UNDERSTANDING

CREATIVITY

THROUGH

MEMES

AND

SCHEMATA

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DEDICATION:

This thesis is dedicated to my beloved husband, Paul Wagner.

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INTRODUCTION

Throughout the ages, our ability to be creative has been the source from which all of the greatest artwork, poetry and writing have originated. More broadly, without creativity the society that we take for granted could not have developed. Creativity is perhaps the defining characteristic of mankind, the single most important character trait that we humans have developed. This thesis will look at just what creativity is, at the conditions under which it becomes possible, and at the internal mechanisms that explain creative effort. By viewing the issue of creativity from the standpoint of the internal workings of the mind, we can get a better perspective on just what this process of creativity might entail.

There are a number of theories of creativity, though none of them are completely satisfactory. For example, Richard Dawkins and Daniel Dennett postulate that the fundamental unit of creative selection is a thing called a "meme," which is a concept or idea that evolves in an analogous way to genetic evolution. These memes are responsible for the way that we think, and they are said to mutate and spread among us just like genetically inherited traits do. When it comes to the notion of creativity, both Dawkins and Dennett argue that creativity is a matter of random mutation, in the same way that genes randomly mutate. Neither Dennett nor Dawkins see anything else in the mimetic theory of creativity than a process of evolution. However, as I will argue, this complete reliance upon the extension of evolutionary for understanding creativity needs to be supplemented by combining it with other ideas such as those of "schema theory."

Schema theory comes largely from the works of E.H Gombrich, who argued that "schemata" play a crucial role in how it is that we are able to be creative. He defines schemas as structure and traditions in society that help to convey the meaning to our creative efforts. Indeed, just as semantics needs syntax within language in order to formulate and convey meaning, so memes need schemas for the creation and expression of new ideas. It will be argued that, rather than being the antithesis of creativity, existing forms of expression and traditions are important for the creation of new ideas, and this needs to be factored into any theory of creativity.

This picture of creativity will show that our ability to be creative and to use our intelligence in this way shows that the operation of memes is far more complex than the reductionism of either Dennett or Dawkins suggests. It will also become clear that Gombrich's schema theory has an essential role to play in the operation of "memes". Indeed, it will be contended that there can be no memes without schemas, as the bearers of memetic content. That this relationship between memes and schemas exists will be a major line of argument in this thesis. However there will also be an investigation into what processes are at work within the brain that ends in creative products. Specifically, this second line of argument will show that there are specific kinds of underlying processes involved in the generation of ideas and other creative products. Here I will be employing the notion of a "generator", as originally conceived by Daniel Dennett, and taking it a step further. I will attempt to show that, within this generator, there appear to be at work processes such as those of bisociation and association, as discussed by Arthur Koestler, and processes that operate with metaphor and analogy that must be acknowledged in addition to the syntactic operations of schemas and the replicating contents of memes. The operation of

all of these ingredients within the generator, when understood together, can be seen as responsible for our ability to be creative.

Chapter One ***PROCESS and PRODUCT: Theories of Creativity***

In a broad sense, emphasis upon either the creative *processes* or the resulting *product* reflects two rather different ways of talking about creativity into which most theories in the area can be categorised. Some writers have approached the problem of defining creativity by looking at the processes that occur before the creative act, including: conscious and unconscious processes; experimental processes; and certain ways of thinking that seem to be conducive to producing creative products and other ways of discerning what creative thinking is. These can be further divided into "top-down" theories and "bottom-up" theories. Top-down theories attempt to investigate creativity by examining the external process of the creative act from conception through to execution, while bottom-up theories take as their starting point the internal processes of the creative act. The other way to approach creativity is to look at the products of creative endeavours and attempt to, as it were, reverse-engineer the creative process. In particular, schematic and memetic theories are two such conceptual frameworks from which insights may be drawn into the nature of creativity. Before we can begin to come to a complete understanding of how these differing approaches may relate to each other, it is first necessary to briefly review the most important theories of creativity from both the "process" and the "product" points of view.

PROCESS THEORIES: FROM THE TOP DOWN

The Muse

According to the mythology of the classical Greek tradition, it is the Muse who inspires, from within the poet or artist, the emergence of something from nothing. One of the central paradoxes concerning a theory of creativity is what is known as the "ex-nihilo" paradox. This is the problem of the impossibility of something being created from nothing. For this

very reason, the mysterious Muse who was often appealed to as the source of inspiration is an appropriate place to begin to understand creativity and the ex-nihilo paradox. In Plato's *Symposium,* the poet Agathon makes a speech about the varied nature of love and, in particular, he discusses how it relates to creativity:

> At any rate, anyone whom Love touches becomes a poet, "although a stranger to the Muse before". Love excels in every kind of artistic creation; how can anyone impart or teach another an art which he does not possess or does not know? It was under the guidance of desire and love that Apollo discovered the arts of archery and medicine and divination, so that he too may be called a pupil of Love, as the Muses are in literature, Hephaestus in blacksmith's work, Athene in weaving, and Zeus in the government of men and gods[1]

Agathon personifies love as the inspiration for poetry much as the Muse Erato was said to inspire lyrical and love poetry. Later in the *Symposium*, Diotima and Socrates discuss the nature of love and poetry in all its forms. Diotima seems reminiscent of the Muse herself in the wisdom that she imparts, and Socrates asks her to elaborate:

> By its original meaning poetry means simply creation, and creation, as you know, can take various forms. Any action which is the cause of a thing emerging from non-existence into existence might be called poetry, and all

[1] Plato (1970). *The Symposium.* Middlesex: Penguin Classics. p. 71.

> the processes in all the crafts are kinds of poetry, and those who are engaged in them poets.[2]

Diotima's response demonstrates the conceptual influence that the classical notion of the Muse had upon the understanding of creativity. Since creativity seemed to produce something from nothing, the functional role that the Muse played was to give an account of where the poets' ability came from in order that creativity not seem so ineffable. However from a purely conceptual perspective, the reliance upon the Muse for an explanation is version of the so-called homunculus fallacy, as the explanation attributes real creative power not to the poet but to another agent, the Muse, whose own creative powers are not explained. The inadequacy with this way of accounting for poetic ability is immediately obvious, for either the question: 'Where does the Muse get her powers from?' forms the beginning of a vicious regress, or else we must simply accept that the Muse has these powers as a matter of fact without further question. In either case, we fall short of an explanation.

Plato was much less sympathetic towards poetry in the *Republic* than the views he presents in the *Symposium.* It was in the *Republic* that the character of Socrates went as far as to suggest that poets should be expelled from the city for being "imitators" of the truth and thus a danger to society at large, because of the influence that Plato thought they had over its citizens. Plato saw the potential of poets to lie about whether a just person was unjust or an unjust person just and thereby influencing people to think in ways that may not be true. Socrates believed that if imitation were to be allowed it should only be imitation of those things that partake of the good.

[2] Ibid (1970) p. 85.

> And if they do imitate, they must imitate what's appropriate to them from childhood: men who are courageous, moderate, holy, free, and everything of the sort; and what is slavish, or anything else shameful, they must neither do nor be clever at imitating, so that they don't get a taste for the being from its imitation.[3]

Plato describes the multi-faceted imitator, who is able to imitate all things as a "wonderful sophist" because it's as though all he need do is to hold a mirror up to the world in order to imitate it. This amounts to the fakery of the "mimetic poet", which is the type of poet that Socrates wishes to ban. However there doesn't seem to be the same desire to condemn the sort of poet who celebrates "good men" or "hymns to gods", for Socrates believed that the value of poetry should be to serve a higher function, which is the common good in the city.

The concept of the mimetic (*mime`tike`*) "imitator" that Plato describes in the *Republic* seems to be very much like the concept of "memes" as described by Richard Dawkins.[4] In brief, "memes" are concepts that evolve in an analogous way to genetic evolution, as described later in this chapter. Dawkins acknowledged that the term "meme" came from a Greek root.

We need a name for the new replicator, a noun which conveys the idea of cultural transmission, or a unit of *imitation*. "Mimeme" comes from a suitable Greek root, but I

[3]Plato (1991) *The Republic*. translated by Allan Bloom, New York: Basic Books p. 74.

[4] Ibid p. 74.

want a monosyllable that sounds a bit like "gene".[5]

Dawkins wants the notion of a meme to be a combination of both genesis and imitation. That is, it needs to be both genotypically realised as well as able to reproduce through imitation. But does imitation guarantee creativity? From the point of view of a theory of creativity, Plato saw that the "mimetic" poet did no more than mindlessly imitate or replicate the world around him. Plato's metaphysics of Forms is linked to his dislike of the mimetic poet because he believed that the mimetic poet was two degrees away from the form or truth of an idea.

> Apart from one reference to the "maker of tragedy" (597e6), the "poet" (*poietes*) is present in this first stage of the argument only implicitly – though very emphatically – as a "maker". The "imitator" is represented by the painter, who makes all things by making appearances of them, just like the person with the mirror.[6]

Plato believed that the poet should not be seduced by beautiful appearances but rather should try to seek out the truth behind such appearances, for pleasing appearances may disguise the true nature of the thing in question. The discussion that Plato has with Glaucon, in *The Symposium,* about the beautiful and the good is one such example of the latter[7]. In order for a memetic theory of creativity to function, memes cannot only be "mimetic" in that they cannot simply imitate any or all appearances since the ideas behind

[5] Dawkins Richard (1981), (1976) "Selfish Genes and Selfish Memes" from *The Mind's Eye,* Sussex: The Harvester Press, p. 143.
[6] Asmis, Elizabeth (1992) "Plato on Creativity" from *The Cambridge Companion to Plato*. Cambridge: Cambridge University Press, p. 351-2.

[7] Plato (1970) *The Symposium,* Middlesex: Penguin Classics p. 84.

creative production are not so slavishly conceived. That is, creativity is not simply the indiscriminate selection and portrayal of appearances, otherwise we would, for instance, consider a photographic reproduction of the same night sky that Vincent Van Gogh was inspired by to be as 'creative' as "Starry Night" in his idiosyncratic painting. Plato's metaphysics of forms also provided a structural basis, for although he was harsh on "poetry" at first, the notion that there are "ideal forms" behind our conceptions, is an important step towards unravelling the ex-nihilo paradox. The concept of the Muse 'visiting' or 'inspiring' a poet to be creative, on the other hand, only serves to personify the problems inherent in conceiving of creativity as producing something out of nothing.

The ex-nihilo problem.

The notion that "something comes from nothing" applies to seemingly fathomless questions to do with the origins of the universe as much as it does to human creativity. Why and how did the universe come about? If appealing to an ethereal being only appears to provide a non-explanation, to what other means of explanation do we have recourse? The capacity for human inventiveness poses questions of the same ilk. We may well ask with David Perkins "How is novelty possible? How can any mechanism of mind produce something genuinely new, something that reaches beyond the boundaries of human achievement up to that point in time?"[8]

In discussing the ex-nihilo conundrum Perkins claims that novelty has more to do with the inventor's ability to combine multifarious influences so as to produce something

[8] Perkins D.N (1981) 'The Possibility of Invention', from *The Mind's Best Work*, Cambridge, MA: Harvard University Press, p. 363.

that is a representation of the combination of these different elements. There are, you might say, prior hidden structures that provide the context within which invention can be possible. However this by no means explains away the ex-nihilo problem for Perkins. "Although the element may have precedent, the combination achieved in an episode of invention does not. That novel combination at least is ex-nihilo."[9] The reason why the novel combination is ex-nihilo, claims Perkins, is because understanding the elements alone will not explain why an inventor should choose to combine them together in one as opposed to some other combinatorial possibility.

Bisociation

In 'The Three Domains of Creativity' Arthur Koestler has in mind associative and bisociative ways of thinking that may help to explain the mental leaps involved in creative acts. In bisociation there is a marriage of previously unrelated associations. That is, these unrelated associations become intimately conjoined in the process of bisociation so that the individual meanings of these associations are now used in combination with each other. On its own, this is a fairly pedestrian way of thinking about mental leaps that contribute to creative acts. However Koestler suggests that the concept of 'bisociation' seems to differentiate between that instant 'flash' of inspiration and our ordinary habitual ways of thinking. In understanding his view of bisociation, there is also a need to comprehend the way he identifies the boundaries of language. For there are certain "rules of the game" in our use of language and many of these rules are used in an unconscious way, meaning that we tend to abide by certain rules of grammar and syntax without explicit knowledge of the way we use them. "All thinking is playing a game according to fixed rules and more or less

[9] Ibid p. 363.

flexible strategies."[10] These fixed rules are also referred to as “frames of reference” that we operate with regularly and habitually. In defiance of these fixed rules, the act of bisociation occurs when unrelated sets of rules are combined to create a new way of thinking. As an example, consider the comic hero “Spiderman”. Spiderman is the result of the combination of a spider and a man, which are two unrelated kinds. From Koestler’s view it is through the process of “bisociation” that the novel comic hero was produced. As a result Spiderman is able to creep up walls that gravity would otherwise not allow and produce webs at will as well as having the sensibilities of a man. There is something Platonic about Koestler’s notion that we work within fixed rules or frames of reference, in much the same way that Plato believed that there are forms behind our conceptions. It is the belief that conceptions have a structure or form that is important to both of them. This notion of bisociation has a special function that serves an important role in future chapters.

PROCESS THEORIES: FROM THE BOTTOM UP

Boundaries

By understanding creativity from the view of the creative process, some writers have tried to explain what creativity is from a more internalistic approach. The following are "bottom-up" approaches because they start by looking at the internal processes as the basis for their theories on creativity. That is, there has been an attempt to associate certain mental traits with the process of creativity. D.N Perkins in 'The Possibility of Invention' calls this approach to understanding creativity "inner creativity".

[10] Koestler A. (1964) ‘The Three Domains of Creativity’ from *The Act of Creation,* New York: Macmillan p. 3.

To elaborate, Perkins looks at the psychological makeup of a "creative person" and how such characteristics reflect a person's ability to be creative. Perkins believes that "creative individuals tend to be autonomous, independent, and self-reliant . . . they value originality, tolerate ambiguity and uncertainty, have an aesthetic appreciation for things."[11] Also Perkins recognises that other general abilities such as the motivation and curiosity to play around with the limits or boundaries of a certain discourse or situation, are indicative of a creative individual. To "play with" these boundaries requires a certain amount of methodical analysis so as to be able to work through what the possible outcome may be. This is what Perkins calls "invention by inference". Perkins also goes into detail about the 'process' of creative production:

> Invention requires not simply the sorts of things listed, but a molar organization of behaviour in that direction. For instance, the physicist, poet, or painter who makes a revolution by revising boundaries not only needs to have enough raw ability to represent and ponder the boundaries but also needs to have patterns of deploying that ability that can lead to such representing and pondering.[12]

Although the process of challenging boundaries encourages invention, there also would seem to be a problem with what Perkins calls "combinatorial explosion". In brief, this is where the challenging of boundaries can cause or uncover a vast number of possibilities for every available option or pathway. The example that he gives is the game of chess whereby for most moves there is a seemingly unmanageable number of available moves to calculate.

[11] Ibid p. 379.

[12] Perkins D.N, *Op.cit* p. 379.

Perkins asks the question: "How can any process cope with such radical **uncertainty** in a manageable and productive way?"[13] He believes that there must be some principles that prevent the combinatorial explosion from becoming unmanageable.

Perkins points out that creatively manipulating boundaries requires carefully following such boundaries or lines of thinking in order to arrive at a new way of thinking. He gives examples of boundary crossing such as when physics is crossed-bred with biology to get 'bio-physics'. In this example it is clear that lines of thinking, or boundaries, need to be followed before they can then be cross-bred with each other. Boundaries need not be completely discarded in the inventive process and in so doing the problem of the combinatorial explosion can be avoided. For these boundaries provide some constraints which are necessary within which the inventive process can take place.

Analogy

In 'What is Creativity?' Margaret Boden also offers a psychological approach for her theory of creativity. Boden's interest is largely in computational psychology and whether it is germane to human creativity. She believes that computational ideas have the potential to help in our understanding of what creativity may be. It is in the exploration of what Boden calls "conceptual space" that AI programs can be of use, for they can help to make apparent certain constraints or boundaries that may not have seemed so obvious without their help. Boden doesn't believe that simply exploring a conceptual space will transform the same

[13] Perkins D.N, *Op.cit.* p. 375.

conceptual space. By the same token, Boden would also deny that "human creativity" is predictable even with the help of computational programs. Boden also explores the relevance of analogy to creative processes and believes that it may be possible to build a program that reflects the way analogy works in different contexts. To this end, Boden reflects on Hofstadter's "Copycat project" which is a highly context-sensitive program that constructs appropriate analogies in a given context, where as Boden says "it's new analogies and new perceptions develop together." However one of the questions that Boden asks is: Where does perception end and analogising begin? Analogy and perception seem to be interdependent because of the need for a program to be context-sensitive so as to respond appropriately to the situation at hand.

In 'Mental Leaps: Analogy in Creative Thought' Holyoak and Thagard, also propose that the use of analogy may shed light on the process that leads to creativity.[14] They believe that creative processes begin by combining similar events, ideas and themes to create a novel situation. Unlike Boden, Holyoak and Thagard are not interested in the cognitive science aspects of how analogy might function, but rather simply in the link between analogy and creative processes. That is, their concern is not so much with the artificial intelligence questions about how analogy functions, but rather what the role of analogy is in the creative process.

Despite comparing computational models with human creativity, Boden believes that the current ability for computational models to investigate conceptual spaces and to transform them is limited. This is due to the unpredictability of creative processes. As a result, computational psychology is unable to compare different creative products because of this limited ability to investigate conceptual spaces. For the purposes of this thesis it is

[14] Holyoak and Thagard (1996) *Mental Leaps; Analogy in Creative Thought*, Massachuetts: MIT.

important to note that it is the view that analogy is context-sensitive and therefore difficult to investigate that needs to be appreciated when investigating its link to creative processes.

PRODUCT THEORY: FROM THE TOP DOWN

Both the “top-down” and “bottom-up” process theories have limitations in terms of what they are able to describe when it comes to creativity. This can be largely attributed to the unpredictable nature of creativity as well as its inability to describe external factors that may have an influence upon creative production. Another way to approach creativity is to look at the products of creative endeavours and the influence that they have upon the creative process. This “product theory” approach has two main strands. The first “top down” approach is a sociological one which looks at the role of schemas and there influence on creative production. The second “bottom-up” approach is a biological/psychological approach which can help to give us a more internal view of creative production.

Schema Theory

Schema theory asserts that there are certain structures or models that can impose themselves upon "creative people" and thereby provide a framework or a scheme within which to work. Schemas provide a context within which certain ideas, themes or concepts can be expressed. An example of this can be found in ‘The Composition of Mozart's Mind’

where Howard Gardner investigates what contributed to Mozart's creative genius.[15] In a letter that Mozart had written he seemed to describe how a whole piece of music had come to him at once, that is, instantaneously. Gardner found this suspect. He went on to claim that the kind of complexity that is produced in such a piece of music could not have simply appeared from nothingness. This situation is what is known as the ex-nihilo problem, as discussed earlier. Creativity needs a context so as to provide the preconditions for some kind of combination of different ideas to take place, to produce a novel product. However at the same time there is an important sense in which the creative act must out of necessity be independent of the content of the different ideas that make up a creative product. For, it is the creative act alone that facilitates the combining of different ideas, and not the ideas by themselves. It is at this point that Gardner claims that "Mozart could not have written his major works - let alone composed them with so little apparent strain - had he not written thousands of fragments of music before."[16] Gardner also points out that in Mozart's day there where definite rules and formulas for music that were easily recognisable and that were fairly inflexible. What this indicates is that there were strong schemas in place to either act as a guide to work by or as a structure to challenge. Gardner points out how schemas operate in the hands of less creative composers: "The "second rank" creators in an era typically produce works that are most faithful to and make the least interesting departures from the "schemas of the time"'"[17]. Mozart's work was so distinctive and

[15] Gardner H. (1982) 'The Compositions of Mozart's Mind' from *Art, Mind and Brain: A Cognitive Approach to Creativity*, New York: Basic Books.

[16] Gardner H. (1982)'The Compositions of Mozart's Mind' from *Art, Mind and Brain: A Cognitive Approach to Creativity*, New York: Basic Books, p. 363.

[17] Ibid p. 363.

inventive however, it could be argued that we must look for his creativity in his "departures" and not his repetition of well worn formulas.

Schemata do not only have influence over creative people, they are also present in many facets of society as well. In a broad sense, schemata are represented by structure or rules in our traditions, constitutive norms, conventions and moral codes, that are influences upon how we live and what we believe. By providing the structure or rules of these influences in society they provide a framework by which to understand the world and what we choose to believe. There are of course numerous examples such as religion, politics and philosophy, to name just a few, all of which have various schemas operating within them. An example could be so-called "good manners" that are expected in Western, anglo-saxon, polite society. From simple things like saying "please" and "thankyou" when someone does us a favour to other codes of behaviour such as saying "excuse me" if you are about to disrupt someone. Also, leaving one's knife and fork in the middle of their plate, to signal that you have finished eating, is another code of behaviour that we readily use. However, the notion of "good manners" is not the preserve of Western culture, in China for instance burping at the dinner table is considered a compliment to the chef, whereas in a Western country it may be considered rude – a sign of a lack of control of ones faculties. The point here is that "good manners", no matter where they are from, are a type of schema which most people readily obey. In this sense, schemata can be seen as being all pervasive in how we understand the influences or beliefs of society.

