

A THEORETICAL BASIS FOR HUMAN CREATIVITY

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ABSTRACT

Background. This paper constitutes part of the theoretical basis for a study proposing to investigate the possibility of comparing the creative content of the vocal improvisations of musically trained and untrained populations.

Aims. The purpose of this paper is to define creativity as a fundamental characteristic of the human personality, from a variety of disciplinary standpoints. It will describe necessary cognitive processes, interactive relationships and other factors that might encourage or inhibit the creative process.

Main contribution. Creativity is arguably one of the most sought after of human capacities and yet also the most nebulous and least understood and may occur in any domain where an individual is able to perceive a problem and conceive of and plan a solution in advance of executing it. It is broadly defined as the ability to create novel ideas from existing material and is a phenomenon which exists through the agency of the unique processing tool of the imagination, itself central to the human advanced intellect and higher consciousness. It is memory, a vital feature of the imagination, which informs an individual's perceptions and makes his discoveries personal through the possession of a personal consciousness of identity.

Every human mind is able to connect often hitherto unrelated ideas and draw new meaning or insight from resulting new relationships through symbolic thinking and analogy based on previous knowledge. The resulting new insight will change future perceptions and understanding and, where it radically breaks away from accepted conventions in a society, it may challenge commonly held paradigms of understanding. Innovation, by definition, is dependent on the presence of existing ideas and requires verification as such by the society from which it comes. Thus, both innovation and value are considered, in Western culture, to be essential elements of the creative process and product.

Implications. Such theoretical considerations will contribute to a study that seeks to address the issue as to whether degrees of musical creativity, as expressed through vocal improvisation, can be differentiated.

1. INTRODUCTION

Creativity is a central feature of the extraordinary phenomenon of the human mind, implying that the understanding of human creativity is fundamental to the understanding of the nature of the human species. Furthermore, it seems that this human mind has few constraints when it comes to conceiving future possibilities, and without creativity, the received wisdom concerning the world from hundreds of years of exploration, scientific discovery and artistic endeavour, would never have taken place. It is also at the

root of the enormous cultural diversity evident in human societies around the world. Despite such a high-ranking pedigree, creativity remains an elusive phenomenon which has mystified thinkers in all disciplines for centuries. Indeed it remains one of the most sought after but least understood of all human capacities.

The study of creativity has attracted philosophers, artists and historians over the centuries, and there has been an increasing interest in creativity from other disciplines more recently. These include archaeology, anthropology, sociology, social anthropology, cognitive psychology and cognitive archaeology each having contributed greatly to the knowledge surrounding the phenomenon. There has also been a greater cooperation between disciplines leading to more honest perspectives. The application of objective scientific study to creativity has been, and still is, a hotly disputed issue, with some validity, as creativity involves essentially subjective processes, which are also often unconscious. The presence of 'intuition' and the 'sudden flash of inspiration', while widely observed and documented, leave the creator with little knowledge as to how he came upon his idea and the researcher little to grasp. Objective research is made more complicated by the fact that the process is unpredictable, the length of time needed is variable and it is also easily disturbed by outside agencies. The act of observation itself creates an artificial situation and the greater likelihood of additional stress which can inhibit the creator (Martindale, 1999). In addition, creative processes and products are often difficult to pin down, quantify, understand and put into words.

Despite such problems, Guilford (1950) pioneered psychometric testing in this field and, while there is considerable argument concerning the validity of such results, it has clarified the nature of some prominent characteristics of creativity and has contributed much to its definition. In Guilford's model, creativity is primarily concerned with 'divergency', a style of thinking associated with the intuitive, involving non-logical leaps or sudden ideas and the ability to generate unusual yet appropriate responses to problems. Creative processes also possess qualities of 'fluency', 'flexibility' and 'originality'. Individuals who tend towards the convergent style of thinking focus on a 'correct' answer to a problem, concentrating on knowledge and logic, thus ruling out the intuitive. Divergency has become an important criterion in many models of the nature of creative thinking (Martindale, 1999; Webster, 2002)

