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Modelling Creativity: How might it help us understand what we do?

Nigel McLoughlin

This article takes as its starting point a number of models of creativity, which can be broadly subdivided into cognitive (Boden, Csikszentmihalyi, Weisberg, Finke et al.); social (Csikszentmihalyi, Boden); behavioural (Amabile) and related to personality trait (Simonton) and examines their various relationships to each other, and to the writing process. The article will also draw on a number of cultural, social and psychological theorists such as Foucault, Habermas, Deleuze & Guattari, Sternberg, Kaufman & Pretz, and Callois, in order to yield insights into how the creative process performs its functions as a process which generates new knowledges within the discipline of creative writing (and artistic endeavours more generally) as well as new writing for the publishing industry and public consumption. The article will explore how those new knowledges might be received and judged in relation to the theories discussed and touches on the epistemological roots of the discipline and the ontological status of the writer.

Keywords: Creative Writing, Creativity, Pedagogy, Research

The purpose of the article that follows is fourfold: firstly it is intended as a comprehensive literature review for the field, so that other researchers and scholars unfamiliar with the territory may be provided with an introduction. Secondly, it is intended to examine points of synergy within the different models and how they may be related to pedagogy and practice. Thirdly, the article is intended as the opening utterance in a conversation and an invitation to debate and discussion as to how work done in this area may be further developed to provide a common vocabulary through which writers may examine and express various aspects of the operation of the creative process. Lastly, it is intended to provoke ideas about how existing models may offer writers new ways of thinking more theoretically about creative processes in their cognitive, social and cultural manifestations.

Various models have been put forward which view creativity as a system of motivational factors (Amabile and various collaborators 1983-1996), cultural or social

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'investment theory' (Sternberg & Lubart, 1991), 'creative ecosystems' (Harrington, 1990; Grubar & Davis, 1988) and interactionist models (Woodman & Schonfeldt, 1990; Amabile, 1983), while others have concentrated on examining the creative processes of (mainly famous) people in terms of biography, heredity, and education (Marjoribanks, 1978; Roe, 1952). Some researchers have attempted to elucidate the process of what happens during the creative act (Root-Bernstein & Root-Bernstein, 1999; Koestler, 1964). Others have begun to examine the cultural significance and history of the term creative and what we have perceived that to mean (Bohm, 1998; Peat, 2000; Pope, 2005). Several have also collected and examined the narratives of a broad spectrum of exceptionally creative people in order to shed light on how the creative process interacts with creative expression (Ghiselin, 1952; Barron, Montouri & Barron, 1997).

Pope (2005: 52) defined creativity as 'extra/ordinary, original and fitting, full-filling, in(ter)ventive, co-operative, un/conscious, fe<>male, re...creation'. Such a definition demonstrates the difficulties that we, as a culture, have in pinning down exactly what we mean when we talk about creativity. Pope expanded his definition (2005: 52-89) to cover the binaries, oppositions, contradictions, dualities and continua which are implied in that original sentence and many of them can be seen operating in the various models that have been put forward to help us think about how creativity operates. However, researchers generally agree on a fairly constant working definition that depends on two key terms: novelty and appropriateness (Amabile, 1996; Csikszentmihalyi, 1996; Finke et al., 1992).

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Perhaps the earliest, and among the simplest of models is Wallas' (1926) separation of the creative process into preparation, incubation, illumination and verification phases. However, this model raises many questions: How do we prepare for creativity? What happens during the process of incubation? How does illumination occur? Who verifies creativity and how? Many later models attempt to address these fundamental questions. Boden (1990) suggests that there are two different types of creativity, which she labels psychologically creative or P-creativity and historically creative or H-creativity. These are different in kind, she suggests: P-creativity being creative in the sense that the person concerned has had an idea which is new to them, whereas H-creativity demonstrates a creativity which generates truly original ideas that no-one else has ever come up with. This depends on the fact that we must be able to prove its newness to mankind and the fact that the creative idea was important and useful. Csikszentmihalyi (1996) takes a very similar perspective to Boden dividing creativity into Big C-creativity and small c-creativity where 'Big C' corresponds to H and 'small c' corresponds to P. This leads to questions as to who will judge which category an output falls under, and how that judgement takes place. Simonton (1999) describes the attributes of highly creative people as those individuals who cross a broad range of interests seeking novelty and complexity, who are comfortable with ambiguity, open to experience, energetically committed to their work (often to the detriment of personal relationships) and who value their autonomy and independence. They are also capable of defocusing attention allowing multiple ideas to be held at one time and worked at simultaneously and providing opportunities for cross-fertilization of those ideas.