In *Art and Illusion* Gombrich explores in greater detail the schemas that have influenced the development of art.[18] He asserts that powerful schemas have consistently dominated aesthetic notions of beauty and style. He seeks to illustrate the function of

[18] Gombrich E.H (1996) *Art and Illusion*, London: Phaidon,

schemas in the creation of artworks as well as how the interpretation of such schemas has influenced the direction that art has taken up to the current century. One of the main contentions that he faces in his investigation is the perceived difference between "seeing" and "knowing".

> The way the language refers to the visible world is both so obvious and so mysterious that it is still largely unknown except to the artists themselves who can use it as we use all languages without needing to know its grammar and semantics.[19]

Be that as it may, Gombrich's objective is to explain art in terms of its grammar and semantics, its structure, through the use of schema theory and in so doing disclose this language to a wider audience than just the artist. In Gombrich's exploration of the history of art he explains how since classical antiquity the representations of art, and the changes in the style of such representations have had reference to the distinction between "seeing" and "knowing". This is exemplified in Plato's discussion of the differences between poetry and painting where poetry, as we understand the term, was seen to be closer to knowledge of the forms than a painting, which was seen as an "imitation" of nature. However, Gombrich explains that this distinction must surely be inadequate. He claims that this distinction has been variously interpreted depending upon the age and context of the time. He suggests that classical antiquity weren't cognisant of the philosophical implications that relying upon observation to achieve imitation suppose. Indeed, he believes the questions that surround the

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[19] Ibid p.7.

psychology of perception weren't fully investigated until the issue of style was discussed as a problem of teaching art. It was during the eighteenth century that it became clear that changes in style were not only based on an improvement of skill, but also were a consequence of a difference in how the world is perceived. The British empiricists dominated nineteenth century psychology and involved themselves in the confusion surrounding "seeing" and visual sensation. Helmholtz developed research into the science of optics and claimed that there is a difference between a raw sensation and a mental act. Given these developments in understanding the psychology of vision the arguments that the impressionists had put forward, namely, that their paintings really did represent the way they saw the world are easy to refute. For the psychological arguments that the impressionists were using could just as easily apply to traditional art by claiming that they were just as reliant upon intellectual knowledge.

Gombrich explains that there have been various attempts since the nineteenth century to form a theory of the evolution of stylistic change in the history of art. One such example was that of Alois Reigl who attempted to provide a non-subjective and scientifically respectable account of artistic evolution. By approaching the history of art from this 'objective' position, Reigl had hoped to eliminate any notions to do with 'progress and decline'. He believed that Egyptian art demonstrates a difference in attitude towards the production of an artwork where touch had a more prominent role than vision. Reigl believed that an artist's intentions express a "will-to-form" which is manifest in all artistic endeavours. Gombrich claimed that this view of the history of art that Reigl expresses is very single-minded and reminiscent of "the habits of mythmakers". Reigl's position tended to reflect romantic mythologies to do with the view of the Renaissance as expressed in

Hegel's work.

> The romantics saw the whole of history as the great drama of mankind's evolution from childhood to maturity. Art became the 'expression of the age' and a symptom of the phase which the World Spirit had reached at any given point.[20]

It is here that Gombrich comes to a bit of an impasse. While he has contempt for notions to do with, what he calls, the "World Spirit" or "Zeitgeist" and other such romantic ways of explaining the history of art and stylistic change, he also acknowledges the appeal of this way of construing art historical style. Gombrich explains that the conventions and traditions that many have rejected in favour of an explanation of cultural change in terms of the self-movement of the Zeitgeist still have meaning for him. He doesn't completely dismiss explanations of art historical styles in terms of a Zeitgeist because he grants that the existence of these notions points to a theoretical hole that needs further investigation. He asserts that in the place of a more adequate way of explaining these notions, positing styles as a pedestrian way in which to represent the world which expresses some kind of "spirit of the age" is the best hypothesis that we have.

As facile as Gombrich admits this explanation of art historical styles appears to be, and however in need it may be of greater clarification, it is as yet only a rudimentary picture of the history of art and creativity. An explanation in terms of a Zeitgeist cannot explain the differences between skilled and unskilled artists for the straightforward reason that skill is left out of the equation. Indeed, Gombrich's response to Reigl, Sedlmayr and

[20] E.H Gombrich (1996) *Art and Illusion*, London: Phaidon, p. 16.

other romantics of this ilk asserts that an account of skill is needed.

> What is their greatest pride is in fact their fatal flaw: by throwing out the idea of skill they have not only surrendered vital evidence, they have made it impossible to realise their ambition, a valid psychology of stylistic change.[21]

Gombrich claims that the differences in style in the history of art have a lot to do with the level of skill involved. Part of the emphasis that he highlights regarding the force that traditions have is tightly linked to how he differentiates a skilled from an unskilled artist. Basically, the difference lies not so much in the knowledge of things as it does in the presence of schemata. In this sense, representations of the world which do not demonstrate an active engagement with the traditions of the time appear to be "childlike" because they are, in a strict sense, rudimentary modes of representing the world. He maintains that there is a gravitational pull towards the schematic or conceptual which differentiates skilled from unskilled artists.

With regard to creativity there is also a distinction to be made between deliberate and conscious interaction with schemata in creative output, and output which is created in virtue of certain styles or schemata. To this extent Gombrich defends his reliance upon conventions. The standard accusation against art history is that it concentrates on a search for influences and in so doing misses the issue of creativity. Gombrich believes that the search for influences is important because there is a pattern of behaviour where people tend towards repeating what they have learned. Yet, there are some people who can break a

[21] Ibid p. 16.

given mould in order for others to build upon it, and these are the people that we should have admiration for, according to Gombrich.

Remembering and Schemas

Many years ago in *Remembering and Social Psychology* Fred Bartlett developed his slant on schema theory in relation to remembering.[22] He believed that in specific instances of recall the setting, otherwise known as the "schematic surroundings", is crucial to the processes involved in recall. When we remember something the images that arise are directly reflective of 'schemes' that tend to be predominant in such images. These images are not by any means homogenous. For their occurrence is indicative of certain psychological responses which may be at cross-purposes. Bartlett explains the significance of the setting in relation to recall once this rationalisation has occurred.

> Social grouping, with its accompaniment of conventionalised and relatively permanent traditions, institutions and customs, has been shown to play a great part in the development of interests, in the determination of the affective setting which is often at the basis of image formation. . .[23]

The schematic surroundings are important for it is what we construct or reconstruct when we are asked to explain a certain image. One problem with the reconstruction of images in recall for Bartlett is that in the combining process the individual nature of the process tends

[22]Bartlett Frederic (1932) *Remembering: A Study in Experimental and Social Psychology,* Cambridge*:* Cambridge University Press.
[23]Bartlett Frederic (1932) *Remembering: A Study in Experimental and Social Psychology,* Cambridge*:* Cambridge University Press p. 309.

to result in imprecise, irregular and highly personalised constructions. However at the same time Bartlett asserts that there exists a connection between words and images that enables features to be described that the image alone falls short of achieving. He claims that words can serve as an alternative means of recall and are able to transgress time and place through their use in our thinking processes. Bartlett suggests that words and images are inevitably determined by the old schemas inherent in most social conventions. Thus Bartlett outlines the mental functions that pose a problem for psychology in the analysis of remembering. There are, however, further 'persistent' problems to do with the notion of "the self" and the society in relation to remembering that Bartlett pursued. Bartlett is fairly sceptical about the notion of a homogenous Self. The overlap of a schema with other different schemata as well as attitudes, desires, beliefs and other such interests seem to define recall as being determined by idiosyncrasies of character. However he believes that the predominant role that schemata seem to play in recall does not justify the claim to the existence of such a Self.

> Equally, of course, we have so far no ground for denying the existence of a substantial, unitary self, lurking behind all experience, and expressing itself in all reactions. We know only that the evidence of the experiments that have been considered do not necessitate such a hypothesis.[24]

Bartlett then draws upon the analogy of individual repeated recall and social conventionalisation. He argues that in both of these cases the past is continually being

[24] Ibid p. 309.

reconstructed and appropriated to fit the demands of the present. In both cases there are also certain events or particular details that can be predominant in the sort of reaction that is elicited. As an example of the role that schema plays in social conventionalisation consider the old structures inherent in the way that we are taught to use cutlery at the dinner table. An example that demonstrates individual repeated recall could be the images and words that are invoked when we are asked to recall our favourite television shows from childhood which have within them their own set of inherent social conventions and new interpretations as well.

This discussion, of the role that schema plays in individual repeated recall, demonstrates how inherent our use of schemas are. This central role, that schemas seem to play in our ability to recall times and places in our past, is appropriate to our discussion of creativity because it demonstrates our psychological dependence upon them. For we seem to use recall, and therefore schemas, in our acts of creativity as well as in everyday life, as shall be discussed at a later point.

PRODUCT THEORY: FROM THE BOTTOM UP

A Conceptual Evolution.

While schemas provide a means of explaining the external influences that impact upon creative production they, like the process theories, are limited in the extent to which they can explain the internal effects that manifest as a consequence of there influence. This is where a behavioural and biological approach becomes necessary.

The products of creativity can also be approached from a behavioural and biological point of view, exploring the idea in the context of evolutionary theory. In Daniel Dennett's "Why The Law of Effect Won't Go Away" he addresses the much maligned approach of behaviourism.[25] Dennett states that even though behaviourism has many faults the one thing that a theory of behaviour needs to include is what behaviourists called the Law of Effect; which is that a particular behaviour has a tendency to be repeated when it is followed by a reward. Dennett claims that the Law of Effect and Darwin's theory of natural selection are analogous to each other and that they are also non-question begging, and even though there may be other non-question-begging theories of evolution and behaviour, these theories are the best we have, which is a good reason for adopting them. Even though, a theory that is behaviouristic cannot account for all the ways of learning, Dennett still remains firm in his belief that there is something valuable in the Law of Effect that needs to be explored without falling into the trap of behaviourism.

As opposed to Skinnerian behaviourism, Dennett asserts that "creatures" have both an internal and external environment. The internal environment is just the "input-output box for providing feedback for events to the brain"[26], whereas the external environment is the one which creatures physically inhabit. One of the objections to the Skinnerian view was that it had not accounted for any notion of an "inner environment" which meant that Skinner's theory of behaviourism ultimately could not explain a great deal of learning. Dennett wants to assert that the inner environment that he proposes doesn't necessarily have

[25]Dennett Daniel (1997) "Why The Law of Effect Won't Go Away" from *Brainstorms*, Britain: Penguin Books.
[26]Dennett Daniel (1997) "Why The Law of Effect Won't Go Away" from *Brainstorms*, Britain: Penguin Books, p. 77.

to be hard-wired and that it could have the ability to evolve as an initial consequence of operant conditioning. He believes that learning, therefore, can be thought of as "self-design" because it is partly a consequence of the activity of the organism. In the field of AI this participation is known as “generate-and-test idea” where different possibilities or alternatives are tested against a plethora of restrictions. The concept of “generate-and-test” in AI is also analogous to the processes of natural selection. Furthermore, Dennett claims that there is no other coherent way of thinking about this process of self-design outside notions which are linked back to evolution by natural selection. This process of self-design can only be defined by what it produces, that is a new design. Dennett puzzles over just where this new design originates, and the extent to which it is a fortuitous consequence of experience.

> Learning must tread the fine line between the idiocy of pre-programmed tropism on the one hand and the idiocy of an over-plastic domination by fortuitous impingements on the other.[27]

As Herbert Simon points out, generate-and-test is not an efficient or powerful process unless there is high degree of selectivity within the particular system (so that it generates only the most likely candidates in a circumstance). This system shall henceforth be referred to as the “generator”. Since "selectivity can always be equated with some kind of feedback of information from the environment"[28], there is a need to question the origin of selectivity in the generator. Is it learned or innate? Accordingly, once this question has been addressed, the generate-and-test process will stem from natural selection if the selectivity is

[27] Ibid p. 85.
[28] Simon Herbert (1996) *The Sciences of the Artificial* Massachusetts: M.I.T Press, p. 97 quoted in Dennett Daniel (1997)*Why the Law of Effect Won’t Go Away* London: Penguin Books, p. 86.

innate or from a variety of learning when it is not.

The notion that creativity could also be explained from a behavioural and biological perspective is of central importance to the question of how creativity works. For now, all that we need to understand is that creativity can be approached from this latter perspective which includes this (as yet explained) idea of a generator which will play a central role in understanding creativity. This biological and behavioural perspective, in tandem with Bartlett's more schematic view of our psychological makeup, will form the core of the argument that will be presented on how creativity works.

Memes

For the purposes of my argument, the best way to encapsulate the biological and evolutionary role that will play a core part in explaining how creativity works is summed up in Richard Dawkins' notion of "memes". The evolutionary biologist Richard Dawkins published *The Selfish Gene* in 1976, which develops an approach to the evolution of ideas.[29] The definition of a meme cannot be independent of the notion of evolution on Dawkins' account. Without the evolutionary model a meme is just a concept or idea that is typically cultural. On his view, memes are self -replicating notions that "infect" brains in a similar manner to viruses. He suggests that memes could be things such as tunes, ideas, catch phrases, clothes or fashions. They can infect and communicate with other hosts or brains globally, thanks to global communication, as well as locally. Due to the amount of competition that self-replicating memes engage in, selection plays an important role in this description of the evolution of ideas. Just as genes propagate themselves in the gene pool by "leaping from body to body" via sperms or eggs, so memes propagate themselves in the

[29]Dawkins Richard (1976) *The Selfish Gene* ,Oxford: Oxford University Press.

meme pool by leaping from brain to brain via a process that, in the broad sense, can be called imitation. As Dawkins points out, memes need human culture in order to flourish and replicate in a "meme pool". In the same way that genes compete with one another in a gene pool, the metaphor is extended to memes, so that memes compete with each other for superiority within meme pools. Dawkins sets out criteria for why and how some memes become more successful than others and such criteria can be found in the qualities that he ascribes to memes. The qualities that memes need for survival are:

Longevity (its long-term endurance)

Fecundity (how productive it is in inspiring others) and

Copy-fidelity (how accurately it replicates)

Dawkins claims that longevity is not of vital importance as at least in an advanced culture there are likely to be copies of particular memes either printed somewhere or lingering in the brains of people for many centuries. Whereas fecundity, on the other hand, has a more essential role to play in explaining why certain memes survive while others do not. If a given idea or concept in philosophy, say, is accepted by the community of philosophers then it has "performance value". Dawkins suggests that one rough way of measuring this would be to count the amount of times it is referred to over several years in philosophic journals. Another example could be measuring the success of a Beatles tune by how it has influenced other musicians to write music in the same or similar vein.

At first glance it seems as though the notion of copy-fidelity may not be all that useful. Dawkins is also skeptical about this quality of successful replicators. The game of Chinese whispers demonstrates how a sentence can be distorted and manipulated by successive reproduction, but is this necessarily the same with the infiltration of different

ideas and concepts in the "meme pool"? Using the example of how Darwin's theory of evolution spreads and infects the community of scientists, Dawkins demonstrates that there has to be some 'core' component of the theory in the brains of those who understand it. Dawkins seems to appeal to the claim that, "the meme of Darwin's theory is therefore that essential basis of the idea which is held in common in all brains who understand the theory"[30]. In this example of how a given scientific theory infects a community of scientists, Dawkins explains that a scientific concept is successful if it has replicated itself and is referred to often in certain journals. However, the feature of copy-fidelity in memes introduces a problem to do with semantics and syntax. How are memes able to retain the 'core component' of their identity in the face of the various influences upon them? The two previous examples of Darwinian theory and Chinese whispers illustrate this conundrum. How are we to understand this 'core component' of a meme? Further on I intend to employ schema theory to suggest that it has to do with what we may call its "syntax".

Dawkins suggests that "there is a sense in which memes must indulge in a kind of competition with each other"[31]. He describes how memes compete in communication mediums such as radio, television, billboard space and, now thanks to global communication, the internet. Dawkins also argues that there is an analogy to be made between mutually assisting, stable sets of characteristics that help a gene pool to survive, and "meme pools". In this situation there are memes which survive because they reinforce each other in a given evolutionary context. Dawkins gives the example of the God meme

[30] Dawkins Richard (1976) *The Selfish Gene:* "Memes the new replicators", Oxford University Press.

[31] Ibid

that has other associated memes that act to reinforce the existence of the God meme. "Perhaps we could regard an organised church, with its architecture, rituals, laws, music, art and written tradition, as a co-adapted stable set of mutually assisting memes"[32]. Dawkins takes this even further when he uses the example of "hellfire" as he asserts that many people are psychologically manipulated by this notion. According to this view the idea of suffering a ghastly, tormented "afterlife" serves the purpose of persuading certain people to believe in God, but nonetheless it is successful. In this sense the meme of God and hell-fire are not only mutually assisting memes they are also self-perpetuating. The meme of hell-fire is just one of many mutually assisting memes from the Christian faith. However this meme of “hellfire” can only work as a mutually assisting meme if the person can be psychologically manipulated by such a meme for belief in “hell-fire” does not necessitate a Christian faith. Other belief systems that have mutually assisting memes are ideologies such as Capitalism, which tempts people into acceptance through the promise of such things as wealth, individualism and respectability. According to Dawkins, selection favours memes that exploit their cultural environment to their own advantage. This cultural environment consists of other memes that are also being selected. The meme pool therefore comes to have the attributes of an evolutionary stable set, which new memes find it hard to invade.

In Dawkins work on memes, the gene-evolutionary explanation imposes a ‘biological structure’ upon a historical process. The question is what form or structure does the meme explanation have as opposed to the gene explanation? For instance, there seems to be a difference between the unmediated, random events that occur in nature and the more

[32] Abid

structured and schematic way in which ideas and concepts are founded. Many memes seem to have multiple layers of other memes which inspired the creation of this first set of memes, hybrid ideas you might say. Yet there is still teleology involved in the creation of new ideas, it is not as "random" as the gene evolution story. The gene evolution analogy doesn't seem to extend far enough in its explanatory umbrella in order to explain human intentionality that is involved in the process of making sense of the randomness of nature. The non-teleological language used in the explanation of gene-evolution doesn't seem to be commensurate with an explanation of concepts and ideas in these terms. For memes have an intentional content to them because they are used and invented for the purposes of people.

As mentioned earlier memes encapsulate a biological and evolutionary role which will be used, in part, to discuss the issue of how creativity works. In brief, memes are concepts or ideas that are generally cultural and which evolve analogously to genes. They are selected for, mutually assist one another and form stable sets, just as in gene evolution. However, the analogy with genes can only take us so far; a non-teleological approach to memes will not do, as it does not explain how they are intentionally used by people. We need to understand how memes function cognitively as well. It is the biological and evolutionary approach as enclosed in the notion of memes, together with our earlier psychological discussion of schemas that will form the core component of this argument about how creativity works.

Are memes 'genotypes' or 'phenotypes'?

The biological difference between genotypes and phenotypes is that "genotypes" are units

of information which are physically encoded like a blueprint whereas "phenotypic effects" are the perceptible, outward manifestations of the genotype such as the colour and texture of a polar bear's fur-coat. In *The Extended Phenotype* Dawkins asserts that memes, by analogy, have physical residence within the brain, they have "a definite structure, realised in whatever physical medium the brain uses for storing information."[33] By saying this, Dawkins effectively draws a distinction between memes as replicators and their phenotypic effects. Dawkins claims that memes have a definite physical structure and that new memes become 'engraved' in the brain that receives them like a virus would, by comparative example. Phenotypic effects on the other hand are the external, perceptible materialisations of memes such as gestures, music or political unrest.

In earlier writings Dawkins treated the properties of longevity, fecundity and copy-fidelity that memes have Robert as phenotypical properties. Yet if memes are in-the-head entities then longevity, fecundity and copy-fidelity are primarily "genotypical" properties. The extent to which a meme has these properties varies depending upon the given meme-pool it fits into and other environmental circumstances which would seem to be beyond the genotype to determine. Some memes will have more longevity or fecundity than others, for instance. However, to what extent can memes be independent of our ability to conceive of them? New memes that enter an unwilling brain are said to work much like a virus as though there really is no control over such entities. Yet we would not deny that the meme existed before it enters our heads. Think of a horribly montonous tune, such as "the hokkie-pokkie" that little kids love. For parents it could well be like a virus because once in it's hard to stop it repeating over again. Thankfully many of these sorts of tunes are only short-

[33] Dawkins Richard (1989) *The Extended Phenotype*, Oxford: Oxford University Press, p. 109.

lived, but the point is that such memes aren't just in-the-head entities but a consequence of complex interactions with the phenotypic effects of other memes in meme-pools.

In 'Memes and the Exploitation of Imagination' Daniel Dennett is concerned with what he sees as a tension between the meme's perspective and our ordinary notions of how ideas are transmitted.[34] These ordinary notions are considered by Dennett to be normative, that is, they are principles or ideals which we tend to admire and approve of. The acceptance of ideas that are thought to be true or beautiful has little to do with replication or transmission and much more to do with epistemology, ethics and aesthetics. If an idea is considered true or beautiful then that suffices to explain it's acceptance and the reverse also holds: if an idea is considered false or ugly then that would suffice to explain it's rejection. Dennett shows how this normal view is tautological:

Idea X was believed by the people because X was deemed true.

People approved of X because people found X to be beautiful.[35]

However, there are special cases that need explanation such as when an idea is rejected despite its beauty or truth and when an idea is accepted despite its ugliness or falsehood. Dennett believes that the 'meme's-eye view' offers an alternative explanation of these special cases. This alternative view is also tautological but in a different way:

Meme X spread among the people because X was a good replicator.