2. DEFINITIONS OF THE NATURE OF CREATIVITY

Most writers agree that in essence, creativity is the ability to bring into being novel ideas often using unusual combinations of existing material (Poincare, 1913; Koestler, 1964; Martindale, 1999). It is very versatile and may occur in any domain of activity where an individual is able to perceive a problem, and

conceive of and plan a solution to that problem, in advance of executing it. In that sense it is a fundamentally human attribute. Thus the creative individual is able to use his imagination, often unconventionally, and is enabled to envisage and express concepts, often with sudden insight, that others might not even be able to imagine. Such inspirational behaviour has led to the mystical, even magical associations with creativity common to every human culture. However, it was the Swiss psychologist, Jean Piaget writing in the 1920s, who first highlighted the fact that creative thinking is, in fact, a part of all human experience from infancy onwards. Therefore it seems that there might be more than one form of creative thinking and Margaret Boden, (1994; 1998) proposes a distinction between Psychological or P-creativity, an everyday creativity common to all human thought processes and another form she calls Historical or H-creativity. In short, P-creativity involves valuable ideas that are new to the individual at the time of conception, but not necessarily new to others. H-creativity, however, is also P-creative but with the additional criterion that no one else in human history has had the idea before. It is the H-creative ideas that will often challenge existing societal conventions or paradigms of understanding. Hargreaves (1986) agrees with the distinction but also notes that for many professional writers, composers etc, creativity is also an everyday, even mundane concept. Thus while some major creative achievements might involve mysterious, irrational and unconscious processes, much is down to basic perseverance and hard work. Indeed the greatest Western composers display both styles of approach, some being more 'inspirational' such as Mozart and Schumann, while others, for instance Beethoven and Bach, expended a lot of laborious effort ('perspiration') during the process.

3. TWO ESSENTIAL ATTRIBUTES OF CREATIVITY: NOVELTY AND VALUE

Western concepts of creativity tend to focus on the presence of an observable product which can be assessed by external judges, or peers or even the society itself. The process involves innovation and the novel combinations of existing, ordinary but often previously unassociated, elements (Koestler, 1964; Martindale, 1999; Boden, 1994), to produce something that is original and distinct from previous work (Poincare 1913; Geist, 1999; Sternberg, 1999; Boden, 1994; Lubart, 1999). A creative product is often unpredicted (Lubart, 1999), out of the ordinary (Weisberg, 1993) and surprising (Boden, 1994).

Novelty and originality have been elevated in Western creativity in relatively recent times, and, by definition, presuppose the existence of patterns of thinking that have gone before (Amabile, 1983) thus demanding comparison with those ideas. However, these concepts are distinct from creativity as they, in simple terms, essentially relate to a statistical infrequency present in a product that has never been imagined or produced before. The human mind has an insatiable desire to perpetuate such variation according to Brailoiu (1986) who also suggests that novelty could be seen, as 'decomposition' where the original is changed in some manner, moving to a 'recomposition', when

a new aspect is introduced. Crucially, the novelty must be different from the original but at the same time not so different that it loses its identity. Others express similar ideas, for instance Levi-Strauss's 'Transformation' (1964), Bartok's 'Variation', G M Hopkins (1865) 'likeness tempered with difference', AN Whitehead (1919) who suggests 'the fusion of sameness with novelty...A mere recurrence kills the rhythm as does a mere confusion of differences.' (in Storr, 1992) and Hofstadter (1979/2000) proposes 'Sameness-in-differentness'. Brailoiu (1986) also suggests there to be opposing views on the process, either a variation is an 'endless corruption', or a 'deliberate fruitful modification' of an original, (p 43-4) both views believing in a perfect initial version from which all the variants derive.