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In thinking about the cognitive processes through which creative ideas manifest themselves Koestler (1964) talks of a 'bisociation' of 'different matrices of thought'. This is an interesting and fruitful analogy which can lead to the 'hybrid vigour' of a creative idea, but can equally lead to the converse 'outbreeding depression' of something of little real use. Csikszentmihalyi (1996) recognises the dangers of the latter in his theory of 'flow' by pointing out that the individual must be able to separate the ideas which they generate and recognise what is truly creative from what is merely novel. Koestler also stressed how crucial it was to be able to recognise the importance of new information in order to take advantage of serendipity. The individual must be able to apply their knowledge to model what Dawkins (1989: 368) might have referred to as the likely memetic selection conditions. Of course, this presupposes a strong knowledge of the area in which they are working as well as a strong sense of the current prevailing philosophies among the gatekeepers in their area of endeavour. Many writers (especially in the early part of their development) do not possess this knowledge.

The Geneplore Model of creativity (Finke et al., 1992) examines the mechanisms by which 'preinventive structures' such as mental images are generated and explored (hence, gene-plore). The model offers both a strategy and an explanation as to how novel properties emerge from mental play. The model posits two separate mental processes: a generative process which results in the generation of preinventive mental structures which may include combinations of concepts, and an exploratory process which mentally modifies or mutates the preinventive structure to produce a novel structure. These processes may be recursive. Both of these processes may also have conscious or unconscious dimensions. Preinventive forms can arise spontaneously and

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may have an ambiguous or incongruous quality. As we will see, this bears some relation to Root-Bernstein & Root-Bernstein's (1999) ideas on abstraction, to Koestler's ideas on bisociation, and to a rhizomic model of cognitive connections. Root-Bernstein & Root-Bernstein (1999) divide the creative process up into what they call thirteen thinking tools. These are observing, imaging, abstracting, recognising patterns, forming patterns, analogising, body thinking, empathising, dimensional thinking, modelling, playing, transforming, and synthesizing. Many of these have correlates in other models: imaging, abstracting, pattern recognition and formation might be used to describe the generative aspect of Finke et al's model, while modelling, playing, transforming and synthesising are closely related to the exploratory end of the Geneplore Model. When Koestler talks about bisociation of different matrices of thought that process of bisociation also involves play, synthesis, transformation and perhaps patterning.

Csikszentmihalyi's (1996) theory of flow offers a set of characteristics of the 'optimal experience' of 'flow in creativity': the clarity of goals; knowing how well you are doing; balancing challenges and skills; the merging of action and awareness; avoiding distractions; forgetting self, time and surroundings; the autotelic experience. (1996: 113-123). The autotelic experience may be defined as being motivated by enjoyment of the experience itself. The characteristics stated are useful to the teaching and learning of writing, and in the practice of creative endeavours more generally, in that they offer conditions to aim at, or points to consider when one is planning curricula, assignments, exercises, and when one is trying to find the time and 'space' to write.