According to Dennett, it is no accident that these two views are correlated, for we must

[34]Dennett Daniel (1990); "Memes and the Exploitation of Imagination", from; *The Journal of Aesthetics and Art Criticism* Vol 48 : 2.

[35] Ibid p. 130.

have developed a strong, though not foolproof, habit of selecting those memes which would best help us in order to have survived. In general Dennett seems to be advocating that the 'best' memes are the ones which replicate well.

This account of the normative view would seem to mirror schema theory because these constitutive norms describe how there are certain fixed rules or measures by which we judge the worth of concepts and ideas. As an example, every society and historical period has normative views about fashion. In many Western countries, in times past, there were strong normative rules about what was and wasn't appropriate for a women's attire which discouraged women from wearing clothes that men wore such as pants and tailored jackets, that might have been more comfortable or practical because, it could be argued, there was an over-arching schema at work to do with the place of women in society. This is an example of how norms, as they have been described by Dennett, and rules or schemas compliment each other. Furthermore, the point that Dennett suggests about memes and norms working together may also help to explain the longevity of certain schemata. That is, schemata can provide the framework within which certain memes are judged based on these constitutive norms. If this were the case then the longevity of a meme would be determined by the presence of such norms in the same way that the longevity of schemata is determined. Perhaps this link between constitutive norms, norms and schemas could help to conceptualise the generator in the generate-and-test principle of selection in relation to new ideas or designs

Schemata and Memes

While schemas and memes are both, by themselves, incomplete explanations of how

creativity works, progress might be made by combining memes and schemas in order to help in our understanding of creativity.

There certainly seems to be some kind of analogy or link that could be made between Gombrich's "schemas" and Dennett's "memes"; and in the following the task is to explain what the similarities are and what the consequences of this will be. Firstly, it seems clear that Gombrich has tried to distance himself from a historicist perspective on the history of art and style. He believes that if we treat change as "inevitable and final" then it leaves no room for choice to exist so that reconstruction of the context within which choice occurred can happen.

> Change becomes the symptom of change as such, and to hide this tautology, some grandiose scheme of evolution has to be called in, as happened not only to Reigl but to many of his successors.[36]

The notion of 'choice' is described as having only "symptomatic significance" that may be expressive of something to do with the context of the time, but without a notion of what alternatives may have been possible there could be no "act of choice".

Both Dennett and Gombrich seem to rely heavily upon conventional archetypes to explain memes or schemas. For Dennett, if X is judged beautiful then that is enough for it to be accepted and likewise if X is judged ugly then that is enough for it to be rejected. Similarly with Gombrich if a work of art is deemed skilled then that is sufficient for the work to be schematic and likewise if an artwork is deemed unskilled then that is sufficient for it to be 'primitive'. Conventions or norms, both of which can be seen as schematic in

[36] E.H Gombrich (1996) *Art and Illusion*, London: Phaidon Press, p. 18.

their forms, play a major role in these accounts as they help to explain how they function in common use. One of Gombrich's main aims is to try to make sensible the Hegelian notion of "spirit of an age". By looking at stylistic change he attempts to explain why certain styles have persisted. Gombrich believes that we have an urge to repeat the conceptual ideas that we have already learned. Gombrich talks about the processes of "matching and making" that are fundamental to the creative process. He believes that this inventive process occurs just as much for children as it does for adults. Dennett also argues that learning is fundamental to understanding creativity with his endorsement of Simon's notion of "generate-and-test" as an explanation of the cognitive processes that occur to result in the invention of something novel. Just as Dennett sees an analogy between the generate-and-test principle and natural selection, Gombrich, who may appear less thoroughly scientific, asserted his principle of "matching and making", which shares basic theoretic similarities with both generate-and-test and natural selection. These similarities can be seen when we understand that matching and making is an interplay between "impulse and subsequent guidance" that schemata provide. Norms also provide guidance in a similar fashion in generate-and-test as do the schema of genes in natural selection. Gombrich also shared with Dennett an interest in the ideas of Karl Popper in that he refutes the position in the psychology of perception that sense-impressions are passively collected and then later differentiated. "K.Popper has dubbed these assumptions the 'bucket theory of the mind', the picture, that is, of a mind in which 'sense data' are deposited and processed."[37] Gombrich claims that certain notions in the history of art have rested on the assumption that sense-impressions are primary and are only later manipulated for artistic purposes.

[37] E.H Gombrich (1996) *Art and Illusion*, London: Phaidon Press, p. 23.

In comparing these two approaches we may wonder about how to explain the pervasiveness and persistence of certain schemas without the aid of natural selection. Gombrich's main contention is that "all representations are grounded on schemata which the artist learns to use. . . The injunction to "copy appearances is really meaningless unless the artist is first given something which is to be made into something else."[38] He is thus suggesting that we repeat what we have learnt over and over again because of these schemas that help to frame the reference, within a certain context. Perhaps one way of understanding Gombrich's claim could be reached through Frederic Bartlett's work on remembering. Bartlett claimed that recall is achieved through the presence of schemata that aid in the process. To recap, these schemas are inherent in our social conventions and hence play a large role in the reconstruction of past events. According to Bartlett, if I were to attempt to recall my seventh birthday, the customs and traditions that surround the way we celebrate a child's birthday would play a part in setting the scene that enables the highly personalised images to occur. Bartlett's view of schemas may explain how they can persist and remain almost permanent features as shown in recall and, in light of Gombrich's thesis, the representations of art.

Both 'process' and 'product' are an essential theoretical means of accounting for creativity. In order for there to be a product there also has to be a process and in a concept of creativity that is couched in the notion of cultural evolution the interplay between process and product becomes even more important. Just as in the genetic evolution of types

[38] Ibid p. 264.

there is a process which begins with a unit of information and through various stages results in a product that is the birth of a species of animal or plant there is also a need to explain, by analogy, memetic evolution. The process by which a new meme arrives in the meme-pool cannot rely simply upon the notion that in the process of replication mis-copying occurs and that imitation of the by chance mis-copy results in a new meme product. One writer who is not too optimistic about a memetic explanation is Susan Blackmore who has only a short passage dedicated to creativity in *The Meme Machine*[39] However, what she does argue is: "Replicator power is the only design process we know of that can do the job, and it does it well"[40] If creativity is ultimately a matter of replication, that is, imitation, as Susan Blackmore has suggested, then that would seem to deny the existence of art historical styles. Yet surely there is more to the design process in art, and indeed its products, than imitation and haphazard mis-copying. Furthermore, this non-teleological perspective can only help in accounting for the 'form' of the product of certain design processes rather than the 'content'. Imitation and mis-copying do not imbue the design process with the content necessary for novelty to occur because on their own they reduce such processes to blind luck. If we think about the artwork of Leonardo D'Vinci or Rubens, the content that is expressed in their work is a reflection of the historical moment in which such artworks were made as well as the particular skills of these artists. Neither of these can be accounted for by the sole reliance upon imitation and haphazard mis-copying and as such the relationship between form and content as they relate to creativity cannot be completely accounted for through the transference of Darwinian evolution upon historical

[39] Susan Blackmore(1999) ; *The Meme Machine*, New York: Oxford University Press, p. 239-240.

[40] Susan Blackmore(1999) *The Meme Machine*, New York, Oxford University Press, p. 240.

processes. Art historical styles are an outcome of the production of creative works as much as they are of the processes that manipulate memes and schemas. Furthermore, Blackmore's explanation of creativity seems to leave recourse to the notion of a "self" hidden away behind the scenes, an infamous 'ghost in the machine'.

Memes produce phenotypic effects that have in turn an effect upon establishing and maintaining certain memes that add to the success of the memes in question. Dawkins famously uses the example of religion, the phenotypic effects of which could be things such as churches and authority figures that help to reinforce the meme. These effects are the meme-products, as it were from the genotype of the meme. Yet while memes need to be grounded in the head to some extent, when comparing memes with genes it becomes clear that whereas we have an account of the genotype, as a blueprint, there is no similar account of a meme. There is already a story to tell about genes in terms of DNA along a chromosome where we have begun to be able to see correlations between the phenotypic effect and information carried in the DNA. However we do not seem to have an analogous explanation of memes that is able to predict their phenotypic effects as well as the processes of replication in terms of creativity. The processes that provide the grounds for creativity to occur which involve the interactions of different memes in their meme-pools and meme-plexes (that is groups of memes that replicate together) needs to be clarified. If the vehicle of replication which aids genes in this process are the chromosomes what is the equivalent vehicle of replication for memes? Schema theory could be of use here, which future chapters will suggest in detail.

Creativity and The Intentional Stance

At this point I'd like to consider whether it could be possible to predict or correlate the phenotypic effects of memes in an analogous way to the correlation of phenotypic effects of genes given specific DNA. As a means of beginning to conceptualise whether this could be possible perhaps the use of an already well established predictive strategy could be used. The predictive strategy that Daniel Dennett has promoted that will be discussed at length later in the thesis, is the "Intentional Stance". In the broadest terms, the intentional stance is a theory that asserts that behaviour can be predicted through the instrumental application of folk psychology. It is always taken from a particular a point of view and uses our shared notions of folk psychology as the predictive tool. Given appropriate beliefs and desires (or hopes, fears, etc) one can predict that certain behaviour will occur by assuming that the system is rational. Is it possible to use the intentional stance to understand the phenotypic effects of creativity?

In "True Believers: The Intentional Strategy and Why it Works" Dennett claims that there could be a "second real pattern" which is able to overcome what Perkins called the 'combinatorial explosion' of an indefinite amount of complexity.[41] "Some elegant, *generative*, indefinitely extendable principles must be responsible. We only have one model of such a representation system: a human language."[42] What if behaviour could be seen as the vehicle of representation of phenotypic effects? Are the patterns of behaviour that Dennett posits linked to the phenotypic effects of memes and if they are could we

[41] Daniel Dennett "True Believers: The Intentional Strategy and Why it Works" from *The Nature of Mind*, Ed, David M. Rosenthal (1991) New York: Oxford University Press, p. 349.
[42] Ibid p. 349.

predict them? The idea is that certain patterns of behaviour, expressive of skills, are needed or indeed necessary in the production of certain phenotypic effects. Here we are specifically talking about skills which lead to creative phenotypic effects. We may define skills as an ordered way of working which we could then see in specific patterns of behaviour. For instance, in order to produce a painting in the tradition of Renaissance Christian art it would be necessary to have the skills, or patterns of behaviour, involved in portraiture, in order to paint, say a work on the "The Madonna and Child" theme that was so prevalent at that time. For portraiture in Renaissance Christian art is a style of art that requires specific skills, which makes such skills difficult to separate from this particular style. However the mechanical skills that an artist may learn in order to paint in this Renaissance manner are not completely exclusive to the expression of the ideology of the time, for the skills involved in Renaissance portraiture can be carried over for use in secular portraits as well. The observable phenotypic effects of memes are in general related to the execution of patterns of behaviour but within the production of art such behaviours are not exclusive to particular historical points in time.

The objection that Dennett would have to this line of thinking is that the intentional stance is only meant to be an instrumental device and he resists the idea that intentional states have distinguishable content in favour of the notion that the states of folk psychology are *abstracta*.[43] He makes the point that the desire to connect the two is sometimes irresistible but that they should nonetheless remain independent. Dennett also claims that the intentional stance has a normative structure whereby the idealized notions of folk psychology are used instrumentally. Memes, however, being analogous to viruses, are

[43] Daniel Dennett "Three Kinds of Intentional Psychology" from *The Nature of Mind*, Ed, David M. Rosenthal (1991) New York: Oxford University Press, p. 613-626.

'*illata'* that is 'posited theoretical entities' as are schemata. The reason why it is important to view intentional states as possessing this content and structure is because memes seem to explain the focus of these intentional states and there are consequences which take the form of an expression, or phenotypic effects, from holding such folk psychological intentional states. This is especially relevant in the context of a discourse about art historical styles and creativity, but it will be contended that the general notions of 'form and content' cannot be as easily disentangled in a discussion of artistic production as Dennett had claimed they could in his intentional stance.

In a nutshell, at the heart of this discussion is the relationship between 'form' and 'content', and there is a need to understand how they interrelate in a theory of creativity that attempts to understand novelty in terms of art historical styles as well as Darwinian evolution. Form and content are not easily distinguishable because they are often reliant upon each other. For instance, the skills necessary in portraiture need to reflect this style of Renaissance art. To be able to paint or create artworks in a particular style requires that the artists learn the relevant traditions and conventions and not only in the history of art, but also in the skills necessary for that particular style of art. The skill and the style of a given tradition are not easily distinguishable in the production or expression of it. The style of an artwork is at once a reflection of the skills of an artist but also an expression of the artist's memetic and schematic content. Skill and style go with form and content. They are hard to separate from each other. This is a point which is at the heart of Gombrich's notion that "there can be no making without first having something to match it with". Matching and making is central to the form of an idea as much as it is to the content.

Phemotypes and Forms

Meme-products or phenotypic effects, which have been renamed as *phemotypes* by Aunger[44], by analogy with the biological equivalent, also have a role to play. For without a surplus of different ideas and inventions in the environment there would be much less to be inspired by. As was just discussed in regard to Gombrich, making cannot occur without first having gone through the process of matching and thereby learning relevant skills. The confusion that still exists in much of the meme theory literature regarding phemotypes and genotypes comes down to an attempt to answer one question: How are we to identify phemotypes, as distinct from meme replicators, in the environment? Perhaps there is a way around this difficulty that combines memes and schema theory. In *Darwinizing Culture* Robert Aunger points to one of the reasons for this confusion . . .

> genes do not code for one phenotype, they code for a gradient of possible variant forms (what biologists call a 'reaction norm'), thanks to the impact of environmental conditions on development. So the relationship between replicators and their products is not one-to-one. This implies that information will be lost in the transmission from meme to phemotype.[45]

If as Aunger points out there is a 'gradient of possible variant forms' in biology, then by analogy we can suppose that much the same would occur with memes and their products, phemotypes. 'A gradient of possible variant forms' leaves room open for

[44]Robert Aunger (2000)*Darwinizing Culture,* New York: Oxford University Press, p. 214.

[45] Robert Aunger (2000) *Darwinizing Culture,* New York: Oxford University Press, p. 215.

different interpretations of the original form. By definition to "miscopy" something implies that there is an original form to describe and perhaps if we go back to Plato and the notion of the *form* or *idea* then we may start to see the difference between the meme and the phemotype.

Gombrich's view of schemas can also contribute towards a greater understanding of the differences between memes and phemotypes.

> It is because art operates with a structured style governed by technique and the schemata of tradition that representation could become the instrument not only of information but also of expression.[46]

As Gombrich sees art as being governed by a structured style as well as schemata, perhaps there is room to understand how this partnership manifests itself. For if memes and schemas could be said to work together then perhaps another way to comprehend or refer to this partnership is as "thematic", for themes seem to be a combination of structure and content. Indeed, "themes" are readily identifiable in the environment. We often speak about the theme of a play, book or movie and perhaps when we do this we are actually identifying memes and schemas working together. What then of the relation between phemotypes and memes/themes? An example may help at this point. Consider for example the themes that are often present in classical music as well as classical ballet. Classical music which has a particular structure to it, such as particular "movements" or "reprisals", are often interpreted for classical ballet which is also a highly disciplined and structured artform.

[46] E.H Gombrich (1996) *Art and Illusion*, London: Phaidon Press, p319.

Consider both “Swan Lake” and “The Nutcracker” both pieces of classical music which have been used in classical ballet. The classical music which is used for these ballets has a certain theme to it which has then been interpreted and the structure of the music has also been used as a means of formatting how the ballet proceeds as well. Classical ballet seeks to express itself by both the memetic concepts expressed through the classical music that is then interpreted by the ballet as well as through the disciplined and schematic movements that it uses to express these concepts or phemotypes. Phemotypes as far as creativity is concerned, seem to be a means by which to express or represent memes through the production of an artwork, the consequence of which is a theme such as the themes expressed through classical ballet and music. This example can also be used as a simile for the way many memetic theories seem to be, as it were, lop-sided in their view of memes and thereby are unable to see the bigger picture with regard to memetics. A concept of the role that creativity plays in regard to memetics becomes so necessary given this latter view of memes and phemotypes because an explanation is needed as to how new schemas or forms can come into existence that is beyond just the ‘miscopying’ of memes. For, we are not simple systems that are only able to express the same memes over again in different disguises. “Miscopying” is not as common in genes as it seems to be in culture. Dawkins famously pointed out in *The Blind Watchmaker*, that a typist would have to have a accuracy rate of one error in a trillion which is equivalent to typing out the Bible 250,000 times with only one error.[47] There seems to be much more miscopying going on in the memetic account than could be needed to say that chance alone accounts for the influence of learning and skill that we gain from our environment.

[47] Richard Dawkins (1988) *The Blind Watchmaker*, Oxford: Oxford University Press , p. 123-124.

The 'Reaction Norm'

According to Aunger and other biologists there is a "reaction norm" that the 'gradient of various forms' have that are a result of environmental conditions especially in light of the work that will be presented on schema theory and memes. In much the same general vain in which Plato believed that forms lay at the basis of concepts, so Gombrich with regard to creativity explains art historical styles as possessing schemas which help in the attempt to define a given period in the history of art. This is a structuralist approach to art and indeed to the social sciences. It will be shown in later chapters that memes and schemas (or themes) work together like semantics and syntax, in the broadest analysis, in order to produce a style of art. The phemotype is the expression of this structured unit of information as the above example of Cubist art demonstrates. The 'reaction norm' in this case would be based upon an art historical style and this thesis will present a case for why memetic theory can be used in the social sciences more generally. For example, something like 'popular music' which never seems to stray too far from an uncomplicated tune with catchy lyrics, may be seen as a 'reaction norm' in memetics. Again, many political parties won't stray too far from core schemas and memes or themes and while the expression of them may differ depending on the environmental conditions there certainly seem to be something like reaction norms in their expression.

Nevertheless if as Aunger suggests information is not only inaccurately passed on from genotype to phentoype but also lost, then this would suggest that much of the same sort of information is mislayed in the transfer of meme to phemotype. However, this need not be a problem for memetics. For if, as Dawkins and Dennett have suggested,

miscopying leads to new memes, then that would suggest that instead of losing information we would tend to gain it. Aunger also asserts that attempting to explain social change or evolution requires many levels of complexity. "Explaining these seems a goal quite far removed from the concerns of most memeticists, who are labouring much further down the organizational heirachy, worrying about replicators"[48] In the following chapters, the focus is on memes and schemas as they relate to creativity. It is essentially a discussion about semantics and syntax, and it will attempt to explain this "organisational heirachy" from the microscopic as well as the macroscopic level.

[48] Robert Aunger (2000)*Darwinizing Culture,* New York: Oxford University Press, p. 225.

Chapter Two ***DAWKINS and DENNETT:*** **There views on memes and genes**

As Dawkins believes that memes are at least conceptually analogous to genes, it is important for the purposes of this thesis to outline his position on genetic evolution. In order to present a thorough exposition of Dawkins' position we need to start back at *The Selfish Gene* written in 1976. Here, Dawkins explains how the origins of life probably came about in what is known as the "primordial soup" the more complex and aggressive self-replicating atoms that are the forefathers of what we now know as genes. After explaining his spin on Darwin's theory of natural selection and the mechanics involved in this process Dawkins eventually introduces the notion of memetic evolution. It is only in the light of his work on genetic evolution that an understanding of memes can possibly be understood and so this chapter will aim at slowly introducing memes beginning with what he has coined as the 'selfish gene'. Daniel Dennett also agrees with many of Dawkins' views on memes. However much of his previous work on the intentional stance and his understanding of the "generate-and-test" principle have a role to play in bettering our understanding of memes as they relate to genes. This chapter will outline both Dawkins and Dennett's respective positions.

DAWKINS' POSITION

The Selfish Gene

Dawkins begins by describing the probable conditions that seem to have heralded what we know as the beginning of life. He interprets Darwin's 'survival of the fittest' as just being a subset of another law that he calls 'survival of the stable'.

> A stable thing is a collection of atoms that is permanent enough to deserve a name. . . .it may be a class of entities, such as rain drops, that come into existence at a sufficiently high rate to deserve a collective name, even if any one of them is short-lived.[49]

Basically, any pattern or group of atoms that is unlikely to change or cease to exist is deserving of the title 'stable'. However Dawkins points out that an understanding of stable patterns alone will not provide a full explanation of systems as complex as human beings. For, as humans consist of many, many millions of atoms this requires a more complex method of analysis, which is where Darwin's theory becomes most important. Dawkins describes certain chemical experiments that attempted to simulate the possible chemical and environmental conditions that would have been necessary for life to flourish. In these experiments, substances such as water, carbon dioxide, methane and ammonia were combined in a flask and environmental conditions such as lightning and ultraviolet light were simulated. After a few weeks of these conditions "a weak brown soup containing a

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[49] Dawkins Richard (1989) *The Selfish Gene*, Oxford: Oxford University Press, p. 12.

large number of molecules more complex than the ones that were originally put in"[50] had been found. Among the substances were amino acids, the foundation of proteins and life. According to Dawkins biologists and chemists believe that similar organic processes occurred in the original 'primeval soup' which then evolved to create the seas and organic molecules that resided there. Such organic matter wouldn't even have been as complex as bacteria.

