

Beyond the Tingle Factor: creativity and assessment in higher education

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A version of this paper was presented at an Economic and Social Research Council (ESRC) seminar, University of Strathclyde, Scotland. November 2005

PROLOGUE

Education is a seriously funny business. We demand that students conform to the formalities of the university and yet we secretly hope they will practise wild, if subtle rebellion. We require them to be versed in inherited theoretical vocabularies, but need them to energise us with some previously unseen thing....The very fact that so many students survive the contradictions is in itself wonderfully encouraging."

(Clark, 1998)

In the spring of 1997 I was in Germany interviewing applicants for the performance design degree course that I ran at the Liverpool Institute for Performing Arts (LIPA). Amongst those interviewed was young woman, B., who immediately struck me and my co-interviewers as a real 'creative spark'. It was also obvious that she exhibited a number of the non-conformist qualities and attitudes (described later in this paper) that are characteristic of highly creative people. We also recognised that if she were to accept the offer of the place that we made, her relationship with the course, the institution and the system would not be unproblematic.

Our assumptions proved correct as B. challenged, often in a very creative way, the course work and assignments that were set. The course team was caught in a dilemma. We had in B. someone who met Torrance's and Rockenstein's description (above) in full, and who was generally recognised across the institution, which prided itself on its fostering of creativity and innovation, as one of the most creative students in the building. Yet her refusal to comply with and conform to the regulations and procedures of the university put her at severe risk of failure.

There was a consensus amongst the course team that we would do all we could to keep B. on the course, even if it meant bending (but not breaking) the regulations. Our reasoning went as follows:

LIPA was an institution dedicated to excellence in the performing arts. The institution and its courses were designed to attract the most talented and able students. We taught a subject that placed a high priority on creativity and creative solutions within an institution that declared the same priorities. If we could not keep someone like B. on

the course, then we had to seriously question 'what are we doing?' and 'why are we doing it?'

In the end there was a compromise. B. agreed to undertake those parts of the course that were essential to her staying, and we would endeavour - with the encouragement of the external examiner - to ensure that we could fit her work into the assessment system of the validating university. B. graduated from LIPA with a 2:2, and she is now a successful artist/performer based in Germany.

DEFINING CREATIVITY

In recent years the terms 'creativity' and 'innovation' have assumed increasing prominence in the various discourses that permeate higher education in the UK. Whilst the early debates on creativity, in the 1950's and 1960's, focused on the areas of personality, cognition and the stimulation of creativity in individuals, more recent research has focused on the influence of environments and social contexts on the creativity of individuals, groups, and organisations (Rhayammar and Brolin, 1999). Thinking about the concept of creativity has changed in recent years and the current creativity discourse also encompasses:

- operating in the economic and political field
- acting as a possible vehicle for individual empowerment in institutions and organizations
- being used to develop effective learning

(Jeffrey and Craft, 2001:3)

At a macro-political level, there is an acceptance, at least in the political rhetoric, that the future prosperity and success in the global economy of what is sometimes referred to as 'UK plc' will depend increasingly on the creativity, innovation and skills of its population. This view has led to education, and particularly higher education, being regarded as a key element in the grand strategy to ensure that the UK maintains its somewhat precarious position as a member of the Group of Seven leading economies.

The emergence of creativity and innovation as important drivers of change led to the setting up, by the New Labour government of 1997, of a number of creativity-focused initiatives. These included the establishment of a 'Creative Think-tank' that produced an influential report on the Creative Industries published in 1999. That same year saw the establishment of the National Endowment for Science Technology and the Arts (NESTA) whose opening credo was and remains Creativity is vital to any nation. NESTA's main objective is 'to promote talent, innovation and creativity in the fields of science, technology and the arts'. Also in 1999 the National Advisory Committee on Creative and Cultural Education (NACCE), set up by the Department of Education & Skills, produced its report All Our Futures that argued strongly for the development and implementation of a national strategy for creative and cultural education.

Behind this paper lie a number of assumptions or hypotheses about creativity. They are as follows:

- though many people find the notion of creativity very appealing, there is very little understanding of what it is and how it might work.
- that a great deal of what is generally considered 'creative' is not necessarily creative and *vice versa*:
- that creativity is not an ineffable concept but is something real and tangible that can be analysed and understood, and that understanding can be utilised to develop students' creativity and their creative processes and products
- that, generally, the higher education system in the UK is not conducive to the development of creativity

There are many aspects to creativity, and it has been explored by a number of theoretical approaches including philosophy, psychology and sociology. From an examination of some recent research reviews of creativity - both generally and in relation specifically to educational and organisational development (Dust, 1999; King and Anderson, 1995) - it is clear that there is no one definition of creativity that can be agreed upon. Also, not surprisingly, given the problems defining it, the measurement or assessment of creativity also poses many problems.