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However, some of the characteristics of optimal experience are more problematic than they first appear, because they appear to set up false dichotomies where continua may be more appropriate. Different parts of the creative process and different levels of development will require a different mix of 'optimal' characteristics. The demand for setting clear goals, for instance, might be more helpful for undergraduates where they have been set an assignment to write a sonnet, but perhaps less necessary for a PhD student who is engaged in speculative research into narrative structure. Knowing how well you are doing can be enabling, if you are doing well, or disabling, if you know you are doing badly. Likewise, forgetting self, time and surroundings may show total focus on the work in hand, or an escape from it. It may not be the best strategy to employ for approaching an assignment when the deadline is pressing! The autotelic experience is the ideal, and one could argue that provided the environment is right, that writers can and will 'fail better' next time. That's undoubtedly true, but it is also true that many fledgling writers in academic settings are also motivated (and demotivated) by assignment marks, deadlines and degree classifications. Writers outside of the academy have editorial and publishing deadlines to meet, which preoccupy them too.

Amabile's Principle of Intrinsic Motivation mirrors Csikszentmihalyi's ideas on flow to a large extent. This too posits that the autotelic experience is the prime factor in generating creative responses. The Principle states 'intrinsic motivation is conducive to creativity; controlling extrinsic motivation is detrimental to creativity, but informational or enabling extrinsic motivation can be conducive, particularly if initial levels of intrinsic motivation are high.' (Amabile 1996: 119). This is backed up by a large number of separate studies that examine the effects of a variety of intrinsic and extrinsic

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motivational factors both controlling and enabling (Amabile, Phillips & Collins, 1994; Hennessy & Zbikowski, 1993; Deci & Ryan, 1985).

Many of these studies offer food for thought when considering pedagogy. Assessment, evaluation, external reward, surveillance and deadlines for instance have all been shown to be detrimental extrinsic factors (Amabile 1996: 92-135, Hennessy, 2003). While none of these are particularly simple effects, and some differences of effect have been found across genders and in personal affect (see Hennessey 2010 for a comprehensive review), it is fairly clear that they are widely considered to be generally detrimental to mean levels of creativity in populations tested (Hennessey, 2003, 2010). Crutchfield (1962) postulated that conformity pressures generally, which may include the perceived need to please editorial or tutorial taste and meet assessment criteria, elicit motivation incompatible with creativity. The trouble is, of course, that on Creative Writing degrees all of the above are standard fare. Feedback can increase creativity if given in the proper manner, that is, feedback designed to focus on what Deci (1975: 142) called the informational aspect. These studies suggest that one would expect to enable an apprentice writer's creativity by playing down summative aspects of assignments and stressing the formative aspects, and steering feedback towards ideas for improvement, while stressing areas of competence rather than being merely summatively evaluative.

Weisberg (2006) describes the creative process as being undertaken in two main ways, both of which are related to solving problems which may be either clearly defined or ill defined. He classifies these two main strategies as either 'algorithmic' strategies which proceed by a tried and trusted formulaic approach which has worked in the past for

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similar problems, or a 'heuristic' approach whereby there is much more trial and error. Boden (1990) also uses the terms but implies that algorithmic is much more formulaic while heuristic is guided by rules of thumb which narrow the trial and error approach down somewhat. Under conditions of surveillance and pressure, studies such as Amabile's (1996) imply that a writer (particularly an inexperienced one) is more likely resort to 'algorithmic' or formulaic methods. The use of such strategies can result in 'satisficing', where the writer may produce something that will be satisfactory and meet the requirements of the task, but won't be particularly ground-breaking (March & Simon, 1958; Amabile 1983, 1996; Williams, 2004).

Amabile (1996) indicates that more 'heuristic' experimental, trial and error, methods tend to dominate the creative processes when motivations are intrinsic. These heuristic mechanisms have been identified as: seeking ways to reduce the distance between the current position and the goal (Anderson, 1980); the identification of 'intermediate possibles' (DeBono, 1971); avoidance of response algorithms (Mednick, 1962); the use of the counterintuitive (Newell et al, 1962); estrangement of the familiar (Gordon, 1961); and playing with ideas (Wickelgren, 1979). These strategies are analogous to those found in various models such as Boden (1990); Root-Bernstein and Root-Bernstein (1999) and Finke et al (1992) which depend on elaborative strategies such as estrangement, counterintuitive possibilities and divergent thinking and remote association more generally. Others are echoed in Weisberg's cognitive strategies for problem solving such as identification of intermediates and incremental movement towards a goal. Weisberg also includes counterintuitive strategies in discussions on the solution of insight problems such as the Towers of Hanoi problem which can only be

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solved by recognising and making a counterintuitive step. These heuristic strategies tend to be used in ill-defined problems, where part of the research involves actually clarifying the research question. This need to explore the problem space in order to clarify what the writing process aims to achieve, and to generate new methodologies or deploy existing methodologies in novel and appropriate ways to achieve those aims, resonates with much how much research in arts practice is developed.

