred to as insight. Intuition is future oriented, and engages in explorations beyond present or past realities. It is also associated with gaining impressions in fluid, global, and diffuse ways, and looking for possibilities and relationships. People who have intuition as a primary preference also like solving new problems rather than routine.

The intuitive, future oriented, seeking of possibilities is a shared characteristic among creative groups such as designers, architects and artists. In MacKinnon’s (1962) celebrated study of American architects the conclusion was inescapable that the more creative the architect, the stronger that intuition was represented. The most creative group in his study showed 100 per cent preferring intuition.

However it would be quite wrong to suggest that intuitive approaches are exclusive to designers and cognate professionals. Highly creative individuals from all walks of life are also shown to be highly intuitive. Henri Poincare said:

“It is by logic that we prove, but by intuition that we discover.”

The creative process requires, at times, both divergent thinking and some intuition, and then convergent thinking and the application of principles or the elicitation of empirical evidence, depending on context.

**EMINENT DESIGNERS**

One aspect of a study of eminent designers (Davies & Talbot 1987) will illuminate some characteristics of intuitive design thinking. The Faculty of Royal Designers for Industry (RDI) comprises a group of designers under the
auspices of the Royal Society of Arts, UK. Membership of the faculty is by peer invitation, and is based upon eminence in design practice.

A representative sample of RDIs were interviewed at length about the ways in which they design, in order to elicit how they experience moments of insight significant to themselves. In particular the RDIs were asked how it was that from the many ideas generated in a problem solving task, they might recognise the idea. Typical descriptions of their insight showed that they simply knew it was the right idea:

“I always know when an idea is right [but] I can’t always put facts and figures against it”.

Overall, these deeply held responses may be summarised as follows:

- a sense of wholeness and unity about the problem solution
- difficult or impossible to analyse, or to express the process adequately in words
- openness to all kinds of experience
- deeply felt positive, pleasant ecstatic feelings and lack of anguish
- originality, unique syntheses and harmony

The recognition of the idea is strongly held. It may appear intuitively, but is then felt to be absolutely right as a solution to the problem under investigation. This realisation may also be attended by strong emotions such as feelings of wholeness and completeness. RDIs also recognised the difficulties that intuitions present for providing rational explanations that are acceptable to others, or even to articulate these profound feelings in words. There is much here that accords with other studies of highly creative persons.

**CONCLUSIONS**

We have seen that creativity has importance nationally and locally, and that professional creative outputs vary widely. Creativity has been studied scientifically over several decades, though there is as yet a small literature of systematic inquiry into designer creativity within the sector of art and design. Often, scientists and artists have been compared, but there are few data on designers as such.

Among the many possible routes to study designers’ abilities, the literature has been surveyed on personality traits related to creative performance. Links may be found between personality measures of design students, their type descriptors, and a good fit with commonplace observation of typical behaviours of students in the studio.

In this context, one clear example of designerly thinking is that of the strongly intuition led approach adopted by student designers at the beginning of their studies, and also by eminent RDIs. These findings accord with a wide range of other studies involving cognate professionals. They are just one example of a rich field of connections that may yet be discovered.

Why should any of this matter?

First, we have a duty to better understand the nature of creativity in our domain. This will not be exactly the same manifestation of creativity as seen in other fields of endeavour.

Second, our students may gain a better knowledge of the locus of their abilities, and how to best apply their individual intellectual skills to the task at hand. It is my impression, in exposing undergraduate students to these ideas, that they are able to address problems and opportunities more flexibly through thinking about their own thinking.
Third, understanding our own creativity may allow us to share these skills with others, either as part of continuous professional development for designers, or for the benefit of other professionals who wish to have insight into our special ways of thinking.

Fourth, because personality studies have also shown links with learning styles, we may not yet understand how to properly attune our teaching to our students’ learning preferences. This may be of increasing interest as we move inexorably from ‘Sitting with Nellie’ to distance/online teaching.

Fifth, understanding the specific nature of our creativity may help us in understanding other creative people. This may be especially important in team designing where the designer may work with a variety of other professionals.

It is time for the sector of art and design to understand its own kinds of creativity. This paper is therefore intended as a manifesto for beginning that wider search for knowledge, from the perspective of our domain.
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