A key issue in discussing and defining creativity is whether the focus is upon those exceptional creative individuals who shift paradigms in knowledge and understanding, or whether it is upon all individuals and their potential for self-actualisation, through what is known as 'little c' creativity or 'possibility thinking' (Craft, 2001). It is this latter, broader view of promoting creativity in all individuals that underpins this paper.

It is generally recognized that creativity exists and is a necessary and important part of human development and activity. Creativity is neither the exclusive preserve of the genius, nor is it limited to specific fields and levels of work. Creativity, importantly, is not just a 'quality': it manifests itself at a number of points, and it informs and is part of a process that leads to an outcome. The time dimension of creativity is very important, as it emerges often after a period of mundane, hard, even repetitious work. Many researchers point out that time is essential for creativity to flourish and for creative products to be produced.

The classical view of creativity can be divided, necessarily simplistically, between Plato's mysterious, divinely-inspired, 'eureka' version of creativity and the more humdrum, Aristotelian view in which sees creativity in an artisan creating a simple new object, though not necessarily even a new form or thing (Madden 2004). That classical dichotomy — between 'high-end' creativity and 'everyday' creativity — still informs current conceptions and definitions.

Creativity research, mostly in the field of psychology, tends to focus on notions such as innovation, invention, problem-solving, and there is a widely accepted definition that refers to the "generation and elaboration of ideas or products that are both novel and useful" (James *et al*, 1999). The 'useful' is important as without the criterion of

appropriateness i.e. a recognition by others of its fitness/utility/value, novelty can be merely bizarre.

There are three aspects of creativity which have drawn much attention: the person, the process, and the product. Barron (1988) defined creativity as 'a creative product produced by a creative person as a result of a creative process'. However this formulation omits an aspect of creativity that increasingly has gained prominence in creativity research: the creative environment. Organisational systems and cultures play such an important role - particularly in education - that Barron's statement could be re-formulated as follows: a creative product produced by a creative person engaged in a creative process within a creative environment.

The Creative Individual

Personal creativity is: a process of becoming sensitive to or aware of problems, deficiencies, and gaps in knowledge for which there is no learned solution; bringing together existing information from the memory storage or external; defining the difficulty or identifying the missing elements; searching for solutions, making guesses, producing alternatives to solve the problem; testing and re-testing these alternatives; and perfecting them and finally communicating the results.

(Torrance and Rockenstein, 1988:275)

There is a wealth of research into the characteristics of creative individuals. A list of the most commonly described characteristics used by researchers (see Table 1 below) reveals that they are a mixture of attributes and personality traits, 'givens', and things that are acquired. However, whilst they provide a good baseline against which to consider the creative individual, they are not easily measurable. Also a number of them e.g. unconventionality, challenging authority, clearly have the potential to pose challenges to any educational system that operates within a highly structured regulatory framework and which value standards and management over creativity and risk-taking (Kimbell, 2000:208).

Table 1: Characteristics of highly creative individuals	
<ul style="list-style-type: none"> ▪ High curiosity ▪ High idea generation ▪ High risk-taker ▪ Lots of questions ▪ Openness to experience ▪ Self-confidence ▪ Broad range of interests ▪ Collector of the Unusual ▪ Lateral thinking and responses ▪ Uninhibited ▪ Radical ▪ Tenacious, determination to succeed ▪ Intellectual playfulness ▪ Preference for complexity 	<ul style="list-style-type: none"> ▪ Concerned with conceptual frameworks ▪ Keen sense of humour (often bizarre, irreverent, inappropriate) ▪ Highly self-aware and open to the irrational within themselves ▪ Heightened emotional sensitivity ▪ Non-conforming, accepting of chaos, not interested in details ▪ Described as 'individualistic' but not afraid of being classified as 'different' ▪ Unwilling to accept authoritarian pronouncements without overly critical self-examination

(compiled from Craft, 2000; Shallcross, 1981; and others)

Notwithstanding the collection of characteristics possessed by a creative person possesses, the creative act itself - according to Amabile's (1983) influential model of creativity - is critically dependent on the following three components working in combination:

- Skills in creative thinking
- Skills in the task domain
- Intrinsic Motivation

Amabile identifies finding the problem in the first place as one of the most essential skills in creative thinking. Also involved is choosing and using divergent and convergent reasoning, understanding the nature of the problem, understanding the appropriateness (or not) of the approach, the ideas generated and the outcome. The sort questions involved in creative thinking include is it appropriate? does it work? is it of utility? can it be done?

Skills in the task domain involve knowledge of the area of the task; relevant technical skills; special talents etc.

Amabile's third requirement is based on her 'Intrinsic Motivation Hypothesis' (Amabile, 1983 & 1996) which states that people will perform more creatively if they are motivated by interest in the activity itself rather than by the promise of rewards or threats of punishments that provide extrinsic motivation. Rewards, according to Amabile, actually have a destructive effect on creativity in general and, in particular, on higher-order problem-solving. Amabile's view of education is that the more complex the activity then the more likely extrinsic motivation will block creativity, and if students perceive their learning as simply something they have to get through in order to 'win the prize', they are inevitably going to be less creative. Moneta and Sui (2001), in their exploration of the lack of creativity in the highly-extrinsically motivated education system in Hong Kong, refer to the "consistent body of research conducted in North America (that) indicates that trait intrinsic motivation facilitates creativity and academic performance, whereas extrinsic motivation hinders creativity but has no effect on academic performance".