Dawkins asserts that somewhere along the line and almost as if by accident a molecule arrived on the scene that was able to duplicate itself. The likelihood of this event occurring seems to have been very slim indeed. However, it only appears as though it is a slim chance because as finite beings we are not able to think of probable or improbable events in terms of hundreds of millions of years. Dawkins calls this molecule the "Replicator" and suggests that a way of making the arrival of the molecule in the 'primeval soup' more fathomable is to view it as being built from available ‘building- blocks’. Such component parts are thought to be essentially able to attract other building- blocks of the same kind from other parts of the great primeval soup, and in so doing they would become sequenced in a way that mimics the original replicator molecule.

> So each replicator is potentially the ‘ancestor’ of an indefinitely long line of descendent replicators, stretching into the distant future, and branching to produce, potentially, an exceedingly large number of descendent replicators[51]

[50] Ibid p. 14.

[51] Dawkins Richard (1988) *The Blind Watchmaker*, London: Penguin Books, p. 129.

Dawkins believes that because the replicator would have been able to spread it's own copies quite rapidly it was able to dominate other types of molecules by shear size of numbers and thereby create a new kind of stable pattern.

None of the molecules that were around before the replicator molecules were able to be as dominant because they didn't have the same capacity or vehicle by which to propagate and spread. The dominant population of replicas that resulted from this process of mimicry was not always identical. The point that Dawkins makes is that in any copying process mistakes are more than likely to happen over the long run. An example to illustrate this would be a copying mistake that an old-fashioned printing-press machine made where too much ink produced ambiguous looking words from the stencil sheet. Another example may be where a printer misprints the item to be printed due to signals wrongly sent from the computer to the printer. So it would seem that in any reproduction process, mistakes happen and this is no less the case than in replicating molecules. These mis-copies, Dawkins claims, gave rise to a diverse range of new replicating molecules in the 'primeval soup' which meant that the competition for dominance between the replicating molecules suddenly jumped in number. However it is also important to remember that although miscopies do happen the overall performance of replicating molecules is impressive. According to Dawkins the replication rate, without natural selection, is the maximum possible rate of evolution and a modest estimate of the accuracy this replication rate is around five million replicating generations before one percent of miscopied characters occur.

As previously noted in chapter one, Dawkins identifies three main characteristics that the successful replicating molecules would have needed to survive in the primeval

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soup and they are longevity, fecundity and copy-fidelity.

> Evolutionary trends towards these three kinds of stability took place in the following sense: if you had sampled the soup at two different times the later sample would have contained a higher proportion of varieties with high longevity/ fecundity/ copy-fidelity.[52]

According to Dawkins, vested within certain molecules is a stability that other molecules do not possess and as a consequence such stability would fortify these molecules against fragmentation and hence make such molecules more abundant. Such molecules are said to have "longevity" precisely because of the latter fortification. The term "fecundity" relates to the speed at which molecules could propagate themselves. This characteristic would undoubtedly have been a positive trait to acquire in order to promote the abundance and dominance of certain molecules. The third characteristic of "copy-fidelity" is concerned with the accuracy with which a replicator molecule is able to replicate itself. The more accurate a replicating molecule is at making a given molecule the more plentiful that particular molecule will be and hence copy-fidelity becomes an essential trait for the molecule to have acquired. Dawkins suggests that this last characteristic seems somewhat paradoxical since copying mistakes are required in order for evolution to occur. However he also points out that evolution is a random process that has no intentions of its own.

[52] Dawkins Richard (1989)*The Selfish Gene*, Oxford: Oxford University Press, p. 18.

Genotypes

Apart from the three traits that Dawkins believes are essential to promoting the survival of a replicating molecule, replicators also managed to survive by constructing complicated vehicles that would help to ensure the continuation of their kind. He defines such vehicles as "survival machines". By constructing progressively bigger and more elaborate vehicles for survival he argues that these replicating molecules were attempting to create even more stability for themselves.

> Now, for the first time, large body size became a possibility. A human body is a truly colossal population of cells, all descended from one ancestor, the fertilized egg; and all therefore cousins, children, grandchildren, uncles, etc of other cells in the body.[53]

In this way, as he is able to elaborate, stability for the human vehicle of survival was achieved. Dawkins describes these replicating molecules as the ancestors of what we now call “DNA”. DNA is a stable system that acts as a blue-print for constructing a body. Furthermore in *The Extended Phenotype* he makes a distinction between active and passive replicators and their differences are fairly straightforward.[54] Active replicators are those that have an intrinsically high likely-hood of being replicated for they exert certain phenotypic effects which influence their probability of being copied. By contrast, passive replicators are unable to exert such influence over their chances of being copied. An

[53] Dawkins Richard (1988)*The Blind Watchmaker*, London: Penguin Books, p. 177.

[54] Dawkins Richard (1983) *The Extended Phenotype*, Oxford: Oxford University Press, p. 82-86.

analogy can be found in the differences between Christianity and Mithraicism. Mithraicism was an early secretive Persian religion that was practised by the Romans in the third century. When it comes to the replication of memes, Christianity carries within itself the means of its own propagation by the desire to “convert” people to their faith. Whereas a minor religion like Mithraicism was not as successful because it was strictly secretive and therefore unable to exert influence upon society. Inherent to our bodies, are millions upon millions of cells and each of these cells contains a copy of that body's DNA. Much like the replicating molecules aforementioned a DNA molecule is made up of "a long chain of building blocks", known as nucleotides. Dawkins describes how there are four discrete types of these nucleotides that are the same across the animal kingdom as well as in plants. However, there is a respect in which they diverge that is irrelevant to the particular nucleotide though it is germane to the sequence in which it is strung together. Put another way, a nucleotide x in a human may be identical to that of a possum, but differ in the way that that particular nucleotide is strung. Such a sequence of nucleotides in humans is also at variance to the extent that it is non-identical to any other human (excepting identical twins).

Though sometimes used synonomously, the expressions DNA and ‘genes’ are quite distinct since a 'gene' is the term that is used to refer to a sequence of DNA as a unit of selection. 'DNA' is the term used to denote the material along a particular chromosome that acts as a blue-print of a body or plant. According to Dawkins, "a gene is defined as any portion of chromosomal material that potentially lasts for enough generations to serve as a unit of natural selection. . . a gene is a replicator with high copying-fidelity"[55]. He also defines that part of the chromosome that may last generations as a genetic unit and he

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[55] Dawkins Richard (1989) *The Selfish Gene*, Oxford: Oxford University Press, p. 29.

utilises this term interchangeably with gene. The smaller the genetic unit is on any particular chromosome the more feasible it's survival, as its size gives it the advantage of being less likely to divide during meiotic division. From this he reasons that the bigger units on a chromosome, which are least likely to survive, do not qualify as genes in the sense that he defines them. He argues that the cardinal unit of selection (and indeed of self-interest) is the gene as opposed to the species or population or any other of the larger means of measuring a "unit of selection". Furthermore, Dawkins claims that when we differentiate the 'bad' genes that have low reserves of longevity he contests that altruism must be 'bad' and selfishness 'good'. He reasons that since genes fight among themselves for survival, to behave altruistically neither maximises nor is conducive to, survival, whereas acting selfishly is able to ensure a genes' continued existence.

In *The Extended Phenotype* Dawkins defines altruism in terms of the extent to which an organism can be manipulated.[56] An organism tends to manipulate others into acting in it's own best interests. He points out that our view about manipulated organisms is that it won't take long before such organisms come up with a counter-adaptation measure in evolutionary time. However there are certain conditions such as in familial kinships in which it is claimed that manipulation continues to occur without threat. Indeed, Dawkins points to Alexander and West-Eberhard who agree that parental manipulation is one of the significant causes that are conducive to the evolution of individual altruism.[57] Reciprocal altruism and kin selection are the other ways that he mentions. Nevertheless, Dawkins contests the view of parental manipulation that implies some kind of intrinsic power that is

[56] Dawkins Richard (1983) *The Extended Phenotype* Oxford: Oxford University Press, p. 55-81.
[57] Ibid p.55-81.

advantageous to parents as far as manipulating their children is concerned. The definition of altruism that he favours is one that sees the 'altruist' being manipulated by the recipient into giving something to it. This is a somewhat alternative definition of altruism, but it needs to be subsumed in the context of selfishness as being beneficial for the survival of a species.

> Evolution is the process by which some genes become more numerous and others less numerous in the gene pool . . . whenever we are trying to explain the evolution of some characteristic, such as altruistic behaviour, of asking ourselves simply: 'what effect will this characteristic have on frequencies of genes in the gene pool?'[58]

Dawkins describes the gene pool as the modern equivalent of the primordial soup that the original replicators lived in. The only difference in biologically modern times is that genes learnt to coordinate and cooperate with other groups of genes to create large 'survival machines' as a means of replicating themselves and thereby ensuring their own survival. Indeed, Dawkins suggests that this cooperation among genes is the result of 'cumulative selection' as opposed to 'single step selection' where a chance event results in a large change in what is selected for and ultimately replicated. Dawkins sees DNA replication as possessing all of the requisite features of a complex replication device that is necessary for cumulative selection to be possible. I cannot resist quoting Dawkins at length:

So, cumulative selection can manipulate complexity while single-step selection cannot. But cumulative selection cannot work unless there is some minimal machinery of replication

[58] Dawkins Richard (1989) *The Selfish Gene*, Oxford: Oxford University Press, p. 45.

and replicator power, and the only machinery of replication that we know seems too complicated to have come into existence by means of anything less than many generations of cumulative selection![59]

Dawkins argues that this is an explanation of how the *blind* watchmaker operates and that we should try to divorce ourselves as much as possible from the notion that coincidence and chance are "miraculous" in any sense. He suggests that the reason why we tend to think improbable occurrences are miraculous is because our brain is not designed to think in the large scales necessary for such occurences. The example he uses in the *Blind Watchmaker* and elsewhere is the unlikely event that a monkey could accidentally write 'Methinks it is like a weasel'.[60] Dawkins argues that if it were possible to group a collection of 10^{46} monkeys who were each given a typewriter then not only would we have one of them writing 'Methinks it is like a weasel' but also one other with something like "I think therefore I am". He makes the point that the impossibility of setting up an experiment like this means that we need to rely on luck to a certain extent but the limitations of human imagination also need to be accepted.

Memes

In the closing chapter of *The Selfish Gene* entitled 'Memes: the new replicators' Dawkins attempts to theorize about culture by applying the theoretical constraints of genetic evolution.[61] He admits that this chapter was very much a speculative endeavour, for he makes no pretence about being adept with the philosophy of culture. The way that Dawkins

[59] Dawkins Richard (1988) *The Blind Watchmaker*, London: Penguin Books, p. 141.
[60] Ibid p. 141.
[61] Dawkins Richard (1989) *The Selfish Gene*, Oxford: Oxford University Press, p. 189-90.

approaches culture is to see it as being analogous to genetic evolution.

> Are there any good reasons for supposing our own species to be unique? . . . the answer is yes. . . Most of what is unusual about man can be summed up in one word: 'culture' . . . Cultural transmission is analogous to genetic evolution in that, although basically conservative, it gives rise to a form of evolution.[62]

Cultural transmission is not totally unique to humans. Dawkins gives the example of the Saddleback birds that reside on islands off New Zealand, which communicate through a possibility of nine variant songs. These songs were arranged into dialects with any young male bird singing only one to a few songs. Small groups of birds have their own song and sometimes a group has more than one song. This research by P.F. Jenkins discovered that the song patterns are not inherited genetically, but rather that young male birds would imitate songs from birds with divergent neighbouring dialects. Further non-human examples of acquiring non-genetic behaviour can also be found with humpback whales whose songs are used as a means of communication. The main point of these examples is to demonstrate how the development of culture could be viewed analogically to genetic evolution. When it comes to human language is often seen as an evolutionary process that is not in itself genetic and is significantly faster than genetic evolution. Language is not the only example of cultural evolution that Dawkins has in mind. Dawkins' basic aim is to convince the reader of how broad-ranging a theory Darwinism can be. Although the following exposition of cultural evolution, according to Dawkins, is only meant as an

[62] Ibid p. 189-90.

analogy to genetic evolution, he certainly has more of a tendency to interpret cultural evolution as Darwinist rather than just historical.

Dawkins defines a 'meme' as a unit of selection just like a gene except that a meme is a concept or idea that is generally cultural. Some examples include tunes, fashion, ideas, cliches, interior designs for a house and even cooking recipes. By analogy to genes that are defined as self-replicating molecules, memes replicate themselves by passing on information from one brain to another. Memes are able to successfully propagate themselves via a process of imitation as once an idea becomes popular it spreads its influence around just like the aforementioned self-replicating molecules. The vehicles through which such memes travel are cited as things such as books, pictures, signposts even buildings and importantly the human brain itself.

> When you plant a fertile meme in my mind you literally parasitize my brain, turning it into a vehicle for the meme's propagation in just the way that a virus may parasitize the genetic mechanism of a host cell.[63]

A parallel example of the way that Dawkins describes the ability for a meme to seize influence over the brain can be found in computer viruses. A computer virus can manipulate and control the software programming of a given computer and is also able to be transmitted and thereby to infect other computers, using the internet or floppy disc as its transmitting vehicles. Dawkins' characterisation of a meme as a virus that "parasitizes" the brain is interesting because it supposes that the host is in a passive relationship to the

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[63] Dawkins Richard (1989) *The Selfish Gene*, Oxford: Oxford University Press, p. 192.

meme. What makes this supposition interesting is that the notion that, if we are the victims of these parasites which portray us, the hosts, as mere passive receptors, then it would tend to suggest that they are automatically accepted. Oftentimes the notion of a virus spreading through the mind is used in memetics to understand why children and others who have religious beliefs are 'vulnerable' to certain ways of thinking. However this does not adequately describe the way memes behave and it is here again that Gombrich's schema theory can be of use. Children tend to be vulnerable to certain lines of thinking precisely because as children they haven't developed the mental schemas, by which to interpret their environment. The way that Dawkins and other memeticists characterise certain social and religious beliefs is simplistic as it insinuates that people are mere passive receptors of ideology when these beliefs should be seen as fitting into schemas that are already present in the way people interpret their environment and life. In the same way that when we view a sunset or hear sounds it is mediated through a set of cognitive and social structures why should we treat memes as being able to somehow bypass these in order to render us passive in their presence? As an example, the unfortunate truth is that anti-semitism was rife in Germany long before the Nazi regime took over and exploited such sentiments for its own political advantage. In other words, a virus simply cannot spread, or strike us blind, unless the condition of the host allows it to happen.

Memes are reliant upon human culture in order to thrive within the "meme pool". In the same way that genes compete in gene pools, so memes compete with each other in the new primeval soup called 'culture'. Dawkins also extends the three main characteristics that determine whether certain self-replicating molecules are going to survive or not to the analogy with memes. These aforementioned characteristics are longevity, fecundity and

copying-fidelity. The definitions of these three characteristics are basically the same for memes as they are for self-replicating molecules. However, Dawkins prioritizes the role of these qualities differently when talking about memes than when he is speaking about them in terms of genetic evolution. For he believes that longevity is not nearly as important as fecundity since the latter attempts to explain why some memes have a survival advantage over other memes, whereas, longevity simply refers to the length of time that a concept or idea lasts in peoples' minds or in printed form. When we think about children's rhymes such as "ring-a-ring-a-rosy" which referred to the effect that the plague had on English households in the late seventeenth century, it would seem to be an example of how memes can stay in our heads for many centuries. For this same rhyme was role-played by children in their playgrounds for a long time beyond the context of the plague. Although there are many such examples of the longevity of certain memes they don't, in themselves, offer an explanation as to how and why some memes have survived while others have perished along the way. A rhyme such as "ring-a-ring-a-rosy" would be said by Dawkins to have "performance value" since it has been mimicked many times by children from different ages and places. It has survived the competition within the meme pool or culture soup.

A further point of interest about this latter children's rhyme is that in today's society it would seem to be an example of a schema which has longevity. That is it is a form without its previous content for when it is used today it is doubtful whether the actual content is understood by our children which is the reference to the plague where the children in the course of the rhyme "all fall down" meaning that they either 'fall' ill or die. The idea that a schema can have the quality of longevity, which is one of the qualities that memes are described as having, is significant for the idea that there are no memes without

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schemas for it demonstrates that there are shared qualities which memes and schemas have which is precisely what one would expect if there are no memes without schemas.

However, Dawkins suggest that there is a problem with this notion of copying-fidelity since there is the obvious problem of potential distortion of concepts and ideas in the same way that self-replicating molecules are not always completely accurate and subsequently mutations occur.

> The copying process is probably much less precise than in the case of genes: there may be a certain 'mutational' element in every copying event . . . Memes may partially blend with each other in a way that genes do not. New 'mutations' may be 'directed' rather than random with respect to evolutionary trends.[64]

The main point about the mutations that happen to self-replicating memes is that there is no guarantee that once a given idea or concept has spread about that it will retain its original meaning through the many incarnations that it will have. To illustrate this point, the game of Chinese whispers serves as a means of demonstrating the way that a sentence can become twisted and distorted by various people. There are two ways in which this sentence can become distorted which is either syntactically or semantically. In the first instance people may attempt to preserve the syntactic structure of the words and thereby the scheme. In the second semantic instance people may be more interested in the message and thereby change the form of words. Chinese whispers becomes amusing, of course, when the message is unrecognisable though the original syntax is still familiar. The question that

[64] Dawkins Richard (1983) *The Extended Phenotype*, Oxford: Oxford University Press, p. 112.

arises here is whether or not this example of the syntactic and semantic distortion of a sentence in Chinese whispers is necessarily the same with the infestation of ideas in the "memosphere"? The suggestion by Dawkins is that there is indeed some kind of core component that is retained through the replicating process of the same idea or concept, thereby bypassing the sorts of problems that an objection such as this creates. Dawkins uses the example of how Darwin's theory of evolution has survived the various interpretations of it to back up his claim regarding the persistence of memes through time. His claim is that there is an “essential basis” to our conceptualisation of the ideas with which we are in basic agreement. As an example consider Paul McCartney’s song “Yesterday” that is the most widely recorded song in history. Whether it be in various musical genres such as orchestral, jazz, folk or sung in various different languages it still remains the same song in spite many and varied “mutations”. Of course in spite of these various mutations there is only limited ways in which this song can be changed without making it unrecognisable. The note sequences have to remain the same for instance. In both of these examples it is clear that we are talking about the persistence over time of both schemas and memes. According to Dawkins, there must be some kind of essential basis which explains the persistence of a meme through time and its various mutations. This notion of an “essential basis” to a meme is recognition from Dawkins that some notion of structure is required in order for memes to persist. However, it could be argued that what he is actually recognising is schemata at work through time. It would make more sense to talk about schemas as residing outside of a meme though still influencing it, memes and schemas need to be seen as distinct yet reliant on each other. Just as genes have DNA which gives them structure and intelligence so memes, by analogy, also have structure in the form of schemata.

Meme Pools

But just where are we to start looking for this "essential basis"?

> An 'idea-meme' might be defined as an entity that is capable of being transmitted from one brain to another. The meme of Darwin's theory is therefore that essential basis of the idea which is held in common by all brains that understand the theory. The differences in the ways that people represent the theory are then, by definition, not part of the meme.[65]

Dawkins' argument may lead one to ask, just what sort of differences and by what degree? According to Dawkins, memes compete with each other in "meme pools" in the same sense that genes compete, against their own alleles for survival in gene pools. He believes that the somewhat purposive language that has been used to describe both genes and memes is a "convenient" way of thinking around the subject, a "fruitful metaphor" that is only meant as a metaphor. With this in mind Dawkins extends the analogy between genes and memes by hypothesizing that memes are, at this point in time, equivalent to the early self-replicating molecules of the primeval soup than "modern genes in their neatly paired, chromosomal regiments." This is especially the case since there is no analogical equivalent to chromosomes or their alleles. There is an objection that can be raised to this way of apprehending the evolutionary state of memes. If we are agreed that memes have a tendency to evolve at a faster rate in culture than in the original 'primeval soup', then

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[65] Dawkins Richard (1976) *The Selfish Gene* Oxford: Oxford University Press, p. 196.

surely memes have progressed beyond being the equivalent of ‘replicating molecules’? Nonetheless, Dawkins still claims that memes can be thought to compete with each other in important ways. In the same sense that genes can be thought of as 'ruthless' or 'selfish' Dawkins believes that memes can also be thought of the same way. The human brain is the central arena in which memes compete. Unlike the space that genes compete for along a chromosome, in the human brain time is the precious commodity that memes compete for and people can only do one or two things at a time. As busy people say, "I only have one pair of hands!". There are also other mediums through which memes communicate their messages so as to gain attention that include the internet, television, radio, giant billboards and other printed media of different descriptions. Aside from these more visually orientated media for transmitting memes there are also more personal ways of influencing people into paying attention to a certain idea or thing. "Word of mouth" is a typical example of a ploy that certain companies rely upon for their business since it is often just as successful as blatant commercial advertising.

“Selection favours memes that exploit their cultural environment to their own advantage. This cultural environment consists of other memes which are also being selected.”[66] Dawkins gives the example of the meme of celibacy as being a successful meme and that if it were determined genetically then it would not be so successful. The reason why the celibacy meme may be successful is because there are other memes that help to reinforce it that are based on ideals of sacrifice and purity in certain religious orders. Another example of memes that are reinforced by other memes can also be found in political parties. In this example there may be certain fundamental beliefs that unite a

[66] Dawkins Richard (1976)*The Selfish Gene*, Oxford: Oxford University Press, p. 199.

political party which dictate, ideally, how policies ought to be drafted which thereby act as reinforcing memes for such policies. The existence of a Socialist party that has certain left-wing views of politics also has the potential to influence people who might be writers or musicians who are then also able to spread the main principles of such memes through their art.