There is, however, a perceived tension between knowledge and creativity (Weisberg, 1999). Some propose that there needs to be a break between the creative product and the past, De Bono (1968) typically stating that 'Too much experience within a field may restrict creativity because you know so well how things *should be done* and are unable to escape to come up with new ideas' (in Weisberg, 1999, p228). However, Weisburg (1986, 93) emphasises that creativity involves essentially ordinary cognitive processes that yield extraordinary products when applied to knowledge already stored in memory. Variation cannot occur without reference to an existing pattern and can only be meaningful as novel or original in that context (Csikszentmihalyi, M: 1999). Boden (1994) goes further, stating that 'constraints - far from being opposed to creativity - make creativity possible... Rather than breaking out of the old to produce the new, creative thinking builds on knowledge' (Weisberg, 1999 p. 226; also Bailin, 1988; Gruber, 1981; Hayes, 1989; Kulkarni & Simon, 1988; Weisberg, 1986, 88, 93, 95; Boden 1994).

In order to be creative, a product must therefore have some element of originality but it also must be significant (Lumsden, 1999), relevant (Albert, 1998), and appropriate (Martindale, 1999) as well as being valuable or useful (Boden, 1994; Csikszentmihalyi, 1998, 1999), fulfilling a need in the culture from which it comes (Lubart, 1999; Csikszentmihalyi, 2000). Value is thus intrinsically associated with that community or culture, indeed it is the culture that pronounces a product to be creative or not. It is also a channel for creativity providing an environment that may or may not nurture it. Such environmental influences, whether intentional or otherwise, are necessary, and, although not all may be desirable, have a profound effect on creative expression whether in stimulating, supporting, defining and evaluating, or whether in discouraging even preventing. Lubart (1999) notes that certain types of creativity may be nurtured in some cultures, but are considered taboo in others. Csikszentmihalyi (1999) radically proposes that even when products display creative features, 'without some public recognition they do not constitute creativity. In fact one might argue that such traits are not even necessary for creative accomplishment' (p. 314). In a cultural context, creativity is able to add something new and in doing so it inevitably affects changes in the relevant symbolic system thus affecting the values of the members of the society. 'A change that does not affect the way we think, feel or act will not be creative' (Csikszentmihalyi, 1999, p 316)

4. COGNITIVE FEATURES - THAT ENABLE CREATIVE THOUGHT AND BEHAVIOUR

Having sampled a few of the myriad of associations and definitions of the nature of creativity from a wide disciplinary perspective, it seems right to consider in closing, the unique cognitive features that make such fascinating, and often extraordinary behaviour possible and indeed, without which creativity could not exist.

Intelligence may be defined as the means by which an animal is able to perceive a situation, identify problems and intentionally and purposefully adapt or modify its behaviour appropriately to that situation (Humphrey, 1983; Hargreaves 1985; Hodder, 1998). Hodder (1998) considers intelligence to be a part of creativity which also includes the capacities of adaptability, agency, interpretation and problem-solving. It could also be said that while intelligence is adaptive, creativity is proactive. One of the most recent and well supported theories of the human mind, proposed in many slightly different forms, is known as the Theory of Multiple Intelligences (Gardner, 1983; Boden 1990; Karmiloff-Smith 1992; Cosmides and Tooby 1992; Carey and Spelke 1994; Plotkin, 1994; Mithen 1996; Martindale 1999). It describes distinct cognitive domains, intelligences or conceptual spaces that are designated for certain specialist functions, are able to be connected and integrated, and between which ideas are able to pass in order to solve problems and function creatively (Hein, 1970; Dennett, 1981; Humphrey 1983; Gardner, 1983; Mithen, 1996; Boden 1994/1999).

Language is a modularised cognitive capacity reliant on its own unique neural processes and is present in all models of the human mind. It is an adaptation shaped by natural selection (Pinker and Bloom 1990) hardwired into the brain, a fixed network constituted of the principles of language with options determined by experience. There are complex innate restraints for learning language which are specialised and seem to be well-designed for the task they serve (Chomsky, 2000). Linguistic function is a 'true "species property" varying little among humans and without significant analogue elsewhere' (Chomsky, 2000, p. 3). It is not only an efficient vehicle of communication but it also structures the mind there being a close link between linguistic principles and thought (Harley, 1995; Forrester, 1996) enabling the exploration, mapping and transformation of conceptual spaces (Mithen, 1998) through the medium of the imagination (Warnock, 1994).