What is important about Amabile's model is that all three components need to be present. For example an eminent creative thinker in one field e.g. physics might lack the task-domain skills in a different area e.g. drawing, and therefore would fail to perform creatively notwithstanding high levels of skills in creative thinking and intrinsic motivation.

There is clearly a link between Amabile's work and certain strands of discourse and practice in education such as the types of learning and understanding described by Biggs (1999) and Bloom (1956) in their respective taxonomies. In particular there is a strong correlation with the 'deep learning' and 'surface learning' approaches to study, derived from original empirical research by Marton and Säljö (1976) and since elaborated by Ramsden (1992), Biggs (1987, 1993) and Entwistle (1981), among others. However, though there is a correlation of 'deep learning' with intrinsic motivation and of 'surface learning' with extrinsic motivation, they are not inextricably tied to each other.

Atherton (2003) points out that “either approach can be adopted by a person with either motivation”.

The theme of creativity as social practice runs through much of recent creativity research. Recent research in communities of practice (Lave and Wenger 1991) also presents a view of learning as social, situated and characterised by communication between individuals. An important aspect of creativity is that its processes and, particularly, its products are socially situated and socially constructed. King and Anderson (1995) stress the point that simply selecting highly creative individuals or providing what is known as 'creativity training' does not ensure that creativity will occur. They also make the important point that what constitutes creativity inevitably depends on the subjective judgements within a relevant field of activity or social setting. This is a view supported by influential researchers such as Gardner (1993) and Csikszentmihalyi (1988) both of whom discuss creativity in relation to the domains (of endeavour, work, subject discipline etc.) and fields (social institutions, peer groups, wider society) through which judgements of individual performances are made. Csikszentmihalyi (1988) argues strongly that creativity has to be studied in terms of an individual acting within a social and historical context. According to Csikszentmihalyi, creativity is the product of three main shaping forces: A **field** i.e. the set of social institutions that selects from the variations produced by individuals those that are worth preserving. A stable cultural **domain** that will preserve or transmit the new ideas or forms to the following generations, and the **individual**, who brings about some change in the domain, a change that the field will consider to be creative.

Creativity is a phenomenon that results from interaction between these three systems. Without a culturally defined domain of action, the person cannot even get started. And without a group of peers to evaluate and confirm the adaptiveness of the innovation, it is impossible to differentiate what is creative from what is simply statistically improbable or bizarre.'

(Csikszentmihalyi, 1988)

The final sentence in the quote above has some profound implications for the assessment of creative processes and products. It means that any assessment has to be undertaken, or certainly must involve, the field in which the person operates. In addition it must involve assessment against the accepted criteria of the domain.

Csikszentmihalyi (1996) has also provided an important contribution to the understanding of creativity with his concept of 'flow'. This characteristic, common to creative people and also in high-level sports, consists of the automatic, effortless, yet highly focused state of consciousness when engaged in activities, often painful, risky or difficult, which stretch a person's capacity whilst involving an element of novelty or discovery.

Csikszentmihalyi elaborates the description of this characteristic in identifying nine elements which 'flow' activity provides:

- • clear goals
- • immediate feedback
- • balance between challenges and skills
- • merging of action and awareness
- • elimination of distractions
- • lack of fear of failure
- • lack of self-consciousness
- • distortion of sense of time
- • autotelic activity (enjoyment for its own sake)

(Csikszentmihalyi, 1996)

An important point for those involved in designing, implementing and managing educational provision is that individual states of intuition, rumination, reverie, even boredom play a role in creativity and problem-solving, and some studies indicate how creativity is enhanced in state of reverie and imagery (Claxton, 2000). Such states are not just 'letting it flow' or 'leaving it to luck', but acknowledging a way of knowing which is not necessarily conscious and draws upon resources of knowledge, skill and experience in order to make new combinations, explorations and transformations (Boden, 2001).