This is also not to mention the more personal means of influencing people that in the case of politics is a topic on which almost all adults have an opinion and within the family unit such a means of influencing people is especially prevalent. Dawkins suggests that for a meme to be successful it needs to preoccupy as much time as possible in the minds of those who possess such a meme. To continue with the example, perhaps the reason why political memes are so successful is because they can preoccupy a community or family's life, because of the values that are inherent to certain political views. The media also play a significant role in broadcasting certain views that may depend upon "current trends" that the media believes they have read from society, as well as local events that catch their attention. The name that Dawkins gives these self-reinforcing memes is "co-adapted meme-complexes" which he believes evolve in very much the same way as "co-adapted gene-complexes". In *Unweaving the Rainbow* Dawkins describes these cooperative groups as "selfish cooperators". He doesn't believe that the individual organism is not essential to life but rather as something which is the consequence of the ganging or cobbling together of genes which were once warring parties into groups of 'selfish cooperators'. From this Dawkins speculates about the nature of individual subjectivity, in an attempt to further the analogy of gene to meme evolution. “Perhaps the subjective ‘I”,

the person that I feel myself to be, is the same kind of semi-illusion"[67]. That is in the same way an individual body is a product of many various, emergent genes that formed cooperative groups, perhaps the mind is a similar kind of conglomerate of warring memes that also become selfish cooperators. Thus Dawkins attempts to bind the "analogy" between memes and genes even closer, which leads us into somewhat muddier waters with respect to phenotypic effects and memes.

Phenotypes and 'Fitness'

The notion of phenotypes and their effects has to do with the emergence of nervous systems that have a degree of flexibility or "plasticity" which allows for the possibility of learning during an organism's lifetime. One of the main survival advantages of having a nervous system that isn't completely hard-wired is that it allows an organism to adjust to changing circumstances in its environment. According to Dennett the process by which such postnatal design-fixing is accomplished is "strongly analogous to the process that fixes prenatal design, or in other words, a process of evolution by natural selection".[68] This process occurs within the organism as well as within the phenotype and Dennett believes that there is some kind of selecting mechanism that is hard-wired that has a role to play in discovering a "Good Trick" which will bestow a survival advantage. However, there will always be creatures who have to work harder to figure out the Good Trick since they will have started out with wiring that is further away from the combination that is needed to learn the Good Trick. At the same time Dennett points out that other creatures

[67] Dawkins Richard (1998)*Unweaving The Rainbow*, Oxford: The Penguin Press, p. 308-9.

[68] Dennett Daniel(1993) *Consciousness Explained,* London: The Penguin Group, p. 184.

will be lucky enough to start off being close in 'design-exploration space' which means that the possibility of them finding and learning the trick through a process of trial and error is more llikely than their competitors. The sense in which a phenotype is conceptualised as 'extended' is defined by the internal and external boundaries of creatures, their external equipment and the way co-operation within the same species occurs. An internal boundary includes things like fur or quills, an external boundary would include nests or webs and an example of inter-species co-operation can be found with termites or beavers building dams. It is the larger scope in which a species effects the environment that is important in apprehending the notion of an extended phenotype.

> The doctrine of the extended phenotype is that the phenotypic effect of a gene (genetic replicator) is best seen as an effect upon the world at large, and only incidentally upon the individual organism – or any other vehicle – in which it happens to sit.[69]

According to Dawkins certain genes have phenotypic effects which become more than just a predisposition under particular environmental conditions. In *The Extended Phenotype* Dawkins suggests that the role that phenotypic characters play is far more significant than has previously been thought.[70] Rather than the accepted view of DNA as being selected because it is 'good' for the organism, Dawkins' view is just about the opposite. For he asserts that the main purpose, as it were, of phenotypic characters is to "help DNA replicate itself, and if DNA can find a quicker and easier way to replicate itself,

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[69]Dawkins Richard (1983) *The Extended Phenotype* Oxford: Oxford University Press, p. 117.

[70]Dawkins Richard (1983) *The Extended Phenotype,* Oxford: Oxford University Press, p. 156-178.

perhaps bypassing conventional phenotypic expression, it will be selected to do so."[71] The consequence of Dawkins' notion of selfish DNA is that the organism is at the mercy of its DNA and this is the opposite of how it was formerly conceived. This is an important clue to understanding Dawkins' notion of memes. For when we think about them as analogous to genes it may explain why there is an emphasis placed on how memes can control the organism rather than the other way around. Dawkins also posits the notion that memes have particular phenotypic effects as well. As an example, the phenotypic effect of a certain fashion would be that a large number of people wear it and that particular garment or "look" may be promoted for a specific group of people and sold at many different shops as well. Another example could be the phenotypic effect that an advert on television elicits, such as encouraging people to go out and buy a certain product or service. These examples illustrate the way that memes work phenotypically for their own survival.

Dawkins argues that the phenotypic effects of a meme (or meme complex) do not have to be correlated in any way to genetic success. He questions his critics about their claim that the success of a meme must be decisively measured by its contribution to Darwinian 'fitness'. It is claimed that it is only because natural selection has shaped our brains to be receptive to memes that accounts for their successful propagation. However, Dawkins claims that Darwinian fitness in itself is the most important attribute in terms of genes. He believes that its just another way of explaining the survival of replicators. Indeed, Dawkins views the issue surrounding the 'fitness 'of a genotype as being essentially confusing. " 'Fitness', as it is normally used by ecologists and ethnologists, is a verbal trick, a device contrived to make it possible to talk in terms of individuals, as

[71] Ibid p.158.

opposed to true replicators, as beneficiaries of adaptation."[72] Dawkins tends to avoid using the term 'fitness' because of the confusion that it invariably causes. He views memes as working together for the survival of what he calls "meme-plexes". In *Unweaving the Rainbow* he notes that as in the case of genes it is incorrect to view a pool of either genes or memes as the unit of selection.[73] Rather the appropriate way to view memes, in this instance, is as 'mutually assisting', so as to create the environment which is conducive to the survival of other related memes. He points to traditions and customs that are meme-plexes of this sort. There seems to be a vague correlation between memes which cooperate together within meme-plexes and Dawkins' notion of cumulative selection where changes in what is selected is gradual rather than the single-step view of selection where there are massive changes which guide what are selected for. But in so doing he also fails to explain how such cooperation is possible, that is, by analogy to genetic evolution, he fails to explain what makes mutual assistance possible. I will argue that 'schemas' can help to account for cooperation in these meme-plexes especially with respect to phenotypic effects and creativity.

A further criticism that Dawkins has had to face is the confusion over the difference between phenotypic effects and memes. Dawkins attempts to allay this confusion in *The Extended Phenotype:*

> I was insufficiently clear about the distinction between the meme itself, as replicator, on the one hand, and its 'phenotypic effects' or 'meme products' on the other. A meme should be regarded as a

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[72] Dawkins Richard (1983)*The Extended Phenotype*, Oxford: Oxford University Press, p. 179.

[73] Dawkins Richard (1998)*Unweaving the Rainbow,* London: The Penguin Press, p. 302-310.

> unit of information residing in the brain. It has a definite structure, realised in whatever physical medium the brain uses for storing information . . . This is to distinguish it from its phenotypic effects, which are its consequences in the outside world.[74]

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However, rather than subdue the confusion about how to distinguish between phenotypic effects and memes Dawkins has just muddied the waters even further. For, the idea that memes have a 'phenotypic effect' doesn't seem to be at all clear. Does replacing the idea that a meme has an expression with the term "phenotypic effects" elicit the same explanatory value as the genetic equivalent? It would seem that something in the translation between the phenotypic effects of genes and supposedly those of memes is lost.

DENNETT'S POSITION

Dennett on Memes and Creativity

In *Consciousness Explained* Daniel Dennett also explains the notion of memes in similar terms to Dawkins. Dennett also seems to believe that intentionality has little part to play in memes.

> To human beings . . . each meme vehicle is a potential friend or foe, bearing a gift that will enhance our powers or a gift horse that will distract us, burden our memories, derange our judgement. We may compare these airborne invaders of our eyes and ears to parasites that enter our bodies by other routes . . .[75]

[74] Dawkins Richard (1983) *The Extended Phenotype*, Oxford: Oxford University Press, p. 109.
[75] Dennett Daniel (1991) *Consciousness Explained,* Middlesex: The Penguin Group, p. 204.

Dennett goes on to describe how, just as there are parasites that can be either pernicious or tolerable, memes can be either detrimental or advantageous. Judging by the sort of language that Dennett is using in describing the relationship between memes and human beings, the subject in whose mind these memes reside is passive or non-intentional in relation to them. In fact, Dennett takes the analogy that Dawkins suggested between genes and memes a step further. He believes that there is no mere analogy between genetic and memetic evolution but rather that genetic evolution fits memetic evolution exactly.

In *Kinds of Minds* Dennett describes the behaviour of gazelles who are on the run from predators such as lions or hyenas as displaying a strange sort of behaviour once they realize that their predators can't catch them.[76] The behaviour consists in the gazelles making absurdly high leaps in the air which are of no practical benefit in making them run faster but rather are used to display their speed. This behaviour is called 'stotting' and it's a way of telling the gazelles predators "Don't bother chasing me. Chase my cousin. I'm so fast I can waste time and energy doing these silly leaps and still outrun you."[77]

Dennett believes human minds are no more in control or independent of the memes that 'infest' them than gazelles are in control of the selective forces that have led them to savour and delight in the victory of the chase! If Dawkins were to use this same analogy he would think that the gazelles' behaviour expresses the phenotypic effects of its genes and that as an analogy memes also have phenotypic effects. Dennett also makes the point that meme evolution fits the law of natural selection perfectly and that both memes and genes are no

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[76] Dennett Daniel (1996) *Kinds of Minds,* London: Science Masters, p. 119-152.

[77] Ibid p.123.

different in this respect. They are just different in respect to the kind of replicator and the various types of vehicles they inhabit that evolve at different rates. In "Memes and the Exploitation of Imagination" Dennett points out that the differences in rates of evolution between genes and memes are not mutually exclusive. He makes the obvious though somewhat overlooked point that just as:

> the evolution of plants had paved the way . . . so the evolution of memes could not get started until the evolution of animals - homo sapiens - with brains that could provide shelter, and habits of communication that could provide transmission media for memes.[78]

Implicit in this definition of memes is the idea that we are compelled to think of our brain as nothing particularly special when it comes to the creation of new ideas.

The Law of Effect

Through his discussion of the Law of Effect in "Why the Law of Effect Will Not Go Away" Dennett attempts to put his finger on the mechanisms involved which may explain

[78] Dennett Daniel (1990) “Memes and the Exploitation of Imagination”, from; *The Journal of Aesthetics and Art Criticism* Vol 48 : 2, p.128. (This view is also echoed in Susan Blackmore’s writing, for she believes that there is no sense in which ‘I’ guide the creative process. Creativity is just a consequence of evolution).

how creativity is possible.[79] Dennett characterises the Law of Effect as that principle that behaviour that is reinforced is repeated due to the effect of a positive stimulus that acts to encourage such behaviour. Dennett's claim is that psychology needs to provide a non-question-begging account of intelligence. In other words, Dennett's view of the type of explanation of intelligence that is required from psychology suggests that it must not explain intelligence in terms of itself,

> for instance, by assigning responsibility for the existence of intelligence in creatures to the munificence of an intelligent Creator by putting clever homunculi at the control panels of the nervous system.[80]

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Rather than concentrating on all of the theoretical problems that the Law of Effect has had in its various guises, Dennett prefers to concentrate on the things that he sees are right about it. He believes that there is a close relationship between Darwinian natural selection and the Law of Effect. His claim is that a non-question-begging account of behaviour that is mechanistic and physicalistic is achieved when these two notions are combined. On this account these two principles are designed to work together. The explanation of intelligent behaviour demonstrates that the Law of Effect and natural selection are in a close relationship which goes beyond mere analogy. Dennett suggests that natural selection alone can provide an explanation of "instinctual" or tropistic behaviour that has a sort of intelligence of its own. He asks us to consider the impressive design of a spider's web or

[79] Dennett Daniel (1997) ”Why the Law of Effect Won’t Go Away” from *Brainstorms,* London: Penguin Books, p. 71-90.

[80] Ibid p. 73.

the wings of a bird and how "innate" dispositions explain why they are able to weave such webs or fly, respectively. In this example the tropistic behaviour of such creatures in their appropriate environmental niches, confer survival advantages over creatures that do not possess such innate behaviour. Furthermore, tropistic behaviour alone will not provide the answer to the "needs-versus-environment problem", for Dennett imagines the possibility of a creature evolving whose input-output relation was more flexible which gave it a survival advantage over other creatures that are less flexibly wired up. The question that he asks is: How are the results of more plasticity or flexibility to be interpreted, such that the advantageous ones are preserved and the bad ones rejected?

The problem of selection reappears and points to its own solution. Let some class of event inside the organism become genetically endowed with the capacity to increase the likelihood of the reoccurence of behaviour-controlling events upon which they act. Call them reinforcers. Some mutations, we can then speculate, appear with inappropriate reinforcers, others with neutral reinforcers, and the lucky few with appropriate reinforcers. Those lucky few survive, of course, and their progeny are endowed genetically with the capacity to learn, where learning is understood to be nothing more than a change in stimulus-response probability relations.[81]

Here, Dennett begins to explain how the combination of the Law of Effect and natural selection would be played out in evolution. The Law of Effect comes from Skinnerian operant conditioning by establishing certain behaviour through a process based on past behaviour and stimulation. Dennett names the creatures that are susceptible to operant conditioning, and whose behaviour could be explained by the Law of Effect, as "Skinnerian

[81] Dennett Daniel (1997) “Why the Law of Effect Won’t Go Away” from *Brainstorms,* London: Penguin Books, p. 75-76.

creatures". However, by this account, not all creatures, including humans and some mammals, fit so neatly under the explanatory umbrella of Skinnerian creatures since this group of creatures are to some extent able to purposively select a certain course of action that is adaptive without the need of operant conditioning.

Internal Environment

In order to provide an explanation of this behaviour Dennett proposes that creatures possess an internal and external environment. On this account, the external environment is fairly straightforwardly the environment that creatures live in but the inner environment is somewhat more complicated. The "inner environment" that creatures carry around with them is meant to be conceived in general as "an input-output box for providing feedback" to the brain. According to this view we could hypothesize that a Skinnerian creature develops an inner environment as a consequence of certain mutations and that the sorts of inner environments that result could usher in behaviour that is environmentally inappropriate, neutral or advantageous to the creature. In the case of inner environments that are advantageous to the creature, its survival chances increase because it is able to learn faster and in a safer way to just overt trial and error. It is explained that this advantage is conferred because the inner something that selects happens to "reinforce the most adaptive potential behaviour controls." According to Dennett, the inner environment does not have to be thought of as hard-wired and that it could have initially evolved as a consequence of operant conditioning. Although his notion of an 'inner environment' does not beg the question by making an empty appeal to intelligence, there is still much to

explain in terms of the kind of design that would be necessary for a brain with an adaptive inner environment. What are the right kind of features for brain design that would ensure that they are selected so as to produce a marked improvement in performance? As was mentioned in the previous chapter, Dennett believes that learning can be thought of as "self-design" that involves participation in the process of self-design. This participation is known in the field of AI as the “generate-and-test idea” where different possibilities or alternatives are tested against a plethora of restrictions. The concept of generate-and-test is claimed to be analogous to the processes of natural selection. Furthermore, Dennett argues that there is no other coherent way of thinking about this process of self-design outside notions which are linked back to evolution by natural selection. This process of self-design can only be defined by its product, which is a new design. Here Dennett denies any intentional involvement of the subject in the process of ‘self-design’ and hence no intentional involvement in his notion of creativity. He questions just where this new design comes from, whether it is underdetermined is relative to old designs or whether the new design is determined by the old design. Let us suppose that a “new design is *underdetermined* by the old design”. This is a feature shared with the one remaining possibility: that the information comes from both inside and outside.”[82] Dennett suggests that this former case is an example of learning which is "genuine" as opposed to mere tropistic conditioned learning. However this is not enough to guarantee that the new design is an improvement upon the old design. It is important for Dennett that the old design must be able to select those fortuitous designs that have the best design features and reject those that don't. The old designs have the capacity for such discriminations because the information is already available. "Learning must tread the fine line between the idiocy of

[82] Ibid, p. 85.

pre-programmed tropism on the one hand and an over plastic domination by fortuitous impingements on the other."[83] In other words, every case of genuine learning must solicit the principle of generate-and-test.

In his work in the area of AI Dennett seems to owe much to Herbert Simon who authored *The Sciences of The Artificial*. Simon argues out that since information from the environment will always lead back to the process of selectivity it is important to continually question what type of selectivity the generator is endowed with; "is it learned or innate?" With reference to Simon, Dennett points out that regardless of whether selectivity is learned or innate, that is of some type of learning or natural selection respectively, there will always be some kind of process of generate-and-test. To this end, he asserts that invention is just another special kind of learning. Furthermore he suggests that neither introspection nor any other kind of simple inspection will be able to provide an answer as to whether a given stroke of genius is "genuine" or not. That is, genuine in the sense that it has only just, this instant, occurred as opposed to being the consequence of longer processes that are, in Dennett's non-intentional language, "now playing out their effects". However there seems to be something quite mysterious about this claim of Dennett's. Since Dennett's mechanistic view of the processes that occur leading up to the moment of invention are accounted for by generate-and-test mechanisms, why should it be any different with a 'genuine' moment of genius? The distinction that he makes between the two sorts of genius or flashes of inspiration doesn't seem to be in keeping with his overall mechanistic explanation of invention and learning. Dennett has left the moment of genius,

[83]Dennett Daniel (1997) "Why the Law of Effect Won't Go Away" from *Brainstorms,* London: Penguin Books, p. 85.

which he counts as genuine, ungrounded when there doesn't seem to be a good reason why it should be, if one is to be consistent in understanding his overall view.

Nevertheless, to illustrate his point Dennett ponders the example of Einstein.

> Did Einstein's genetic endowment guarantee his creativity, or did his genetic endowment together with his nurture, his stimulus history, guarantee his creativity or did he genuinely create (during his own thought processes), his great insights? I hope it is now clear how little hinges on knowing the answer to this question.[84]

Here is a clear indication from Dennett that there is no role for a "creative self" in his explanation of creativity. The inclusion of such a notion is redundant since he believes that this physicalist and mechanistic explanation suffices to explain creativity. Furthermore there is a sense in which arbitrariness and randomness have a part to play in explaining extremely creative individuals. For Dennett accepts a view put forward by the poet Paul Valery, that in order to invent anything there needs to be a collaboration of two different modes, as it were. On the one hand there is the "critical eye" that chooses and on the other is the fecund or spontaneous imagination. This way of viewing creative processes is really just an extension of the generate-and-test idea that Dennett believes is fundamentally "passive" in the sense that it does not depend upon a creative self. It is important to note that if the role of the critical eye or the tester becomes foremost in importance then creativity would seem to depend upon luck. Also, if fecund imagination or the generator becomes dominant then we would be identifying ourselves with what Dennett describes as

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[84] Ibid p. 86.

"an automaton, an ultimately absurd, blind trier of all possibilities". However, he does not seem perturbed about the idea that there is no agent that controls the creative output, as he is trying to find a non-question-begging solution to intelligence which he inelegantly lumps together with creativity and invention.

Intentionality

Thus far there has been no acknowledgment of the role that Dennett's notion of intentionality has to play in an understanding of creativity. There is a need to explain intentionality in our understanding of creativity since, as we found in chapter one, a non-teleological approach to memes will not suffice to explain how they are deliberately used by people for creative purposes. The objective now is to firstly explain Dennett's view of intentionality as viewed from the 'intentional stance'. Following this, I will show how this intentional level account, which is often maligned as irrelevant to the notion of the *blind* watchmaker in evolution, is particularly germane to the issue of creativity.

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Daniel Dennett's account of intentionality is pragmatic and instrumental in nature. That is to say this account is pragmatic to the extent that underlying his views is the belief that if the theory has explanatory or predictive powers then we are justified in holding this view. The extent to which his account of intentionality is instrumental can be seen in the way that instrumentalism is tied to pragmatism in that it views scientific theory as an instrument for predicting events. The pragmatic nature of his intentional stance is in the ascription of beliefs and desires to a system as a means of explaining, and reliably predicting behaviour from observables to observables, as it were. The ascription of these beliefs and desires from the intentional stance is a strategy that is deemed useful and

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reliable. This intentional strategy relies upon the folk psychological notions of belief and desire. Dennett persuades us that reliance upon such psychological categories is a worthwhile strategy to adopt since it works most of the time, often without us even noticing. A further claim that he makes in relation to the predicting and explaining of behaviour from the intentional stance is that talk about belief and desires is confined by and corresponds to "real patterns" of behaviour in the world.

In the following I will unpack the various positions that make up Dennett's overall project. To begin with, one of the underlying claims that Dennett has for his theory of intentionality is that it must be a way of bridging the gap between the physical and the mental by looking at intensional and extentional descriptions. Furthermore, there should be a way of describing mental phenomena that is a combination of the two. A 'system' in this theory is anyone who exhibits intentional mental phenomena. Dennett claims: "I will call such systems intentional systems and such explanations and predictions intentional explanations and predictions in virtue of the intentionality of the idioms of belief, desire (and hope, fear, intention, hunch. . .)."[85]

The point that's being made is very important to Dennett's overall project; that given the occurrence of these idioms, a system can be called an intentional system if attributing these idioms of belief, desire allows us to predict and explain its behaviour. Hence the 'intentional stance' is the point of view that one adopts to help explain and predict a system's behaviour. Belief, desire, hope, fear and so on are pragmatically assumed of the system because the intentional stance seems to work well when such assumptions are made of such a system.