Deadlines for assignments, as in life, are unavoidable, but this may be mitigated through a programme of instilling the ethos that a poem or story is written every week or fortnight for workshop and providing frameworks and guidelines to stimulate writing in the writer's own time. The setting of such mini deadlines can also serve as a form of inoculation with regard to the tendency to 'satisfice' when the pressure of the assignment deadline begins to be felt. Assessments tend therefore to 'write themselves' over the semester and the creatively disabling 'assignment stress' can be minimized. The studies undertaken by Amabile and Hennessy and their collaborators quoted above also indicate that the added pressure to write under surveillance in a workshop for 10 minutes (as is often done using free writes) is likely to inhibit real creativity in the writer by combining, as it does, surveillance, deadlines and the expectation of assessment and evaluation.

There is a counter argument to be made, of course, that such factors are part of the creative artist's normal business and that as writers we will be confronted habitually with publisher's deadlines, the likelihood of critical appraisal and even possible surveillance if we have to present regular interim drafts of chapters or poems to editors

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etc. One might argue that Michelangelo painted under surveillance quite a bit of the time, and that Dickens, and Chekov wrote for magazines and faced frequent and fairly tight deadlines for copy, and yet they seem to have been extremely successful and creative. All of that is of course true but neither of those arguments necessarily detract from the findings that such things are generally detrimental. Because they are based on population studies, there will always be those individuals who are not effected or who are less effected by deadlines, surveillance and expectation of evaluation etc. But the studies suggest that these are in the minority and that for the majority of those tested, they proved significant factors in decreasing creative output. Interestingly, those individuals whose creativity is less inhibited may have found a way of making those normally detrimental factors intrinsically motivating rather than extrinsically demotivating, and there are studies that suggest that this is possible through the use of 'immunization techniques' (Hennessey & Zbikowski, 1993) such as regular interim deadlines and regular critique feedback sessions tend to build good writing habits and accustom the writer to evaluation and deadlines.

The influence of creative play in all of these models is difficult to deny. Callois (1961) classified play into four types Agon (competitive), Alea (chance), Mimesis (mimicry) and Illinx (vertigo). Each of these four types of play also have ludic or paedic varieties which correspond to structured and rule driven play or unstructured, free-form, imaginative play. I have found these classifications fruitful in the past in designing exercises which make use of competition and chance, for example, in either structured or unstructured ways – an example might be to 'turn to page 9 of the first newspaper you

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see and write a sonnet starting with the sixteenth line of column 2' or the game of text-tag poetry which has a competitive/collaborative base and strict rules.

Deleuze & Guattari (1980) offer the model of the rhizome as one which resists the organizational structure of the root-tree system and this may be taken as an apt metaphor of how creative thought functions. It resonates with Koestler and Finke et al's ideas through the mechanism of ceaselessly establishing connections, or bisociations in Koestler's parlance, which may form nodes around which new ideas can gather. These nodes can be seen as analogous to the preinventive structures of the Geneplore Model through their potential for expansion and exploration in new directions, and because they are storehouses of the systems' potential energy. These nodes may send shoots which suddenly burst through into consciousness like a 'eureka moment' from the network of subconscious connections constantly being incubated, as suggested in Koestler, Wallas, and Geneplore models.