The Creative Process

The creative process receives the most attention by far of writers and researchers. Most of the work focuses on the mechanisms and phases involved in the manifestation of a creative act. As with the actual definition of creativity, there is a wide and divergent range of opinion. This has led to the development of dozens, if not hundreds of models of the creative process. However, many are adaptations, variations and developments of the influential four-stage model of the creative process developed in by Graham Wallas (1926):

- **Preparation** (problem definition, data gathering, verification criteria, etc)
- **Incubation** (contemplation; could be weeks, months or years;)
- **Illumination** (often very brief, energized, holistic i.e. seeing the whole solution)
- **Verification** (demonstrating or having accepted that it works)

In the *preparation* stage, the problem or challenge is defined; any data or resources the solution or response needs to account for is gathered; and criteria for verifying the solution's acceptability are set up. In the *incubation* stage, we step back from the problem and let our minds contemplate and work it through. Like preparation, incubation can last minutes, weeks, even years. In the *illumination* stage, ideas arise from the mind to provide the basis of a creative response. These ideas can be pieces of the whole or the whole itself, i.e. seeing the entire concept or entity all at once. Unlike the other stages, illumination is often very brief, involving a tremendous rush of insights within a few minutes or hours. In *verification*, the final stage, one carries out activities to demonstrate whether or not what emerged in illumination satisfies the need and the criteria defined in the preparation stage.

Several clear themes emerge from the various models of the creative process:-

- that it involves a dynamic interaction of purposeful analysis, imaginative idea generation, and critical evaluation.
- that it involves both imagination *and* analysis, divergent *and* convergent thinking,
- that it requires a drive to action and the implementation of ideas. The act of imagining new things must be combined with the ability to make them concrete realities.

This understanding of the creative process has profound implications for the design and delivery of educational provision if the stated desire to see more creativity in that provision is to be realised.

The Creative Product

The criteria or characteristics of creative products are of particular importance because it is the basis of any performance assessment of real world creativity and may provide a window on the other aspects of creativity. The creative product – whether it be an actual, physical object or an expressed idea – is the proof or evidence that creativity has occurred. It is because it *is* a product and therefore tangible that makes it the easiest element to assess.

It is worth noting that the focus on the tangible outcomes of creativity is a particularly Western concern. Westwood points out that Eastern cultures are far more process-oriented and far less concerned with outcome or product. The concern of these cultures is in the "role of creativity in providing personal fulfilment and enlightenment, or connection to an inner relax of reality" (Westwood, 2003:239)

The Creative Environment

A great deal of creativity research concentrates on the previous '3P's': people, process and product. However organisational systems and cultures have increasingly attracted the attention of creativity researchers. As the research and debates on creativity have widened it became obvious that the creation and maintenance of 'creativity-friendly' environments – architectural, organisational and intellectual - was an important factor in supporting and enhancing creativity and innovation.

Creativity processes are used regularly by many private and public sector organisations of all sorts in manufacturing, services, banking, or construction companies. Big firms such as Xerox, AT&T, Frito-Lay, as well as car manufacturing firms, software development firms, railroad pharmaceutical firms etc., use creativity techniques to increase efficiency and quality, especially in their research, strategic planning and marketing departments.

(Sefertzi, 2000:5)

A number of successful companies, particular in the high-tech and creative sectors, are renowned for their informal, non-traditional work environments. For example, the employees of Pixar - the highly successful American computer animation company – work in customized miniature log cabins dotted around a large warehouse complex, and they are supplied with scooters to enable them to move quickly round the building. (It is perhaps worth noting that the log cabins were also cheaper to purchase and fit out than conventional cubicle offices). Similar approaches to creative workspaces are not restricted solely to the creative industries. A large and successful asset management and investment firm in the USA has no offices, cubicles or permanent work stations.. Instead of traditional oversized desks or cubicles, everyone has three pieces of wheeled furniture to promote and facilitate changing workgroups.

The purpose behind the design and maintenance of these creative environments is not altruistic. Whilst the 'cutting-edge' or 'cool space' is designed to promote creativity and innovation in thinking, some of the most innovative companies use their physical space as a competitive weapon in the race for new ideas and market advantage. However, as Miller points out:

By itself, the design of the physical workplace cannot bring about the basic transformation required for an organization to embrace and reap the benefits of collaborative ways of working. But facilities design can create significant barriers to the type of activities that true collaboration requires, or, in combination with an organizational culture and structure that values and actively pursues collaborative effort, the environment can be used to create settings that encourage and support the behaviors and relationships that create new meanings.

(Miller, 2000)

The characteristics associated with organisational climates and cultures that are conducive for innovation are similar to many of those associated with creative individuals (i.e.; openness to change and challenge; a playful approach to new ideas; a tolerance of vigorous debate). But they also include specific organisational

characteristics such as democratic and participatory structures, and encouragement of risk taking. Amabile (1996) makes the point that many of the organisational factors considered to be inhibitors of creativity e.g. evaluation, constraints, formal rules, respect for traditional ways of doing things, indifference, competition; time pressure (when too high), operate by restricting people's freedom to work in the way that best suits them.

Tait's (2000) research into the views of university lecturers supports Amabile's point about creativity inhibitors. Her interviews with lecturers revealed that they expressed the challenges to their creativity or power to innovate in terms of limited professional freedom. These were usually attributed to the normalising constraints of a particular context.

This quote from one of Tait's respondents is typical:

I am told that we should meet certain kinds of educational and organisational requirements for which I should provide much paperwork ... accurately filled-out lesson plans, assessment schedules and schemes of work, and examples of assignments out and in ... I never feel that the real depth of the course can be appreciated from these processes, and the feedback from them is rather poor.