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[85] Dennett Daniel (1971) "Intentional Systems", in *The Journal of Philosophy*, Vol LXVII, No.4, p. 87.

Dennett has put a lot of faith in folk-psychological theory, for he believes that there is no better alternative theory. The intentional stance assumes rationality and a lack of malfunction in order for it to be an effective method. The intentional stance is a way of predicting behaviour that is so commonly used that it is rarely even acknowledged. For instance, although stereotyping can be unwarranted and typically conventional it is nonetheless a convenience that is often used to identify certain people in certain contexts. People typically tend to stereotype other people and in doing so they ascribe beliefs and desires to such people. We often ascribe beliefs to people who only have a passing to regard for their appearance as being "hippies" or students who are not that affluent, when they may have other ideological or practical reasons for their sloppy attire. The way in which we use the intentional stance can also be seen in the way we respond to books and films. Given the character development in a book or film, we come to expect certain characters to behave in certain ways that are appropriate to those particular characters. Some of the best films are ones which play with our expectations (ie the beliefs that we ascribe) of the characters and their ultimate fate. For instance, the Star Wars films by George Lucas have plots that include other sub-plots. Consider for instance the father and son subplot in *Return of the Jedi* (1983) where at the end of the film Luke Skywalker discovers that the evil Darth Vader who he had been fighting was actually his father all along. These other sub-plots end up surprising people because of the assumptions they make in ascribing beliefs and desires to certain characters in an attempt to predict their behaviour. The way that such a sub-plot surprises us provides us with an insight into how commonplace the use of the intentional stance is from a folk psychological perspective. We

also tend to assume that people are generally rational and will act in a rational manner according to their beliefs and desires.

Of the two remaining stances, the physical stance is the only stance from which to make predictions about the malfunction of systems and is worked out by using the knowledge we have of the laws of nature. Hence, we can predict that if there is smoke coming from an electrical device then it is unlikely to work effectively.

With regard to the design stance, Dennett asserts that:

> the essential feature of the design stance is that we make predictions solely from knowledge or assumptions about the system's functional design, irrespective of the physical constitution of the innards of the particular object.[86]

The design stance is often taken for granted, for instance we generally don't need to know the internal design of a television or a computer to know that if we press the "on" button the device will work. We seem to regularly make these predictions with reasonably good success. It would seem that the design stance can work on different levels. The design stance works for the technician who needs to know how an object functions and how each component of an object functions and so on to more levels of abstraction so that s/he can make predictions of an object's behaviour. In *Darwin's Dangerous Idea* his discussion of

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[86] Ibid p. 88.

"reverse engineering" sheds light on how the intentional and design stances are related.[87] In reverse engineering engineers take apart devices in order to find a way of making a superior model to the one that's taken apart. Reverse engineering is often used commercially to put a better product on the market. For Dennett's purposes, the example of reverse engineering shows that design and intention have a part to play in the construction of a given device.

> Sometimes engineers put stupid, pointless things in their designs. . .Still, optimality must be the default assumption; if reverse engineers can't assume that there is a good rationale for the features they observe, they can't even begin their analysis.[88]

The design stance has the precondition of optimal design predictions about a machine that is vulnerable to lapses in the program's design, short-circuits and other such design hiccups. However as Dennett points out, the overall success of the stance is a measure of the programs design.

The intentional stance has as one of its conditions that a system must be rational and entirely resistant to malfunction. The problem is that not all systems, including ourselves, are perfectly rational and resistant to malfunction. We often idealise our notions of belief and desire which we then use to predict or explain behaviour but can sometimes be misleading and result in us having to draw back from them. Such imperfections can be seen when somebody has the belief that they have their house keys with them only to find that due to forgetfulness, the keys were actually left on the kitchen table and not in their purse

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[87] Dennett Daniel (1995) *Darwin's Dangerous Idea*, London: The Penguin Group, p. 212-213, 246-250.

[88] Dennett Daniel (1995) *Darwin's Dangerous Idea*, London: The Penguin Group, p. 212-213.

where they believed that they were. This person would have seen the keys lying on the kitchen bench yet their forgetfulness prevented including that bit of information when they formed the belief that they had the keys in their purse. However, Dennett claims that even though there are many things that we are ignorant of even when we've been exposed to them, one rule for the intentional strategy is: "attribute as beliefs all the truths relevant to the system's interests (or desires) that the system's experience has to date made available."[89] This claim is also a part of Dennett's belief that we should attribute to a system the beliefs it should have given its situation, which he discusses in relation to his view on evolution.

In "Intentional Systems" Dennett uses the example of the chess playing computer, where the complexity of design has become too inaccessible, in practice, for even the designers of the system to make predictions based on its design.[90] In this situation the best way to try to predict the computer's next move in a game of chess is to ascribe to it the rationality of a human opponent. That is, ascribe to it beliefs and desires that one would think it should have in a given situation so as to best predict what move[s] it should make. Indeed, if you don't like chess, there are many other computer games that require you to assume certain beliefs and desires of your digitally generated foe. For instance, if the main antagonists are carrying guns you can be reasonably certain in your prediction that they will use them against you in the right circumstances. Furthermore, it is obviously more pragmatic to use the intentional stance given the short amount of time available to respond than to try to understand each move from the design stance.

At this point the objection may be raised that ascribing beliefs and desires to a computer presupposes that we believe it to really possess a human mentality much like our

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[89] Dennett Daniel 'True Believer: The Intentional Strategy and Why it Works' from Rosenthal. D (1991) *The Nature of Mind*, New York: Oxford University Press, p. 346.
[90] Dennett Daniel (1971) "Intentional Systems", in *The Journal of Philosophy*, Vol LXVII, No.4, p. 87-106.

own. The response that Dennett would have to this objection is both pragmatic and instrumentalist in character. Dennett argues that to question whether a chess playing computer 'really' has beliefs and desires is beside the point.

> The definition of intentional systems I have given does not say that intentional systems really have beliefs and desires, but that one can explain and predict their behaviour by ascribing beliefs and desires to them.[91]

The move to adopt the intentional strategy is a pragmatic one, it should not be seen as intrinsically true or false. However, Dennett asserts that when someone adopts the intentional stance towards the computer that it is necessarily the same attitude that we have towards something that we believe to be a conscious, rational agent. The intentional stance is a convenient strategy to adopt when a physical system is too complex for explanations that are based on its design or physical features to suffice. By treating the chess playing computer, or any other type of electronic game, as if it were rational we may have a better chance of checkmating or out-foxing the program than without it.

Are we, nonetheless, just anthropomorphising objects, or in this case digitally generated opponents, by ascribing our beliefs and desires to them? Dennett acknowledges this concern about unjustly attributing human categories to non-human things, but says that it is "conceptually innocent anthropomorphising". It is innocent because the main attributes that are ascribed to non-human objects such as computer games are the categories of

[91] Dennett Daniel (1969) "The Ontological Problem of Mind" from *Content and Consciousness*, London: Routledge and Kegan Paul, p. 8.

rationality, perception and action. Dennett's reasoning here is used to justify his pragmatic / instrumentalist stance.

Dennett's claim is that the intentional strategy works and that we use it with a great deal of success. So why does the Intentional Strategy work? Dennett suggests that the success of the intentional strategy is linked to how well human beings are designed by evolution. He also believes that humans are designed to be rational "which means that they believe what they *ought* to believe and want what they *ought* to want"[92] (*my italics*). The sense in which *ought* is meant seems to be that humans believe and desire what is best for them in any given situation, which suggests that self-interest is our main motivation. If evolution designed humans to be rational then, how does this well designed rational package that Nature has produced actually work? There seems to be no clear answer to this question despite numerous attempts at it. In spite of this Dennett believes that even if we were to come across alien beings so unimaginably unlike ourselves we would still be able to use the intentional strategy. The account of evolution should lead us to reason that natural selection is taking place and that the population is selected in virtue of how well designed they are. So, if aliens really had landed at Roswell in the 1950's we would have been able to understand their behaviour by ascribing beliefs and desires and relying upon natural selection to have endowed them with rationality. Dennett believes that such a selected population would have responded well to their environment such that the propagation of the species could have occurred. Once this information has been ascertained the needs for survival or continuation of the species can also be ascertained. Hence as soon as we have "ascribed beliefs and desires, however, one can at once set about predicting

[92] Dennett Daniel 'True Believer: The Intentional Strategy and Why it Works' from Rosenthal .D(1991) *The Nature of Mind*, New York: Oxford University Press, p. 342.

behaviour on their basis, and if evolution has done its job - as it must over the long run - our predictions will be reliable enough to be useful."[93] Such predictions will be reliable because, according to the role that natural selection has to play in the intentional stance, the process of evolution is rational.

Homuncular Functionalism

In *Consciousness Explained* Dennett describes a possible functional model of the brain that Lycan calls "Homuncular Functionalism".[94] This model consists of a system that is divided into separate functional parts that break down into even smaller parts and so on down to reveal "stupid homunculi" that exist solely to perform certain individual tasks. Dennett explains that we must not be confused by the traditional notion of homunculi as little men running around one's mind performing certain tasks. This was a view that in the past manifested certain philosophical problems because people assumed that such homunculi must have a self-reflective consciousness. The consequence of this would be an infinite regress, for if homunculi have a self-reflective consciousness then this would mean that there would need to be homunculi inside the head of the homunculi, in the same way that humans have homunculi inside their heads and so on.. However, Dennett argues that this need not be the case, for we can eventually replace these homunculi with functional components that have certain duties to perform and which do not need to be 'conscious', as we understand it, in order to perform such tasks. Accordingly:

[93] Dennett Daniel (1969) *Content and Consciousness*, London: Routledge and Kegan Paul, p. 93.
[94] Dennett Daniel (1991) *Consciousness Explained,* Middlesex: The Penguin Group, p. 253-282, 459-460.

> positing a gang of homunculi would indeed be just as empty a gesture as the sceptic imagines, if it were not for the fact that in homunculus theories, the serious content is in the claim about how the posited homunculi interact, develop, form hierarchies and so forth[95].

Thus, he develops a humuncular functionalist theory that attempts to address this very concern.

By way of contrast, Fodor has a belief in a "central facility" which helps to co-ordinate the actions of the homunculi. Dennett describes how in *The Modularity of Mind* [96] Fodor distinguishes modular from non-modular activity in the mind and claims that all of the higher cognitive capacities of the mind are non-modular. The modular capacities are fixed, the tasks are defined and limited and are not directly responsible for belief-formation or thinking. Dennett claims that positing such a large amount of work for this mysterious central facility to do tends to suggest a "crypto-Cartesian" view of the mind. All of the thoughtful and creative content, according to Fodor, is left to the central facility, while the rest of his modules perform more straight - forward "mindless" tasks. This dichotomy of the mysterious, unexplained central facility along with the mindless, mechanical nature of his modules is the source of the crypto-Cartesian claim. The main point behind Dennett's endorsement of the homuncular functional model is that the term 'homunculi' is no more loaded with meaning than using the term 'units' or 'modules', to designate the role of homunculi in these theories. By reinventing a use for the concept of homunculi operating in our brains, he cleverly makes 'the problem of the infinite regress' into a solution. For, the

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[95] Ibid p. 261.
[96] Fodor Jerry (1983) *The Modularity of Mind*, Cambridge: A Bradford Book.

further down the line of homunculi one goes the greater the depth of explanation of the functional design of a system. The result being a greater understanding of the system's behaviour, through the use of the intentional strategy in predicting behaviour on the basis of the optimal, rational design of the system. However, there is more to explaining his position on homuncular functionalism that has yet to be addressed such as the ontological status of homunculi.

In “True Believers: The Intentional Strategy and Why It Works” Dennett uses the example of the 'superior' Martians who can calculate a person's movements in a thoroughly physical way as opposed to the way humans tend to make predictions using the intentional stance.[97] He believes that to fail to use the intentional stance may lead to missing certain "objective patterns" that can elude to the physical stance that the Martian uses. He is a realist in terms of belief, in as far as there are real patterns in the world which, when considered, we can attribute to people in accord with their beliefs. These objective patterns are patterns of human behaviour that contribute toward making predictions of such behaviour viewed from the intentional stance. The instrumentalism of the intentional stance allows us as observers of these objective patterns of behaviour to make predictions in regard to further behaviour. It provides us with a calculus, in effect. These calculations work as a convenient vehicle that allows a pragmatic attribution of belief and desire.

[97] Dennett Daniel 'True Believer: The Intentional Strategy and Why it Works' from Rosenthal. D (1991) *The Nature of Mind*, New York: Oxford University Press, p. 339 – 350.

The "Kafkaesque Bureaucracy"

Another theory of how to explain why the intentional strategy works, is in terms of belief and desire as internally represented states governing behaviour. That is, for every belief that is predictive and attributable to a system, say, there is an internal functional state of machinery. On one version of this view, a belief is a physical state in someone's brain at time t that has a neurophysiological description as well as a functional description that is related to the brain's program. In the latter part of 'True Believers: The Intentional Strategy and Why It Works' Dennett remarks that on this view whatever beliefs or desires (hopes, ambitions, fears) we attribute to a rational being will have a structural form in the brain or in what we might call its hardware.[98] Such states will mirror the logical form of the propositions that we attribute to rational beings. This view, which Dennett describes but doesn't endorse, is known as a "language of thought" that is encoded in our brains, and the hope is that one day our brains will be understood by unravelling this coded system. This coded system can be thought of as manipulating symbols in the brain much as computers do.

Dennett characterises his version of realism as "mild realism" as he does not believe that beliefs as such are a salient feature of the brain. This view is opposed to Fodor who has a computational view of beliefs where they are stored in the brain much like a computer stores its programmes. Dennett is very much against that sort of realism. He argues against the notion that there is some kind of "Oval Office in the brain housing a Highest Authority

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[98] Dennett Daniel 'True Believer: The Intentional Strategy and Why it Works' from Rosenthal .D (1991)*The Nature of Mind*, New York: Oxford University Press, pp. 339 – 350.

to whom all decision can be appealed".[99] His tongue-in-cheek remark relates to Fodor's notion of there being a "central facility" which controls all of the higher cognitive processing, as was mentioned earlier.

So why is all this important for an understanding of Dennett's account of intentionality? Instead of the idea of there being an 'Oval Office' in the brain he claims that it is rather more like a "Kafkaesque bureaucracy of homunculi". Here, he is referring to his belief in 'teleofunctionalism' which is the view that beliefs and desires can be explained by dividing an intentional system into functional parts which decompose into yet smaller functional components. These functional components can be continually broken down until we reach "stupid homunculi" who operate on a simple level of something like an on/off switch mechanism. Dennett imagines such a functional design to be somewhat like the tasks that different neurons perform so as to enable one to use their sight or other senses. He states that he is perhaps the 'first teleofunctionalist'. The difference between his teleofunctionalist view and your average functionalist is that "I [Dennett] don't make the mistake of trying to define all salient mental differences in terms of biological functions."[100] Following Lycan's notion of homuncular functionalism we may wonder whether the homunculi that make up Dennett's model really "exist" and if so in what sense? If the model of homuncular functionalism is just a colourful way of explaining the pattern of mental activity, then he would appear to be an instrumentalist about homunculi; in which case the homunculi that make up his model are just a heuristic device. On the other hand, if Dennett is a realist about homunculi then they must "exist" physically. This is an issue which will be discussed later on in this chapter.

[99] Dennett Daniel (1991) *Consciousness Explained,* Middlesex: The Penguin Group, p. 429.
[100] Dennett Daniel (1991) *Consciousness Explained,* Middlesex: The Penguin Group, p. 460.

As the main outline of Dennett's "intentional stance" has been explained it is now time to return to memes, the generate-and-test hypothesis and schema theory. In the following I will attempt to provide an explanation for how these issues are all importantly related to each other so as to provide a general basis for a theory of creativity.

Memes in Detail

Although much has been said about memes from the combined perspective of both Dennett and Dawkins, there is still some lingering doubt about whether the account that they give suffices to answer the question "What is a meme?". The objection is not so much that we don't have any idea about how to conceive of memes as much as it is that more could be explained to enable a better understanding. We also need to consider what the ontological status of memes. Are they "real" entities that exist inside my head or are they just a convenient heuristic device? One way to come to an understanding is through a functional account of the behaviour of memes. What are the ways in which memes function within a meme-pool and what might this explain about creativity? Perhaps we could imagine that there are structures, within the 'generator' that Dennett alludes to, which perform certain tasks that help explain how memes interact with each other and in the process explain how creativity results.

How does a given meme manage to persist? Dawkins suggests that it is partly due to how the phemotypes contribute to the meme's overall survival.

> A meme that made its bodies run over cliffs would have a fate like that of a gene for making its bodies run over cliffs. It would tend

> to be eliminated from the meme-pool. . . so there are many other ways in which memes may work phenotypically for their own preservation.[101]

While it is true that phemotypes such as musical tunes will be successful if they are catchy enough and hence more likely to be copied we also need to acknowledge that this doesn't happen in a vacuum. Memes exist in a social and biological environment and the success of a given meme will also depend upon the memes inside the meme-pool. In the background of Nazi Germany there were certain memes that were definitely more advantageous to believe in than others. A belief in Judaism, for example, would have put one at an acute disadvantage against such a hostile meme-pool as Nazism. Depending upon what the social milieu is there are always memes which are going to 'fit' into the meme-pool and thus become replicated and others which will be disregarded because they don't fit into the cultural context of the time.

Memes and Homuncular Functionalism

Dennett also largely follows Dawkins in the manner in which he conceptualizes memes, except that on Dennett's naturalist approach there is no mere analogy between memes and genes, but rather for him they fit perfectly. Dennett sees memes as vehicles of information that are spread around the world and shares Dawkins' view that memes are parasites that 'infect' our brain. Furthermore, Dennett points to Dawkins' statement that a cultural trait can evolve in a certain way because "it is advantageous to itself", as being an important indicator as to what the survival chances of the meme are. We tend to have on average a

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[101] Ibid p. 110.

strong tendency to choose those memes that are going to help rather than hinder us. This is by no means an exact science, but in general Dennett sees it as the best explanation: "the good memes are the ones that are also good replicators". As with genes, Dennett believes that the best way to ensure the immortality of memes is through the replication of information-carrying vehicles, more so than the longevity of such vehicles. It would be fair then to say that those memes that have a strong rate of replication are the ones that we have the highest esteem for as well as the ones that are going to benefit us in some way. However, this is not to say that there aren't equally successful memes that replicate well in spite of our loathing of them such as racism, homophobia and a particular computer virus to name just a few.

Another way of looking at memes is from a functional perspective. Through Homuncular Functionalism, Dennett can help to provide a possible way of thinking through how such a fertile meme-nest as the mind may be structured. As has been shown earlier, Homuncular Functionalism refers to a way of conceptualizing the functional organization of the brain that is made up of many layers of 'homunculi' or units that perform basic tasks. Dennett leaves the question as to whether these homunculi are real or just a heuristic device quite open to interpretation. However, suppose we do want to suggest that memes are mechanistic in the sense that they form a matrix of data structures in the brain. Dennett describes memes as "micro-habits of thought that developed in the individual, partly idiosyncratic results of self-exploration and partly the predestined gifts of culture"[102]. Perhaps one way of figuring how memes operate is to view them as consisting of

[102] Ibid p. 263.

homunculi that make up a database where each possess a particular mental content which make up a habit of mind like on-off switches and so on to more complex content.

If we imagine it this way then we could use the analogy of a circuit board that has many small components as well as larger ones that have the net effect of producing a special effect such as opening a file in a computer program. This notion of memes as being "micro-habits of thought" is also especially interesting when we factor in the notion of skill and the way Gombrich also views skill as the combination of idiosyncratic preferences that culture has endowed us with. Nonetheless this is an area of thought that is best left for Chapters Three and Four.

Generate-and-test

Dennett also makes a distinction between what he calls Darwinian creatures, Skinnerian creatures, Popperian creatures and Gregorian creatures. Darwinian creatures are the creatures that are blindly generated by an arbitrary process of mutating genes. Skinnerian creatures are a subset of these Darwinian creatures that were fortunate enough to be endowed with a reinforcing mechanism that had a tendency to select the 'Smart Moves'. Confronted with a variety of options from the environment these creatures are able to test each possibility until they find the best option. According to Dennett these creatures had 'conditionable pasticity' "since, as B.F. Skinner was fond of pointing out, operant conditioning is not just analogous to Darwinian natural selection, it is continuous with it"[103]. Popperian creatures are an improvement upon the merely Skinnerian creatures as they have a 'better-than-chance' likelihood of making foresightful first moves. The

[103] Dennett Daniel (1995) *Darwin's Dangerous Idea*, London: The Penguin Group, p. 374.