The metaphor may be further extended to include the polarity Deleuze and Guattari see between the arboreal model and the rhizomatic model in terms of cognitive strategies as described in the models by Boden and Weisberg. Arboreal systems tend to be algorithmic, top down driven, logical, and directed modes of thought. These are particularly useful for solving clearly defined problems where a method exists which will help to find the solution quickly. Rhizomatic thinking patterns are much more heuristic, complex, and random, open to ambiguity and defocused attention. This mode is prevalent where the problem is not clearly defined (as in most artistic endeavours) or there is no formula which may be followed to yield success. In effect the process favours

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unexpected connections (Koestler) and the generation of new preinventive structures and their exploration for use (Finke et al).

In recent years evidence about the mechanisms underlying creative cognition has begun to be gathered through the use of electroencephalography and magnetic resonance imaging among other methods. Dietrich (2004) has reviewed the evidence related to the involvement of the frontal lobes of the brain, and frontal processes more generally in the creative process. While deliberate searches for insights can be carried out through directed thought instigated by prefrontal mechanisms, Dietrich suggests that defocused attention promotes flatter hierarchies of cognitive organisation thereby facilitating remote association and divergent thinking processes and the suspension of conscious directed thought which may prevent novel combinations of associations that lead to insight. This is based on the known executive and attentional functions of the frontal lobes and what occurs during daydreaming, REM sleep and other periods of defocused attention, when normal executive function is suspended (Braun et al., 1997; Gazzaniga et al., 1998; Martindale, 1999; Damasio, 2001). In such cases the brain acts as a parallel processor where novel combinations of associative thoughts are generated constantly. This resonates with both Deleuze and Guattari's rhizome metaphor and many of the cognitive models previously described which relate to defocused attention and the combination of remote association, divergent thinking and bisociation of different matrices of thought.

Obviously, creativity requires periods of focused and defocused attention and creative individuals tend to develop strategies for harnessing both and these strategies take time

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to be developed and an optimal individual balance found. All of these ideas are further complicated by the need to apply different strategies appropriate to the level of development in the writer. It would seem logical that there should be progression along a continuum from more algorithmic strategies in the early years where apprentice writers need to learn form, structure, craft skills etc. towards a much more heavily heuristic creative strategy in the postgraduate years where the concern becomes much more about finding new ways to deploy the skills learnt and to develop theories of poetics which are original and coherent. Theories of play have much to offer. Combinations of strategically targeted exercises which offer guidance increase the opportunities for 'ludic' play – play which is dictated by 'rules of the game' and which promote structured ways to learn craft, poetics and creative strategies. Other more 'paedic' strategies may also be employed, for example, offering the writers 'free play' exercises without boundaries. Ludic strategies tend to reinforce algorithmic thinking, by relying on being creative within a set model, or changing elements within a set structure, for example generating variations on the sonnet. Paedic strategies encourage heuristic thinking and may lead to more overtly creative thinking, but it needs to be balanced in the early levels with the need to 'learn the rules of thumb' by which heuristic thinking process proceeds. Of course for those involved in the development of writers, there are always opportunities to design exercises that allow ludic play to take a paedic turn.

Once the individual's creative process has done its work and generated an output, there is another much more social process which acts upon it. If it is a story, a novel or a poem it may find itself in front of an editor, publisher or reader. If the writer is enrolled on a class, their poems and stories may well end up being discussed at a writing workshop.

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These will make some form of creative judgement on its worth. Csikszentmihalyi (1996) offers a mechanism for the judgement of creative outputs through the tripartite model of individual, domain and field. Domain relates to the area of endeavour in which individual is working and the field who are all those within the domain who act as gatekeepers.