(quoted in Tait, 2002)

Whilst Amabile's work has focused primarily on creative environments in the corporate world, Craft et al (2001) present a range of well-supported discussions of the elements of learning environments which are conducive to creative developments.

Characteristics of these environments include:

- awareness of the ways in which creativity is related to knowledge across the curriculum, not just the 'arts' and that the rules and structures underpinning 'conceptual spaces' in different knowledge domains can be combined, explored and transformed (Boden, 2001)
- opportunities for exploration and play with materials, information and ideas (Craft, 2000)
- opportunities to take risks and make mistakes in a non-threatening atmosphere (Davies, 1999)
- opportunities for reflection, resourcefulness and resilience (Claxton, 2000)
- flexibility in time and space for the different stages of creative activity (Claxton, 1999)
- sensitivity to the values of education which underpin individual and local interest, commitment, potential and quality of life (Beetlestone, 1998)
- teaching strategies which acknowledge 'teaching for creativity' as well as 'teaching creatively.' (NACCCE, 1999)

These characteristics would appear to provide little that is contentious or disputable in the design and operation of creative learning environments. However they do pose a number of questions and challenges. One is whether the organisational and operational systems currently found in UK higher education are susceptible and open to the changes required to develop genuinely creativity-enhancing environments. Whilst it is important to recognise, and emphasise, that higher education in the UK is not an homogenous unified system, the strong influence of the funding councils and various

other agencies e.g. QAA, and the legacy of the major higher education reports e.g. Dearing, has created a generally convergent system that is built principally on the 'twin-pillars' of knowledge and skills.

Certainly some of the factors required for creativity can be detected in current higher education. Inter- or cross-disciplinary work and reflective practice increasingly are being utilised to enable students to widen and deepen their understanding and knowledge of other domains as well as reflecting on their own practice and learning. Yet, for the most part, the systems and processes generally in place in higher education would appear to be designed specifically to exclude or oppose those characteristics. There are numerous examples available, but a few will suffice.

It is difficult to see how Claxton's requirement of 'flexibility in time and space for the different stages of creative activity' (1999) might be accommodated in a modularised, unitised system that is governed by strict timetabling, efficient use of space, and fixed assessment deadlines. Similarly it is difficult to see how Davies's 'opportunities to take risks and make mistakes in a non-threatening atmosphere' (1999), and Craft's 'opportunities for exploration and play with materials, information and ideas' (2000) might be accommodated in a system in which time and resources are at a premium, and in which students are driven largely by assessment rather than learning.

A consideration of the conditions pertaining in the university sector in the UK e.g. the increase in student numbers and the consequent pressures on resources, benchmarking and the requirement for detailed programme specification, rigid assessment procedures, etc. - would lead to the conclusion that they are the very conditions in which creativity is unlikely to be nourished and thrive. The fact that creativity does exist in the system is likely due to attitudes and activities that manifest themselves *despite* rather than *because of* the surrounding environment.

CREATIVITY AND ASSESSMENT

The assessment of creativity is complex and problematic in structures of assessment in which quantifiable, measurable outcomes are considered to be 'high stakes' and valued for the purpose of making judgements and comparisons between individuals, institutions and systems.

(Loveless, 2002:25)

At a conference on creativity in higher education (*How can creativity be taught?* University of Hertfordshire, March 2004) the participants were asked to provide personal accounts of how they approached and developed creativity in their teaching. One of the questions they were asked was: *What types of creativity were you trying to promote?* This elicited, as might be expected, a range of responses. Whilst most of the responses were concerned with process (e.g. promoting divergent and convergent thinking), a significant number of responses indicated that the creativity resided in the activity or product (e.g. producing a film, writing fiction). What is interesting about the latter is the assumption that engagement in the production of 'artistic' products is inherently creative.

Though there is a great deal of literature on, and many tests of and for the creative person, creativity tends to be evaluated and assessed in terms of what is produced rather than the processes that led to it or the individual personality traits. Our assessment of creative products also tends to ignore two of Amabile's (1996) components, i.e. creative thinking and intrinsic motivation, and focuses instead on the consequences of those personality characteristics as evidenced by the products created. King and Anderson provide the following example:

If one rated Lennon and McCartney as amongst the most creative popular music writers of this century, one would cite as evidence not the personality traits they possessed, but their songs - their products.

(King and Anderson, 1985:17)

The creative process is actually very difficult to assess, especially as there are so many differing views as to its nature. Also, and this is particularly important in regard to education, there is no correlation or definitive 'line of determination between a 'good' creative process and a 'good' creative product.. The history of art, literature and music is littered with examples of what are generally considered great art that derive from what are also generally considered to be destructive processes.