Popperian creature has the ability to preview any of its possible future acts due to its inner selective environment. Dennett believes that humans have this capacity along with a number of other species. At this point Dennett points out that due to the way the inner environment has already been designed, constraints are likely to be encountered with regard to options for the improvement of design features. The only possible way to account for new designs from the external environment is for the old hard wiring to be submerged "under a new layer of pre-emptive control". Aside from the complex and cunning acts that we impose upon the world that have been composed from a myriad of possibilities we also share with many of the higher animals the ability to imitate actions. These actions are passed down from our ancestors and through society over generations to become 'traditions' through this process of imitation. Perhaps the memes of organized religion are an instance of the imitation of actions through the generations that has led to the various traditions within the organized religions of the world. The ability to preview future courses of action, as well as the ability to imitate, seems to reside in basic structures within the generator of humans and, theoretically, in the generators of other higher animals as well. There is, of course, more that needs to be said about the subtleties of the human brain that extend beyond the notion of the Popperian creature. The final creature that Dennett mentions is called the 'Gregorian creature'. Gregorian creatures have inner environments that are influenced by the 'designed portions' of the outer environment. The example that he gives is of a pair of scissors and the way that it is not just a result of intelligence but also an endower of intelligence. The example could also be extended to any other tool that confers intelligence to the user so as to bring them to a good trick or 'Smart Move'. This example of

> tool use is a two-way sign of intelligence; not only does it *require* intelligence to recognize and maintain a tool (let alone fabricate one), but tool use *confers* intelligence on those who are lucky enough to be given a tool[104].

This conference of intelligence is known as 'Potential Intelligence'. Gregorian creatures are so named after Richard Gregory who was a theorist in the area of intelligence and according to Gregory one of the pre-eminent mind-tools that we have are words. Words equip the Gregorian creature with the ability to create 'move-generators and move-testers' that are much more subtle in nature. Such creatures are better able to think about the way they think about their thought processes and other such internal reflections. Dennett believes that when words first became a part of our internal environment it already had a landscape of considerable *complexity*, it was by no means a *tabula rasa*. As an example of this he suggests that by the time that words such as 'giving' and 'taking', 'owning', 'hiding' and 'keeping' are introduced into the child's vocabulary there are already homes at least partly constructed for them. The reasoning behind this is that it has been suggested that there are genetically imposed mind-tools which pertain to certain abstract notions as *ownership* and *being alive.* The acquisition of words and language provides us with a wealth of mind-tools that help to provide a structure in the use of generate-and-test known also as science. Dennett even argues that the use of generate-and-test in science separates our brains from our nearest animal relatives.

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[104] Ibid p. 377-78.

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However there is also a need to acknowledge and explain how the brain accommodates to and learns from the external environment which consists of other memes that constantly impinge upon the brain. In the generate-and -test model we saw that there is a process of "self design" that occurs in learning. Dennett believes that there is a interplay between 'old designs', or predetermined information, and the environment which can bring about a 'new design'. "That is, it takes *information* to distinguish the new design from all other designs, and that information must come from somewhere - either all from outside the system, or all from inside, or a bit of both"[105]. He goes on to explain that in order for new designs to result in genuine learning as opposed to the simply tropistic kind the old designs must be able to reject random contributions on the basis of poor design features. Without this capacity for selection as a capability of the old design there would be no way to guard against random impingements from the external environment. This is an essential feature of the generator and there is a correlation between this explanation of new designs and that of memes that reside in it, because we have a tendency to select the memes which are most advantageous to our survival. Dennett describes us as possessing a "meme-immunological system" which, while not perfect, will tend to ensure that memes such as the meme for suicide or other such self-destructive memes are not adopted. As Herb Simon points out, the generator needs to possess a high degree of selectivity as "selectivity can always be equated with some kind of feedback of information from the environment"[106]. This is the 'critical-eye' that Dennett believes is as important to the generate-and-test process as the producers within the generator itself. He describes this generate-and-test process as one that we are introspectively familiar with already and that the generators and testers which we

[105] Dennett Daniel (1997)'Why The Law Of Effect Won't Go Away' from *Brainstorms*, London: The Penguin Group, p. 84.
[106] Ibid p. 86.

recognize possess highly sophisticated, intelligent homunculi. "There appears to be a trade-off here between, roughly, spontaneity or fertility of imagination on the one hand, and a critical eye on the other."[107] He sees invention as requiring a combination of the generators and testers.

At the beginning of this chapter it was asserted that conceptualising human brains as "passive" in response to parasitic, viral invaders of the brain would tend to situate our relationship to memes as being much like Skinnerian behaviourism whereby we innocently absorb input from the environment. If this is not the case then there is a sense in which there is a two-way relationship between the human mind and memes. This is another reason to include schema theory as a means by which to understand the back ground learning and influences that we bring to memes when we encounter them. Memes need to be seen as mediated by schemas in the same way that genetic evolution is subject to the laws of nature and is made intelligible by the structure behind the DNA code.

In Chapters Three and Four I will go into much greater detail about why memes and schemas are so important to each other and also the role that the generator plays in this theoretical explanation. There is indeed much more that needs to be explained about memes and schemas and the generator.

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[107] Dennett Daniel (1997) 'Why The Law Of Effect Won't Go Away' from *Brainstorms*, London: The Penguin Group, p. 87.

Chapter Three ***MULTIPLE NOTIONS OF NOVELTY***

The main purpose of the following chapter is to establish why a multi-levelled theoretical view of novelty is needed that goes beyond the mantra of Darwinian evolution as espoused by Dawkins, yet is able to incorporate it at the same time. Ideas on how to view creativity will be presented that ultimately can be seen as features of the "generator" in Dennett's explanation of generate-and-test, originally inspired by Herbert Simon. Furthermore there will also be an investigation into how to understand intention and design as they relate to a cognitive and philosophic account of creativity. The chapter begins, under the title 'Delineation and Novelty' with the argument that Darwinian evolution on its own is not a sufficient argument to explain creativity. It then proceeds under the title 'Biology and Novelty' to explain other means that are necessary along with evolution, such as Gombrich's schema theory, to give an account of novelty.

DELINEATION AND NOVELTY

Bisociation and Association

In "The Three Domains of Creativity", Arthur Koestler discusses the terms 'association' and 'bisociation'. For Koestler, association and bisociation are described as different modes of thinking, the former being more pedestrian and the latter seemimg to have more potential for creativity and being less methodical. As far as associative thinking is concerned, Koestler believes that it doesn't make sense to try to understand associative

thinking in the vacuum of a psychological laboratory. For we need to be a part of the different contexts of normal life in order to appreciate how the various rules that are involved in orderly thinking work. Koestler claims that these rules, which govern our thinking, work on an unconscious level which helps explain how our use of language works. His claim is that "when talking, the laws of grammar and syntax function below the level of awareness, in the gaps between the words."[108] These "rules" are also a part of everyday uses of logic, conventions and other complicated rules that Koestler calls "frames of reference" or "universes of discourse" or "thinking in terms of this or that - of physiological explanations or ethical value judgements."[109] According to this account, thinking is very much to do with operating strategically around and with such implicit rules.

An example of these common, everyday rules could be something such as judging whether it's safe to go swimming at the beach by how many blue-bottles are on the shore. This is what associative thinking is about for Koestler, which is in contrast to his explanation of bisociation. *Bisociation* is the word that he uses to describe that imaginative combination of at least two different associative ideas. This results in a kind of fecund expression of creativity that goes beyond the more pedestrian routines of thinking. This is importantly different to associative thinking in that the outcome of bisociative thinking is a new concept or idea. The products of bisociation are not the only difference to be found from associative thinking. For the processes are also importantly different as well. Bisociation involves a collision of diverse contexts to form new ideas, whereas association requires there to be appropriate resemblances between the two contexts.

[108] Koestler Arthur (1964) 'Three Domains of Creativity' from *The Act of Creation,* London: Pan Books, p. 3.
[109] Ibid p. 3.

Nonetheless, perhaps bisociative thinking can also provide an explanation for the ability to fuse together a coalition of memes that then forms a new meaning, which in turn helps to explain how new memes are created from within Dennett's 'generator'. Bisociation and association must then be mechanisms that are at work within the generator constantly. We can also imagine there being highly intelligent homunculi that are responsible for such mechanisms. Furthermore, bisociation and association assume different roles within the generator and it is important to understand how these two roles are distinctive. Bisociation and association are distinctive in the same sense that metaphor and analogy, respectively, are distinct from each other. Analogy involves the use of associations because in our use of it what we typically do is to find some sort of respect in which one thing is sufficiently like another. Our use of analogy tends towards making comparisons between things that are already often, though not always, conventionalised notions. When we use metaphors, however, we bisociate ideas that are idiosyncratic and dissimilar in most respects, they tend to lie outside the common contexts and fields of reference by which comparisons are made in our use of analogy. While analogies should still be viewed as creative, the use of bisociation in metaphors has important implications. The employment of bisociation in metaphors would seem to provide a greater *potential* for creativity than could be achieved through the use of analogy alone. One argument for this is because to bisociate ideas that were previously unrelated to each other requires greater discernment than our use of resemblances in analogy can provide. It is also an ability to operate at different levels of meaning from that of resemblance and association. The differences in operation between analogy and metaphor are really the same differences that separate association and bisociation, respectively. Both metaphor and analogy should also be seen as necessary

functions of the generator that allow for highly intelligent homunculi to bisociate and associate ideas.

Koestler also describes three different reactions which he associates with three kinds of creative production, that of the scientist, the comic and the artist. The first one is the "Aha" reaction which describes that point when the intellectual or scientific puzzle is solved, it is when the truth is illuminated. The next reaction that Koestler describes is the "Haha" reaction, this is the comic bisociation that occurs when two otherwise unrelated contexts or frames of reference collide. Whether or not such reactions take place can often depend upon who the audience is and what attitudes they bring with them, in other words, this reaction can be context dependent. For example consider the use of bisociation when a comedian tells a joke such as: If people have mice traps then perhaps that makes Disney World a people trap operated by a mouse. Koestler's third reaction, 'Ahh!', occurs when the emotions of the audience are stirred up by the artistic expression that they experience, be it through music or fine art or some other artistic production. This reaction is a more self - transcending experience, as Koestler describes it, where we may be awestruck and overwhelmed with emotions. Once we get to the artist:

> we get a symmetrically reversed transition towards the other end of the spectrum, from the highly intellectualised art forms towards the more sensual and emotive, ending in the thought free beatitude of the mystic.[110]

Koestler describes how, as we view the three reactions, they form a continuum

[110] Koestler Arthur (1970) *The Ghost in the Machine*, London: Pan Books, p. 218.

from the domains of humour to discovery and then to the domain of the artist where the emotional atmosphere changes from the court jester to the scientist and then to the artist. The idea of "association" has been explored by many in the history of philosophy, and famously among them is David Hume who precedes Koestler by two centuries. Hume thought that there were three qualities that brought associations about which are resemblance, contiguity and cause and effect:

> I believe it will not be very necessary to prove, that these qualities produce an association among ideas, and upon the appearance of one idea naturally introduce another. 'Tis plain, that in the course of our thinking, and in the constant evolution of our ideas, our imagination runs easily from one idea to any other that *resembles* it, and that this quality alone is to the fancy a sufficient bond and association.[111]

In *A Treatise of Human Nature* Hume discusses the nature of association by introducing the three qualities of resemblance, contiguity and cause and effect. Hume seems to believe that these three notions are necessary to our understanding of why and how we arrive at our associations. Our imagination or *fancy* seems to play a large role in understanding this process as well. Associations seem to come about according to Hume because either one idea *resembles* another, because they are reinforced by *cause and effect* relations or because of the *contiguity* of things in our environment. The evolution of our ideas results in the *resemblance* of these thoughts and there is a *cause and effect* relation between these associative thoughts and the ideas that result. Nonetheless, when it comes to

[111] Hume David (1984) *A Treatise of Human Nature,* London: Penguin Classics, p. 58.

the imagination the ability to perceive how one idea *resembles* another is what is most important to our understanding of associative imagination.

Unlike Koestler, Hume did not make a distinction between the quality of bisociation and association. Rather, he saw that complex ideas were made up of simple ideas that came from the senses. It is relevant to make mention of Hume because of this latter insight into complex and simple ideas, for we can see that some memes are made up of other smaller component memes. Hume also points to imagination and memory as faculties which help to preserve ideas and impressions which is a principle that he uses to justify his claim about the *liberty of the imagination to transpose and change its ideas:*

> Nature there (in fables or poems) is totally confounded and, nothing mentioned but winged horses, fiery dragons, and monstrous giants. Nor will this liberty of the fancy appear strange, when we consider that all our ideas are copy'd from our impressions, and that there are not any two impressions which are perfectly inseparable. Not to mention that this is an evident consequence of the division of ideas into simple and complex. Where-ever the imagination perceives a difference among ideas, it can easily produce a separation.[112]

Hume views the role of memory as providing the 'original form' of an idea, the schema if you like - a view not unlike that of Bartlett who saw schema as a necessary element in the role of recall. The concept of memes however differs from Hume's view of ideas in that it gives an account from an evolutionary perspective and seeks to find an explanation that

[112] Ibid p57.

isn't so open to introspection as his account of ideas. As was noted, some memes are constructed from a complex of other smaller component memes. These smaller component memes on the Humean view are basically simple ideas which derive from impressions. Perhaps by understanding the schemas behind our use of these ideas we may come to a better understanding of them.

With regard to what notions such as "culture" and "society" refer to themselves, perhaps one means by which to understand them and the different forms that they take around the world, is to view them as products of evolution. This is not to say that they aren't historical entities but rather that memes need to be viewed as products that have a history of evolution. However, this is also not to say that association through schema theory would not be possible, for we may be able to trace the history or genealogy of an idea associatively if we admit the notion of structure or schemas as vehicles for meme. By combining the notion of structure or schema with memes we can at least find a way of understanding memes as historical entities. One example of this can be found in the history of Christianity. Christianity as we understand it today is very different from the cultural context in which it was understood 2000 years ago. There are some issues in Christianity that are in many respects a consequence of the cultural milieu of our times that weren't present even 500 years ago such as the notion of sexual orientation where you are considered either "gay" or "straight", which is a nineteenth century invention. This is a meme which, it could be argued, continues to confuse people in relation to what the Bible has to say about homosexuality. One argument is that "homosexuality" is a mistranslated term for what were understood 2000 years ago to be certain Greek pagan religious rituals and it was the pagan connotations not the sexual act itself that were objected to in the Bible.

Nevertheless, although there is still controversy over these Hebrew texts throughout its long history there has remained a kind of structure or schema that hasn't changed to do with the core beliefs of this religion such as "Love thy neighbour as thyself", the significance of the Resurrection and so forth. It is this structure that has given Christianity its cohesion over time.

Bisociation and Phenotypic Effects

As was aforementioned, memes live in meme pools and they operate with the broader available schemas in society. Memes grow and develop from this stock of other memes and the schemas of the time, context and the phenotypic effects of memes have consequences for the development of other memes. Indeed the phenotypic effects of certain memes are strong enough to last more than just one generation of such memes so as to effect the development of memes for future generations as well. An example of a meme which has pervaded the social landscape and consciousness of most of the world in recent decades is that of McDonald's restaurants and take-away franchises. While it certainly may seem like McDonald's has always been around, the idea had to start somewhere and be influenced by something or someone. The local hamburger store had preceded McDonald's but it wasn't as efficient as franchising a food outlet with much the same food to a larger customer base. From Dawkins' perspective the McDonald's meme can be described as very successful since it has a high degree of copy-fidelity and fecundity as it continues to replicate itself all over the world and has longevity since it has been replicating since 1955. However, as has been discussed, Dawkins only provides a conceptual as opposed to a causal explanation of the success of such a meme. Perhaps there was some degree of inevitability that the meme

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for franchising would develop into the restaurant industry, thus evolving the local hamburger store meme into that of a corporately run chain of identical restaurants. We can see that at some point there was some sort of bisociative process that fused the two memes together. By far the most popular and expanding restaurant for many years, the phenotypic effects of the meme for Mcdonalds is that it has helped to create a convenient, fast-food lifestyle which in turn has had an effect upon our diet, waistlines and the way we view food in general. Food has become a convenience that we snack on which has little nutritional value when bought from such a fast-food outlet. Carefully constructed media campaigns have promoted the idea of McDonalds as a "family restaurant", a restaurant that is children and parent-friendly. Furthermore, McDonalds has always aimed its product at the lower end of the restaurant industry, making its prices cheaper and accessibility greater. However it is important to distinguish between the cause of the success of the meme for "McDonalds" and the causal explanation for the success of the McDonalds restaurant chain. While no doubt they are related, the former is not a sufficient explanation for the success of the latter. This chain of restaurants has many other features that have contributed towards its success. The context surrounding dining at McDonalds is that no additional time than is required is taken in preparing a meal, it seeks to serve the customer and have them leave as soon as possible, hence the term "fast-food". These phenotypic effects also demonstrate the streamlined, corporate image that McDonalds seeks to present for itself. This example also illustrates how just one meme, that of McDonalds, can have component memes, such as 'franchise' and 'fast-food' which play a role in defining it.

A potent example of a set of memes that had a profound effect upon how we viewed the world was found when the philosophy of Aristotle was bisociated with the ideas of a

dogmatic church in Europe in the thirteenth century as discussed by Koestler, in *The Sleepwalkers*.[113] It came to be an over-arching complex of memes that dominated the actions of the church and intellectual climate of Europe at the time. This example demonstrates the way that the evolution of ideas or memes should not be thought of as 'progressive'. Koestler states that while the rediscovery of Aristotle had begun with high ideals which encouraged the observation of nature and the use of reason, the reliance upon non-Platonic '*emperia'* without the use of measurement or quantification was to bring scholasticism into decline. The contradiction that he finds is that "Aristotle constructed, by that method of *a priori* reasoning which he so elegantly condemned, a weird system of physics 'argued from notions not from facts'"[114] However there was more to Aristotle's philosophy for thirteenth century Europe:

> The alliance born of catastrophe and despair, between Christianity and Platonism, was replaced by a new alliance between Christianity and Aristotelianism. . . . . Perhaps the greatest historical achievement of Albert the Great and Thomas Acquinas lies in their recognition of the 'light of reason' as an independent source of knowledge beside the 'light of grace'. Reason, hitherto regarded as *ancilla fidei,* the handmaid of faith, was now considered the bride of faith. A bride must, of course, obey her spouse in all important matters; nevertheless, she is now recognised as a being in her own right.[115]

[113] Koestler Arthur (1989) *The Sleepwalkers*, Group Australia: 'Arkana' Penguin, p. 107-116.
[114] Ibid p. 111.
[115] Koestler Arthur (1989) *The Sleepwalkers*, Group Australia: 'Arkana' Penguin, p. 109.

The notion of reason as the "bride of faith" is a reference by Koestler to the way that mathematics and science became divided so that the mathematical basis to physics was replaced by the notion of a "guiding hand" that could explain empirical phenomena. While these reasons may seem unfathomable now it is because the basis for them was faith. The dogma that was implicit in this marriage of Aristotle and faith was to produce, in the words of Koestler, "nothing but rubbish" during the Dark Ages. The point that he makes is that while it is possible to argue that there were important advances in thinking made during this time, science seen as a scholastic discipline made little inroads for three centuries. The reason for choosing this example of the rediscovery of Aristotle's philosophy and it's bisociation with the dogmas of faith, is because it demonstrates that not all memes will be advantageous for society. According to Dawkins, memes replicate for *their* own survival and they may not always coincide with our better interests.

Art Historical Style

Let us turn now to the relevance of Gombrich's schema theory to memetics and the need for a wider-ranging view of the make-up of a novel product that is inclusive of, but not exclusive to, Darwinian evolution. It is time also to introduce Gombrich and his notion of "schema theory", language, biology and 'art historical style' and the role that they play in understanding novelty. Following this there will be a discussion of Dennett and Dawkins in relation to Gombrich's argument to do with objective standards and how the argument relates to novelty.

E.H. Gombrich was largely interested in the history of stylistic change in art and what this tells us about creativity. The main perspective that Gombrich takes is to look at

the psychology of style and how the propensity to repeat certain styles has affected the overall history of style in art. Indeed it is this propensity which has made stylistic change an interesting point to consider:

> The more we become aware of the enormous pull in man to repeat what he has learned, the greater will be our admiration for those exceptional beings who could break the spell and make a significant advance on which others could build.[116]

He rejects the causal analysis of history where blind and isolated causes are behind history's great human movements. There is also scepticism in Gombrich's work about the explanatory notion of there being a 'Spirit of the Age' which is a kind of meaningful cultural movement that tends to bring about great historical changes. This romantic ideal which found its voice through philosophers such as Hegel, saw the history of art as a progression from childhood through adolescence to full maturity as opposed to the notion of it being a history of the refinement of technical skill. However, Gombrich points out that what the notion of there being a "spirit of the age" indicates at least is the lack of a thorough analysis of the history of stylistic change which does not rely upon a posited collective term such as the "spirit of the age" or "geist". The problem with such Hegelian explanations, says Gombrich is that "by throwing away the idea of skill they have not only surrended vital evidence they have made it impossible to realize their ambition, a valid psychology of stylistic change".[117] The challenge that Gombrich has set himself, therefore, is to find a method of explaining stylistic change in the history of art without relying upon

[116] Gombrich E.H. (1996) *Art and Illusion*, London: Phaidon Press Limited, p. 20.
[117] Ibid p. 17.

these other more romantic notions.

Language and Art

In chapter eleven of *Art and Illusion* Gombrich explores the age old question that Plato had first raised about whether there is a language of forms and colours that exists by nature and not as a result of arbitrary circumstance. "The notion of being really *F* is the notion of being *F* in a way that is independent of both the viewpoint of the judger and the circumstances of the object"[118]. The notion of the form *F* in this example was treated by Plato as a sort of paradigm and perceptible objects were seen as mere imitations of such a form. From a modern standpoint, one might well argue that Plato's notion of Forms was bedeviled by "a disinclination to separate the epistemological and metaphysical issues"[119]. For the purposes of Gombrich's inquiry the argument comes down to whether the language we use to name things is a result of nature or an accident of convention.