This filtering process is dependent on 'expertise' and may also be related to 'selection pressures' which apply a form of memic 'natural selection' to ideas or artefacts that decide which we, as a society, come to regard as truly creative. Csikszentmihalyi's field acts to 'select' the outputs that will survive to be added to the domain. This type of pressure can result in conservatism in the domain and pressure towards the preservation of hegemonic power among those in the field best placed to decide what enters the domain. This makes for an interesting Foucauldian analysis of the power relations involved and what (and who) is being surveilled by whom. The relationships between the gatekeepers and the field are complex in this regard, for although the gatekeepers may seem to be able to control what they add to the domain, they too are being watched by those who wish to contribute to the domain. Those gatekeepers who are thought unlikely to embrace new or experimental work may find themselves excluded from any such new movement. The gatekeepers too must identify new directions and either champion or follow them if they are to survive as gatekeepers. The net effect may be described as the result of a multitude of small scale processes within a social network, since all individual practitioners within a domain constitute the field attached to that domain, and all, to a greater or lesser extent, act as gatekeepers to it, but, much power tends to be centralised in the hands of a few major gatekeepers. These tend to be editors

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of large publishing houses or elite journals and they wield a disproportionate level of power within the field in comparison to their number, so the process is not quite as democratic as it might first appear.

Models such as Csikszentmihalyi's describe the social aspect of how creativity is received as 'creativity' but say nothing regarding the internal process by which the gatekeepers decide what is creative, and decide whether the artefact under consideration is an example of the major or minor kind of creativity. The model separates the internal processes of creativity from the judgement of creative artefacts produced through these processes and does not foreground the idea that the same processes which produce Big C-creativity also produce small c-creativity, that they are in effect governed by the same laws and acted upon in the same ways by the same cognitive models. It also fails to foreground that the cognitive processes used by the gatekeepers to come to an understanding of the creative work upon which they pass judgement may include the use of some of the same creative processes and cognitive models used to produce creative outputs themselves. Therefore, the gatekeepers' creative processes have an effect on how they judge creativity which may act to perpetuate certain prejudices and be a conservative influence on the domain.

It is important to remember that some of the most groundbreaking texts were initially rejected by the fields that governed the domains of literature at the time in which they were initially presented, so any 'second guessing' of the field's response should be done with some caution, if it is engaged in at all. Perhaps the clearest benefit that beginning writers and more experienced practitioners may derive from looking at the historical

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reception of radical ideas is that they will see that the field is not infallible and is sometimes governed more by the prejudices of the time than sound aesthetic or artistic judgement.

Csikszentmihalyi's model of the individual, domain and field can also be understood in terms of Levebvre's (1991) ideas around the socialisation of space, whereby a domain forms a kind of intellectual or imaginative space populated by ideas which the field consider appropriate to add to the domain, and out of which the domain is formed. The domain may be changed (sometimes radically) through the addition of paradigm shifting creative ideas (true H creativity in Boden's terms), and through that process neither the 'space' of the domain nor the field can ever be the same again. Boden (1990) thinks of these processes as either exploring or transforming the conceptual space.

In their propulsion model of creative leadership, Sternberg, Kaufman and Pretz (2003) provide a useful model which can be adapted to include any attempt at change within a domain. These changes can be instigated and perpetuated by gatekeepers or by a body of practitioners who while not yet significant gatekeepers may emerge into positions of power within the new paradigm they are developing. This may gain them acceptance more widely, and they then become part of the status quo. An example might be the emergence of a group of *avant garde* poets who, because they find it difficult to secure publication in the existing presses and journals, start new journals or presses dedicated to experimental work, they then assume positions as gatekeepers to these new journals and presses and the broader field and domain shift somewhat to accommodate them. Through time they too establish themselves among 'the field' and may find that a

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generation later new poets now regard them in the same way they once regarded 'the gatekeepers' when they started out. It is important to remember that gatekeepers are usually active members of the creative field who have emerged into positions of power through proving themselves to the previous gatekeepers and through adding significantly to the development of the domain. It is also to be remembered that they can be open to varying degrees to new types of work, some embracing change and some resisting it.