This leads to a critical question: Is it possible, in an educational context, to 'design-in' and assess what Prentice (2000) describes as the ' complex and slippery concept' of creativity? Because of the complexities and problematics surrounding creativity, the tendency has been to avoid it, and to focus instead on that which appears to be straightforward and, if not unproblematic, then certainly less problematic than dealing with creativity.

In the early 1990's, when the educational buzzwords were skills, training and competence, there was a great deal of discussion and debate surrounding the introduction of National Vocational Qualifications (NVQ) in the UK . A particular concern was that the introduction of competence-based education and training (CBET) would drive creativity and innovation out of the system.

Instead of an holistic framework, CBET atomises and fragments learning into measurable chunks; rather than valuing process and experience, CBET is concerned only with performance outcomes and, most importantly, instead of encouraging critical reflection on alternative perspectives, CBET offers a mono-cultural view based on the satisfaction of narrow performance criteria and directed towards fixed and pre-determined ends.

(Hyland, 1994:235)

In response to those concerns, the then Department of Employment (not, significantly, the Department of Education) produced a series of papers on creativity in its journal *Competence and Assessment*. One of the papers (Fennell 1993:5) outlined what was described as a *lexicon of creativity*. It was based on the idea that very few tasks are without precedent and that virtually every task has its unique features or circumstances. It also embodied the view that creativity can be applied or demanded of every

occupation. It may be at a higher or lower level, it may be grand or modest, eminent or everyday, but it exists nevertheless. Westwood and Low support this view:

In general we concur with the view that creativity is a normative human cognitive capacity;..... that is, it is not a function of exceptional cognitive capacities but is inherent in the normal generative capacities of everyone's cognitive processes. In this sense all people are capable of creative acts.

(Westwood and Low, 2003:244)

Fennell set out four categories of creativity and provided a set of descriptors and examples for each category (see table 2), and he was concerned to demonstrate that creativity was and could be contained within the competence-based, vocationally-oriented, outcome-based framework of the NVQs.

REPLICATION	FORMULATION	INNOVATION	ORIGINATION
Descriptor Materials and process are prescribed with little or no latitude.	Descriptor Materials and process are well-established but latitude is permitted, and variation, within agreed limits, may be welcomed	Descriptor Materials and process are discretionary but work is within established conventions	Descriptor Materials and process are discretionary and work is either without precedent or significantly extends beyond established conventions
Examples Production-line worker; fast-food crew member; check-out operator; bio-hazard handler(!)	Examples Bricklayer, painter & decorator, chef, waiter,	Examples 'Good' Teacher, Architect of estate-houses; most managerial jobs,	Examples Designer/Creator of unprecedented solutions; policy-maker; producing/using radically new methods; new outputs produced

Table 2. Lexicon of creativity, based on Fennel (1993)

Fennell's *lexicon* provides a means to consider creativity — in an educational context — in a way that shifts and widens the focus away from the 'high-end' creativity that tends to be the sole consideration when creativity is discussed. It also has some profound and interesting consequences for the design, delivery and assessment of educational programmes.

Though, as he describes it, there is a definite hierarchy in Fennell's lexicon, with Replication at the bottom and Origination at the top, it is more appropriate to consider it as a continuum within which a person's 'creative journey' moves constantly between and amongst the four categories. Creative breakthroughs, for example, often occur after long periods of replicative or formulaic labour, and the replication of well-proven procedures — often demanding extremely high levels of skill — is expected in hazardous, life-threatening situations e.g. surgery.

This *Replication-Formulation-Innovation-Origination* (RFIO) model can also be applied to the higher education curriculum, where it is unrealistic to expect or demand constant high-end creativity. Most, if not all courses of study, when mapped against the model, would reveal content and delivery that ranges from replication to origination. In fact, as the quote by Clark (1995) at the start of this paper reveals, replication and formulation lie

at the heart of much higher education, and the assessment systems used to test them may well be antithetical to the development and enhancement of creativity.

The problem lies in part with the increasing emphasis on standards and quality assurance, the almost universal use of learning outcomes and assessment criteria, and the division of courses into self-contained modules and units. As long as the expected learning outcomes are carefully set and defined; as long as the assessment tasks are designed to enable the student to meet those learning outcomes; and as long as assessment and grading are carried out fairly and reliably against carefully designed criteria, then the system is deemed to work. Essentially it is a closed system which, like any closed system, will tend to encourage and enforce replication and formulation rather than innovation and origination.

One of the interesting features of the RFIO model is that a great deal of what is considered 'high-end' creativity in fact meets the criteria for replication and formulation. It is one of the great fallacies that arts activity i.e. the 'creative arts' inherently involves high-end creativity. Certainly there is scope in arts-based activities for innovation and origination, but much arts activity is in fact replicative and formulaic. For example, a musician in a symphony orchestra is expected play the notes as written and to follow the instructions of the conductor. Despite the high level of skill required, there is little scope or expectation of innovation or origination. On a larger scale, in the industrial and commercial world, success is often based on replication e.g. mass production, and formulation.