Consciousness is the subjective understanding and awareness of the sensations, thoughts and feelings being experienced. It is a multifaceted phenomenon that no one really understands (Mithen, 1996), but is found in active states, where there is systematic mental activity focusing on and absorbing the world around, and passive states, where thoughts and images come more spontaneously and there is minimal awareness of the world around (Hilgard, 1980; Milner and Rugg, 1992). There are two kinds of consciousness (Block, 1995; Ornstein, 1991), a 'lower order' of the awareness of sensations which all species possess (Humphrey, (1983) and a 'higher order' reflexive consciousness which only humans seem to possess (Warnock, 1994). This, **self consciousness** is the ability to be aware introspectively of the actions of self in relation to others, the environment and in the context of the understanding of the concepts of past present

and future (Humphrey, 1983; Warnock, 1976/1994; Ornstein, 1991; Kellogg, 1995). Other species also possess some form of consciousness and are able to use imagery and cognitive maps to a certain degree (Griffin, 1984; Riotblat and von Fersen, 1992).

The sense of **personal identity**, is a special feature of self consciousness only found in human 'higher order' consciousness (Warnock, 1994), is intensely personal and inaccessible to others. While dualism suggests there to be two fundamentally different domains of reality, the inner and outer, physical (brain) and non-physical (mental) identity theory suggests one domain of reality physical and mental being two different language systems for describing the same domain thus consciousness and personal identity emerge from the actions of both systems. The need to express self is fundamental to the human personality.

The imagination, is part of man's advanced intellect and higher consciousness, and is the means by which a person is able to have a concept of self, other people and objects existing in space and time that are continuous and independent. It enables an individual to explore ideas that are not present including those that no longer or don't yet, exist (Warnock, 1994). It is the mortar which holds all the other conceptual bricks of the human mind together, and the medium through which all mental elements and ideas are connected, unified, associated, synthesised and transformed, making each a possible and plausible entity within a whole conceptual framework. However, it is not simply a means of thinking originally but is also as the tool through which the individual is able to think symbolically.

Memory is a store of all unconscious and conscious experiences as internal representations of the external world. It involves the capacity not only to store but to retrieve information. The life of an individual only has meaning because of memory (Warnock, 1976/1994; Kellogg, 1995). It is a crucial part of the imagination, essential to the consciousness of self and others as being part of that external world, past and present, informs an individual's perceptions and is used as part of the mechanism for anticipating future possibilities (Humphrey, 1983; Warnock, 1976/1994; Ornstein, 1991)

It is through these cognitive features that the mind is able to **draw meaning** from each new relationship and therefore propose new ideas. This is made possible through the agencies of symbolic thinking and the associated forms of thinking in metaphor, analogy (Warnock, 1994; Mithen, 1996; Martindale, 1999; Cummings, 2000) and recursion, Hofstadter (1979/2000). Hofstadter proposes that 'Symbols are the hardware realisations of concepts.' (p. 350) thus providing the means of connecting the real world with the inner imaginative world. Often a symbol will bear little similarity or have little connection to its associated idea which Cumming (2000) calls a 'stipulated sign' of which language is the most familiar form. For Mithen (1996) and others, symbolism is an expression of a cognitively fluid mind. Metaphor and analogy are also tools of thought (Dennett, 1991), some drawing on one domain but the most powerful crossing domain boundaries and can only occur in a cognitively fluid mind (Mithen, 1996). Analogy works at a deeper conceptual level than metaphor, which is essentially a figure of speech, and is able to link previously unrelated concepts, which can be simultaneously retrieved and compared. Hofstadter (1979/2000) also stresses

the possible 'changeability' or 'reconfigurability' of concepts through recursion (Boden, 1994/1998; Mithen, 1996; Martindale 1999) in which the human mind is enabled to simultaneously conceive of different levels of understanding about one idea, with the possibility of moving from one level to another.

The ability to think symbolically, analogically and recursively requires an imagination in which to manipulate ideas, the functions of memory and retrieval to retain those ideas even when not in conscious thought, the ability to draw significance from all the levels of understanding and through these processes, to propose new connections and ideas. This is the essence of creative thought.

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