The model put forward by Sternberg, Kaufman and Pretz basically describes development within any domain in terms of extension, revision or synthesis. Extensionist strategies involve four types of movement. Replication: doing more of the same type of work that has already been done, which is a very conservative strategy and can lead to stasis. This may be most often found in established domains with a strongly established field that have reputations to protect. Redefinition, which seeks to revision the reasons that the domain is as it is rather than change it. It is more a perspectival change and is usually found where one group seeks to replace another group in power but without actually changing what is done in the domain. Forward incrementation is the most usual extensionist movement, this involves the further development of the domain in the current direction, but without really pushing the boundaries too far. This is usually found in domains with an established structure and tradition of practice which is accepted by most within the domain. This is easily recognised as creativity in the domain since it is the type of movement most within the domain expect to see and is most likely to be approved by those in power. Advance forward incrementation is quite a common movement, usually observed where creative individuals push at the boundaries of the domain and generate really experimental work. This can catch the

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gatekeepers by surprise and result in the work being initially rejected but accepted later as the rest of the domain catches up.

More radically, individuals can adopt revisionist strategies. Redirection is the attempt to move a domain towards a different direction than the one where it is currently headed. This can often result in the development of a new sub-domain or a paradigm shift within the domain itself. This is likely also to be fought by the status quo within the domain and can lead to the individuals seeking to redirect the domain either being treated as outsiders for a significant time or the domain eventually going in a different direction than that intended by either the individuals attempting redirection or the current power base. Reconstruction and redirection involves attempting to return a domain to an earlier position and then move in a different direction than the one originally taken. An (exaggerated) example might be a neo-formalist approach to poetry advocating a return to classical form, rhyme and metre, and then moving towards a futurist content as a way of dealing with the constraints and technological or cyborg nature of modern life. Alternatively, an individual or group may attempt re-initiation of a domain, and attempt to re-start from an as yet unreached point. This would require a complete revolution in how we normally think about an art form for example it would be akin to a sudden from representational to abstract art.

Lastly, a synthetic approach may be used, whereby two domains are combined to either re-invigorate one or both or to create a completely new domain. One might think of this in terms of say the creation of film from drama, photography and narrative. Foucault (1975) maintained that knowledge is embedded in the activities, social relations and

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expertise of specific communities, and it can be argued that individuals are socialised into the domain through learning the tacit expectation and rules by which they engage with the domain and the field, and with the gatekeepers that control access to the domain. These processes can be related to the process of self-actualisation (Rogers, 1969) of the apprentice writer as 'writer' and their induction into the wider communities of practice of the degree programme and writing more generally. The generation of new knowledge is therefore a function of that relation, which is what Czikszenmihalyi implies in his stressing of the importance of 'the field' and the various gatekeepers who decide what knowledge is new or useful. Boden's ideas may be related to this too through the ability to recognise when an idea is truly H-creative and when it is P-creative (or indeed when one might become the other).

Critical examination of these models can be fruitful in helping apprentice writers understand the complex and inter-related forces that act upon their work after they have released it into the market. Such discussions can also be developed to help writers understand the dynamics at work in workshop environments as domain and field in microcosm. The workshop environment may be understood in Habermas' (1990: 65) terms as a place where the participants 'critically examine a hypothetical claim to validity' for a piece of writing. By extension, the writers can come to see that all fields act to judge hypothetical claims to creative validity, and that what constitutes validity can and does change over time and is directly related to the prevailing culture of the domain and the underlying assumptions about what constitutes creativity at play within it at that particular time. Such models can also provide an insight into the workings of the creative industries through asking apprentice writers to make discriminatory choices

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about what work might be included in an anthology and what is left out and to analyse the processes that they go through in order to reach their decisions.

While these theories and models may be of interest to writers generally, and to those teaching writing to others more specifically, I think that they are also of use to writers and artists in the academy who are attempting to articulate the process of making art as a research process. I think the literature on creativity offers the opportunity to articulate our associative and heuristic processes as legitimate research methods which allow us to generate new knowledge through our art and to generate new means and modes of expressing that new knowledge and to ground these processes in a literature. Further these models offer a way of articulating both the subconscious mechanisms which may give rise to new artistic ideas and new modes of expression and articulating the mechanisms by which these new ideas and modes can be tested and validated, both at an individual and social level. A number of models also offer ways of describing and analysing the position of the writer or artist as an actor within the social structures that constitute the art form.

(5573 words)

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