In terms of assessment, *replication* and *formulation* are relatively straightforward. Replication, for example, can be assessed via a teach-it, test it, tick it methodology. Although, as Race (1993) points out, competency itself is not as unproblematic as it may appear, and there are questions about 'shades' of competence, and about a range of descriptors which may be needed to provide more information than simply 'can do'.

Those who teach and study within a system of assessment based on the learning outcome/ criterion-referenced model would appear to be caught in an essentially determinist system which will display a tendency towards replication and formulation, and which will have difficulty dealing with innovation and origination. It is clear that the traditional examination and, to a lesser extent, the academic essay are best suited to the replication or formulation of existing knowledge rather than the development and encouragement of innovation and origination.

Too little of our teaching in higher education is focused on nurturing students' ability to think in creative ways. As a result an educational system that should train students to become independent thinkers ends up creating individuals who readily conform to prevailing thought, individuals who take a reactive rather than a proactive approach to problem solving, and individuals who would rather follow than lead. The educational experiences of many young people condition them to take a passive approach to the learning process.

(Puccio, 2004)

The assessment problems really start to multiply in relation to *Innovation* and *Origination*. According to Beattie (2000) over 200 instruments have been developed for the purpose of identifying and assessing creativity. However Beattie also cites Sternberg's (1991) claim that none of these instruments have been able to measure creativity adequately. Amabile (1993) maintains that anything created purely by following a known, straightforward set of instructions for problem solution cannot be considered creative; creativity must involve the individual in defining the problem for themselves. She also, like Sternberg, maintains that it is impossible to develop assessment criteria for genuinely creative products. This challenges the whole notion of learning outcomes and criteria-referencing that is central to higher education assessment in the UK. The problem is that the learning outcome/criteria-referenced approach is predicated inevitably on what is already known. Therefore that approach is well suited to processes and products that fall into the *replication/formulation* area of the creative continuum. However, if *innovation* and *origination* are genuinely sought, then it is not feasible to develop criteria and learning outcomes for that which is new, unexpected, different to the norm, etc.

Amabile's answer as to how to assess creative products clearly relates to the work of Csikzentmihalyi (1988) and Gardner (1993) on domains of work and fields of knowledge. Amabile's research (1983) showed that, when faced with a new product, a group of experts in the field, despite sometimes extreme and fundamental differences between themselves, were frequently able to agree on the quality of the product placed before them. Applying this expert peer-review method to educational assessment would be seen as a throwback to the 'bad old pre-assessment criteria days' when critical assessment decisions were at the mercy of what appeared to be the personal preferences and prejudices of the assessors. One of the ironies of this is that expert peer-review is the accepted norm in the area of publishing academic research.

Those who decree, design, implement, and participate in assessment systems that are based on notions of validity, fairness and reliability, and which also allow rights of appeal and possible litigation, are unlikely to find a return to a system based on expert peer-review acceptable. What is required is an assessment process that both values and recognises creativity, and meets the requirements of the quality and standards frameworks.

An example of such a process was developed at the Liverpool Institute for Performing Arts (LIPA). As notions of creativity, innovation and excellence were at the heart of LIPA's educational mission, it was essential that the institute's assessment system – which also had to meet the requirements of the validating university – was able to meet those aspirations in practice.

With the support of the chief external examiner¹ a system of 'negotiated assessment' for creative practical work was developed, first in the performance design curriculum area, and then adopted across the curriculum areas. It is perhaps significant that it was the performance design department that drove the initiative, as the pedagogic ethos of that department was based on that more commonly found in UK art schools rather

¹ The chief external examiner was Professor Ken Robinson, who was to chair the National Advisory Committee on Creativity and Culture in Education (NACCCE) in 1999

than the more traditional dance, music and drama conservatoires or university departments.

Informed particularly by the work of Amabile and Fennel, the negotiated assessment system at LIPA was based on several ideas:

- a) that students engaged in creative practice would be working not only at different levels but also in different ways, and that the products they created would be different as would the processes and methods utilised.
- b) that assessment should operate and be perceived as an integral part of the learning process rather than 'bolted-on' to the end of that process.
- c) that the form, content and implementation of the assessment process should be commensurable with the discourse and practices of the field
- d) remembering that the word 'assessment' derives from the Latin 'ad sedere' which means 'to sit down together' (Ross 1993) students became *agents* in their own assessment rather than *objects* of assessment.

Six assessment fields were identified:

1. **Presentation/Production** i.e. the finished product presented to an audience
2. **Process** i.e. the journey that led to the product
3. **Idea** i.e. the ideas that informed both the process and the product.
4. **Technical** i.e. the quality and utility of the technical features of the product and the skills with which they were assembled and/or operated
5. **Documentation** i.e. research, design, planning, evaluation etc.
6. **Interview** i.e. the student's ability to articulate their understanding, utilisation and application and use of any of the above.

Each field was divided into grade bands that correlated to the somewhat eccentric UK honours system², and detailed assessment criteria were developed for each band. One departure from the norm was the introduction of a band of 'High First' (85% - 100%) to acknowledge truly outstanding work.

The important feature of this system was that, through negotiation between the students and the tutor(s), the assessment weighting for each of the fields could be altered. This allowed the student who was quite consciously and determinedly 'taking a creative risk' (working at Fennel's 'Innovation' or 'Origination' level) to have the assessment emphasis placed less on presentation/production and more on process, idea, and documentation. It also allowed the student who was carrying out a specific task or working to a strictly defined brief i.e. to make rather than design a particular artefact (working at Fennel's 'Replication' or 'Formulation' level), to have more emphasis placed on the final product and technical features and less on idea and process. In the case of the latter there would still be a requirement for documentation, and in both cases students would still be required to undertake an assessment interview.

² There is not the space here to provide the necessary critique of the eccentricities of the honours grading system. However a system that has 40% as a pass, then three pass bands of 10%, and a final pass band of 30% (so that both 70% and 100% are a 'First') would appear to require some urgent re-consideration.

The interview would normally last between 30- 40 minutes. Students would bring all and any the evidence they had to support their 'case', and the interview would consist of the tutors turning the assessment criteria statements into questions. An important and essential feature of this process was that tutors would rigorously work their way up from a level that was clearly below that which was applicable to the student's work. This gave an opportunity to the students to demonstrate or argue that their work not only met a particular criterion in full, but exceeded it. (Sometimes the tutors had to persuade the student that their work was actually better than they conceived it to be).

Eventually a point would be reached where there were more negative than positive responses to the questions. That would indicate, both to the assessors and the student, that the assessment of the work had reached its maximal level.

Amongst the outcomes of the implementation of this system was the genuine interest and pleasure - for both students and tutors - that derived from engaging in the purposeful discussion of creative practice and product, and the sense that the student's efforts as well as product had been fully considered and assessed fairly. One unexpected benefit was that student appeals against their grades virtually disappeared, as the process was transparent, explicit and mutually agreed.

Though it was not without some drawbacks (particularly time) the system developed at LIPA demonstrated that it was possible - within an higher education context - to assess creative processes and products in a way that was not only valid, fair and reliable but also, and importantly, was perceived and experienced to be so. It demonstrated that assessment and creativity were not mutually exclusive terms.

CONCLUSION

This exploration of creativity and assessment has demonstrated that whilst creativity is a complex and elusive psycho-social phenomenon, it is not entirely resistant to examination and analysis. What is clear is that creativity involves both cognitive processes at the level of the individual and also important social and cultural dimensions. Creativity is a normative human cognitive capacity and lies within the capabilities and capacities of all people, and engagement in creative activity and its recognition is dependent on the type of activity engaged in and the domain in which it is placed. Within the domain of higher education, in which the dominant discourses and practices tend to focus on the development and demonstration of knowledge and skills, the articulation, embedding and assessment of creativity in general and creative practice in particular is not unproblematic.

The evidence suggests that the relationship between education and creativity should be viewed contingently and in subtle and nuanced ways. Such a view would suggest that there are different processes, mechanisms, and structures through which creativity and innovation emerge. It becomes a truism that one cannot legislate for creativity, but one can create the conditions in which creativity is more likely to thrive. One of the important factors is the context of a particular system and the exigencies and

contingencies of that system, and that educational cultures and subject disciplines are creative and innovative within the context of their own systems.

This exploration has also demonstrated that any valid assessment system that seeks to encourage and evaluate creativity, needs to reflect both the requirement of validity and reliability and the contingent nature of creativity in its own formation and implementation.

If thought, time and energy were put into understanding the creative dimensions of the curriculum - in relation to people, processes, products and environments- it is possible to create a valid assessment methodology that was consonant with creativity. Unfortunately it is perhaps unavoidable that when those notions of validity, fairness and reliability are codified into rigid assessment criteria, learning outcomes, marking frameworks, and assessment protocols, then it is less rather than more likely that innovative and original processes and products will be enabled and encouraged.

Finally, despite the apparent wealth of academic research into creativity, there is a strong need for research within specific, local academic and pedagogical contexts to determine how creativity is conceptualised and to examine the processes of creativity and innovation and the factors that have a bearing on those processes.

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About the author:

Paul Kleiman, BA Hons, M.Ed., PhD, trained as a theatre designer, and then worked for fifteen years as a designer, director and performer with a number of the leading companies in the field of Theatre-in-Education, political and community touring theatre. In 1995 he was invited to join the small team that created and then ran the Liverpool Institute for Performing Arts (LIPA) and its unique interdisciplinary performing arts degree programme. He joined PALATINE in 2000 as Associate Director/Senior Research Fellow. His primary research interests are creativity in higher education, curriculum design and assessment. He is a regular speaker at conferences and seminars, and he also undertakes advisory and consultancy work for universities and other organisations.

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