Gombrich uses an amusing example whereby he imagines taking Socrates to a children's nursery where they are playing with red, green and yellow blocks that are all lined up in a row and screaming "choo, choo".

> 'What has this in common with a train?' I would ask tiumphantly. 'A what?' he would say. . . . . If I told him what trains are, he would believe, or at least pretend to believe, that they move through the country as red, green and yellow cubes saying 'choo, choo'. 'If not,' he would say, 'why do you call this a train ? And if it does not say 'choo, choo', what purpose do these strange and

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[118] White Nicolas P. "Plato's metaphysical epistemology" from *The Cambridge Companion to Plato* (1992) New York: Cambridge University Press, p. 292.
[119] Ibid p. 292.

> senseless syllables serve?[120].

This example serves to introduce what Gombrich sees as the proper argument. It begins with the point that the words of language have more in common with visual representation than is often acknowledged. The train, in this example, is not an attempt at a sincere depiction; rather it is a flight of the imagination that makes use of convenient equipment on the nursery floor to suffice as a model for a train. The situation with the use of the 'choo, choo' isn't really all that different either. For if we take into consideration the limitations of a child's linguistic capabilities 'choo' imitates the sound made by a steam train no worse than other possibilities such as 'chug, chug'. Gombrich makes the point that the use of 'choo, choo' has become convention since it is still used in countries where electric trains have long since replaced the steam engine trains which don't sound anything like 'choo, choo'.

These onomatopoeic imitations of sound in language illustrate that within this limited field there is a connection between perception, convention and mental set that should be of interest to the study of visual representation. Gombrich also makes the point that these imitations should be thought of as approximations rather than imitations proper, given the linguistic medium and the sound heard.

> To me, at least, the cock says not 'cock-a-doodle-doo' as he calls to the English in the morning, nor 'cocorico', as he says in French, nor 'kaio kaio', as in Chinese, but still 'kikeriki', as he says in German. Or-not to fall into the mistake of Socrates-it is not

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[120] Gombrich E.H. (1996) *Art and Illusion*, London: Phaidon Press, p. 306.

> precisely 'kikeriki' he says; he still speaks cockish and not Viennese.[121]

Gombrich points out that, as his perception is flavoured by habitual interpretation, there is a kind of absurdity in attempting to figure out what part is the *real* sound and what part is coloured by convention. This is because the only way we understand reality is through interpretation; there is no innocent ear in the same way that there is no innocent eye.

Another onomatopoeic example we could consider is the words 'pitter-patter'. At certain times rain, falling on a roof-top, sounds like 'patter-patter' depending on the ferocity of the weather and the type of roof. In spite of this many of us will still feel the need to interpret this sound in the conventional form of 'pitter-patter'. However, interestingly, Gombrich makes the claim that "we can experiment and through trial and error learn something about such impressions. An alternative interpretation may drive out the accepted one and reveal a glimpse at the reality behind it."[122] There is a tension here to do with verisimilitude as Gombrich seems to be suggesting that we both can and cannot see through our interpretations to an autonomous reality to things that is independent of interpretation. The tension here is amplified as he has only just maintained that there is no "innocent ear" just as there is no innocent eye. Nevertheless, Gombrich believes that the adventurous artists of visual representation were doing much the same sort of trial and error in that they were questioning what constitutes an accepted version of reality. The consequence of this was that they were eventually able to explore and reveal the ambiguities of vision.

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[121] Koestler Arthur (1970) *The Ghost in the Machine*, London: Pan Books, p. 218.
[122] Gombrich E.H. (1996) *Art and Illusion*, London: Phaidon Press, p. 307.

Synaesthesia

In continuing this analogy between our use of language and visual representation, Gombrich looks at the features involved in having a language such as our accent. He believes that the task of learning to speak is similar to that of art in that it begins with a few basic schemata that progressively change to approximate the sound. He believes that in the same way that children attempt to transpose new words into their limited phonemes something similar happens when people attempt to imitate the sounds of a new and foreign language. The native tongue of a person in this situation is limited in the amount of phonemes that it will allow given the acquired motor habits which not only condition speech but also the way we 'hear' the language. There is a certain kind of selection process that is a result of the original conditioned schemata whereby some distinctive features of language are watched for while others are roundly ignored. Gombrich believes that an accent has many of the ubiquitous features that we associate with *style:*

> I believe the skill of hand in art, like the skill of throat in language, follows the awareness of differences that have to be pointed out to be experienced. Wherever there is a clash of style, where one artist wants to copy the work of a different tradition the importance of these motor habits becomes important.[123]

Gombrich argues that there is a certain kind of accent of style that an artist has that is manifest in his/her work, and that it is their manner or motor habits that will tend to show

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[123]Ibid p. 308.

through even when copying the schemata of another artist's work. Gombrich uses the example of Van Gogh's "copy" of Millet's *The Cornfield,* as an example of how Van Gogh's unmistakable style manifests itself in the microstructure of the painting. Van Gogh would not have intended to "copy" Millett's work, in the same manner that a forger might seek to copy an artwork, but rather to render it in his own style. At the same time, however, even when forgers seek to "copy" a work of art one of the greatest difficulties is of their own accent showing through in the attempt to reproduce the artwork in question. There are many more examples of the distinct manner with which different artists will render a copy of paintings that come from different traditions than their own.

An example from Gombrich of the rendering of an artwork that reflects the background influences of the artist upon the subject of his work can be found in the Chinese artwork of Mr Chiang Yee who painted scenes from the English and Irish countryside. Chiang Yee's rendering of the English scenery tended to reflect the Chinese tradition in which he was trained:

> As he scans the landscape, the sights which can be matched successfully with the schemata he has learned to handle will leap forward as centres of attention . . . Painting is an activity, and the artist will therefore tend to see what he paints rather than to paint what he sees.[124]

Gombrich suggests that because of the selectivity with which the Chinese tradition admits certain features into its schemata it is useful to compare it with the more "picturesque"

[124] Gombrich E.H. (1996) *Art and Illusion*, London: Phaidon Press, p. 73.

view that the Romantic period gives us of the same landscape. In so doing we can see the influence that particular traditions have over what schematic elements are used.

Another example of the influence that background schemas have on the sort of artwork that is produced can be found in the nineteenth century English artist John Glover. Before arriving in Tasmania in 1831 Glover, along with Richard Wilson and George Smith, had established a reputation in England as one of the "English Claudes" after Claude Lorraine who had a particularly romantic and graceful style of landscape painting . Many of Glover's paintings of the Australian landscape tended to have an idyllic quality to them such as *The Bath of Diana* or *Patterdale, Van Diemen's Land.* Rather than the wilderness "as it was", Glover seems to have employed the characteristics of Lorraine's schemata, creating paintings that were more reminiscent of an English pastoral scene onto this very different landscape. "Glover treated the valley landscapes around his farm at Patterdale as quiet pastorals. Aborigines, shepherds, the figure of the artist himself, were peaceful inhabitants of the landscapes."[125] Clearly Glover's treatment of the Australian landscape is another example of the way that schemata influence the style of artwork that is produced as it acts as a kind of filter through which perception is translated.

Gombrich argues that it is absurd to try to isolate and describe the 'personal accent' of an artist by looking at the idiosyncratic tricks of hand that they display. He suggests that it is rather a matter of looking at the relationships and interactions, the sequences and distribution of personal nuances of expression that we perceive in a holistic manner which seems to defy analysis. In his analysis of personal style Gombrich asks whether there really is a sharp distinction between description and expression. He sees language as fulfilling an

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[125] Mary Eagle and John Jones (1994) *A Story of Australian Painting,* Melbourne: Macmillan Australia, p. 16.

important function in terms of what it is capable of conveying to us about personal style:

> For language, like the visual image, functions not only in the service of actual description and subjective emotion, but also in that wide area between these extremes where everyday language conveys both the facts and the emotive tone of an experience.[126]

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Gombrich explains that when we use language to convey visual impressions we often use sounds that seem to imitate them, words such as 'blinking', 'flicker' or 'scintillating'. He claims that these words are close approximations in language to the visual impressions as words like "choo-choo" are to the auditory ones. The converging of the impressions from one sense modality over to another is what he calls 'synesthesia'. The metaphors we use in common language are a good example of this synesthesia, for instance we speak of an 'icy tone' or a 'velvety voice'. Gombrich gives an example of the use of synesthesia in Mondrian's painting *Broadway Boogie-Woogie* which explores the challenge of sound and departs from an exploration of pure visibility. He adds, "I don't know exactly what boogie-woogie is, but Mondrian's painting explains it to me".

Nelson Goodman also saw the expressive capacity for synaesthesia in the use of metaphor. However, he was also aware of the limitations of this mode of metaphorical expression. He talks about the possible interpretations that a picture painted in a "grey" hue might have. Oftentimes it is used metaphorically to depict "coldness" or "sadness". He points out that in our use of metaphor in art the veracity that it once had tends to diminish over time and the novelty value that it had possessed tends to become fact or convention.

[126]Gombrich E.H. (1996) *Art and Illusion*, London: Phaidon Press, p. 310.

Goodman points out that our use of metaphor should not be considered completely arbitrary:

> To say that our picture is yellow is not metaphorical but merely false. To say that it is gay is false both literally and metaphorically. But to say that it is sad is metaphorically true even though literally false. Just as the picture clearly belongs under the label "gray" rather than under the label "yellow", it also clearly belongs under "sad" rather than under "gay".[127]

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He views metaphor as the reassignment of an old label where the term is contra-indicated to some extent. The use of metaphor, as has been illustrated, is one of the fundamental elements that could help to define the mechanisms involved in understanding how memes operate.

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At this point it is important to remind ourselves of what Koestler had to say about bisociation, and the earlier link that was made between metaphor and bisociation as well as analogy and association. It would seem apparent from Nelson Goodman's description of synaesthesia that bisociation through the use of metaphors is necessary in order to explain how two unrelated qualities become joined together synaesthetically. Synaesthesia is a case of how bisociation works. For instance the colour green can be used to describe a mood such as when someone is described as being 'green with envy'. Metaphors tend to be descriptive of things whereas analogies for instance are similar in some respect to something else. Many examples of synaesthesia may be described as metaphorical such as the use of the colour "red" and its association with "heat" but not analogical in the sense of

[127] Goodman Nelson (1976) *The Language of Art,* Indianapolis: Hackett, p. 70.

being similar. The bisociative use of metaphor requires that the associations or in this context, the synaesthetic qualities, need to be distinct associations that aren't so often used in the same context or field of reference.

The various uses that artists have had for synaesthesia have been variously employed in the history of artistic styles. Yet while synaesthesia, along with metaphor and analogy are important considerations in understanding art historical styles, Gombrich is also just as cautious to point out that skill should not be abandoned in the search for new ways of communicating the interior of the mind. Indeed, if synaesthsia is itself an example of bisociation, as has been argued, then whether or not an artist has used particular skills of hand, inherent in certain traditions, should not exclude it as a novel artwork. For the bisociative quality inherent in the use of metaphors in art defines it as such. Furthermore these skills of hand help to give the use of synaesthesia structure and composition. However, there is one stream in the history of art that Gombrich took particular exception to precisely because of its perceived abandonment of skill, which was the philosophic perspective of the Avant Garde.

Context and the Avante Garde

Having ventured into an exploration of synaesthesia, Gombrich wonders whether our synaesthetic experiences are really all that 'accessible' at all, objectively speaking:

> Granted even that most of us experience such synaesthetic images with more or less intensity, are they not completely subjective and private, inaccessible and uncommunicable? Can there be real objective discoveries of good and better matches in these elusive

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> spheres as there were in the discovery of visual analogies to visual experience? Can the world of the mind, of the dream, be explored by experiments that result in accepted conventions as was the world of the waking eye?[128]

Gombrich claims that in assessing twentieth-century art much may depend upon the answer to this question, as even though it is not concerned much with synaesthesia, just about all of it attempts to represent the interior of the mind where feelings are expressed by the use of shapes and colours. A further point that Gombrich addresses is that of context. He raises three factors that he sees as being important to any discussion of representation in art. These factors are: the medium, the problem of equivalence and the mental set. In particular, Gombrich refers to the renderings in many of the twentieth century paintings as belonging to a particular kind of medium that is acquired through a combination of skill and tradition. It is his belief that if we neglect skill in our analysis of art historical style we will deprive ourselves of the means by which to interpret style as expression. He claims that there also needs to be an expectation of what one can expect from a certain range of representational styles. While each individual style has its limitations in so far as there are restrictions on the artist's choices, Gombrich asserts that this is more of a strength rather than a weakness. The reason he cites is that when everything is possible communication will suffer as a result. "It is because art operates with a structured style governed by technique and the schemata of tradition that representation could become the instrument not only of information but also of expression".[129] This is one of the reasons why Gombrich is so fervently against what he considers the false philosophies that drove the avant garde

[128] Gombrich E.H. (1996), *Art and Illusion*, London: Phaidon Press, p. 311.
[129] E.H. Gombrich (1996) *Art and Illusion*, London: Phaidon Press, p. 319.

perspective.

Without this understanding it would be difficult to place the context of a Van Gogh or a Picasso. Once we have an appreciation of how context operates we can put such paintings into a subclass of their own as well as have an idea of the breadth of possibilities to which they refer. The impressive leaps forward that science had made during the 19th and 20th centuries, which lead to much progress, fuelled an underlying perspective of the time which was part of the avant garde philosophy that it should always be at the forefront of change and what is new. This provided the context in which many art historical styles could find their inspiration. Examples of this can be found in Impressionism and the psychology of perception, Surrealism and the notion of the Freudian unconscious or in the relativity expressed in Cubism.

The importance of context to the understanding of representation can also be shown in other areas of the arts such as the Romantic poetry of the 18th century. Much of the Romantic poetry of this time rebelled against the increasing influence of scientific discovery in physics, chemistry, geology and biology. Added to this were "the extraordinary new machines driven by steam power which were radically changing the world."[130] The Romantics sought a return to nature and to express their feelings as experienced through the senses. The expression of their feelings was more important to them than the mechanistic and materialist vision of science at the time. As James Burke in *The Pinball Effect* describes, Mary Shelley was one such poet who was inspired by the industrialism of her time to write a novel about what she saw as the destructive effects of science and industry upon the ordinary lives of people. In *Frankenstein* Shelley imagines what the consequences of meddling with nature would be by telling the story of how an

[130] Burke James (1997), *The Pinball Effect*, London: Back Bay Books, p. 214.

experiment to create an artificial human being goes terribly wrong. It is because of the background context of the 18th Century with its scientific breakthroughs that Romanticism got its inspiration and in this sense it is much the same story for art historical style with regard to the importance of context as it is for the poetry of this time.

Gombrich argues that the philosophy driving the avant garde was the consequence of the belief that such art lived to be recognised by an appreciative artistic audience of the future rather than by contemporaries. In *The Image and the Eye* he explains that this sort of 'futurism' is fuelled by a conviction which has legend status that true genius is always slandered and mocked before it is recognised for it's 'real' value. There is also the compulsory belief that the criterion for 'good' art is that it should be 'ahead of it's time'. He sees this as being "part and parcel of that philosophy which Popper has criticised as 'historicism', the belief that there is a law of progress in history which it is not only futile but actually wicked to resist."[131] Gombrich believes, on the other hand, that historicism itself is wicked because it is being linked to the belief that suffering in all revolutions and wars is the unavoidable consequence of a new age. It is this philosophy which Gombrich believes gained popularity when politics used religion to damn its opponents and give righteousness to the victors. The ideology of inevitable progress is really the backbone of the avant garde perspective by this interpretation and it is this belief in the law of progress that stamps its mark on each new generation. Furthermore, "I find it noxious, because it really abolishes the very belief in values which the other interpretation upholds. There is no good or bad art, only antiquated and advanced art."[132] For example, according to Gombrich the avant garde would tend to see the skill and tradition of the Renaissance as backwards

[131] Gombrich E.H (1982) *The Image and the Eye,* Cornwell: Cornwell University Press, p. 241.
[132] Ibid p. 241.

and antiquated as opposed to say a painting such as Jackson Pollocks "Blue Poles" which does not rely upon the same skill or tradition and would therefore be seen by the avant garde as 'progressive'. Gombrich's evaluation of the philosophy behind the avant garde is that it is a pernicious dogma. It relies upon historicism and the worry that it is unable to accept the judgement and criticism of its contemporaries. Rather than face up to such criticism, he argues that the avant garde philosophy hides behind the mistaken belief that true genius is never understood or appreciated by the present. This is another of the reasons why Gombrich emphasises skill as being important to an understanding of art historical styles. He suggests that:

> our standards, our conscience, moral or artistic, are derived from our environment. We are free to criticize and modify them but without criteria of what is good and what is better we cannot submit our ideas to the judgement of our 'corporeal eyes'.[133]

Furthermore, Gombrich argues that when there is such a breakdown in standards it affects the art critics' confidence in making judgements for fear of being seen as backward or antiquated. Not to mention another troubling consequence linked to when 'good' art means 'advanced' art which is when the artist him/herself is unable to be critic of his/her own work. Given the existence of styles and traditions in art the value of such a philosophy seems "doubtful to the history of art" according to Gombrich.

In *Ideals and Idols* he refers to what Gombrich calls the mentality of 'follow my leader' when it comes to the means by which fashion seems to dictate what style should be followed. He makes the claim that there is a sort of game of 'one-up-man-ship' played

[133] Abid p. 242.

where what is at first seen as eccentric and way off left field is accepted and then out done by others thereby leaving this once 'new' ideas on the scrap heap. A new idea doesn't even have to be particularly skilful in order for it to gain popular acceptance. Gombrich talks about this as the "rarity game" where some departure from the norm draws attention because of its rarity. There then begins a kind of competition for attention which can have some extreme excesses as people attempt to outdo each other. Gombrich makes mention of how excessive powdered wigs seem to us but at the time it was what drew attention and what people, even those who were loathed to follow fashion, eventually did. "Whether we have our hair cut or put on a tie, whether we drink tea or go skiing we all join in the game of 'follow my leader'"[134] Gombrich points out that there is a competitive element in art along these same lines. It is this same mentality which also appears to be prevalent with the influence of the avant garde perspective in contemporary art.

Popper and Historicism

In order to understand what Gombrich has to say about the avante garde, which proceeds from his views on synaesthesia, where skill and structure became important to the expression of these interior sensory impressions, it is first necessary to define 'historicism'. In *The Poverty of Historicism,* Popper explains why the aim to be able to predict the future course of social and political history is doomed to fail.[135] "Historicism", a term coined by Popper, is the idea that generalizations can be made about the future by looking at the past course of historical and social events. For the historicist, sociology is theoretical history it believes that there is a common element between the predictive methods of the physical

[134] Gombrich E.H (1998) *Ideals and Idols,* London: Phaidon Press, p. 63.
[135] Popper Karl (2002) *The Poverty of Historicism,*London: Routledge Press.

and social sciences. The historicist will argue that the social sciences can never hope to attain the same precision in its large scale forecasts as the physical sciences can. Popper explains that historicists, such as Hegel and Plato, for example, believe that there are certain "social or historical forces" that can be used to forecast future historical events. By way of contrast, this reliance on historical or social forces, as a way of understanding the progression of history is the very opposite of archaeology. Rather than make predictions about the future by using a variant of historical and social determinism, archaeology aims to understand the past by using science to uncover what might have happened when and how.

Two of the main objections which Popper has to historicism are the argument against social 'holism' and what he sees as the fallacy of 'historical law'. With regard to holism, the holists mistake is to take the 'whole' in the sense of totality as being something not far removed from 'whole' in the sense of Gestalt which puts it that things with a regularity are 'more that the sum of their parts'. For instance, Popper describes how a melody has more to it than a collection of single musical sounds however this is just one aspect of these sounds which we consider that can be clearly differentiated from other aspects. The difference between the Gestalt 'whole' and the totality 'whole' is not just in degree but in kind as the latter is closer to the notion of an essence. Popper argues that as science is selective we cannot understand the totality of holistic meaning of historical events in these terms. Science cannot understand 'wholes' in the sense of totalities.

> If we wish to study a thing, we are bound to select certain aspects of it. It is not possible for us to observe or to describe a whole piece of the world, or a whole piece of nature; in fact not even the

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> smallest piece may be described, since all description is necessarily selective.[136]

With regard to the notion of a historical law, Popper argues against historicists who believe that society has some kind of memory or history in much the same way that in biology we can speak of an organism having a life-history and that therefore historicism can use historical laws to predict change. Historicism commits itself to the view that history is governed by a necessary law. This notion of a 'law' is not used in the sense of biological laws which explain specific processes to do with evolution but rather it is meant to refer to laws which govern a great chain of cause and effect from ancient times to the present. Popper argues that the way human societies have evolved is a unique historical process and cannot be described in this way because universal laws make statements about some kinds of unvarying order. He asserts that the historicists have misunderstood the notion of a law. Social trends are not the same as laws and societies, races and the whole world are not organisms which we can use a governing law to understand. Of this confusion between laws and trends Popper has this to say about the historicist approach: "This, we may say, is the central mistake of historicism. *Its 'laws of development' turn out to be absolute trends;* trends which, like laws, do not depend on initial conditions, and which carry us irresistibly in a certain direction into the future."[137] Laws and trends are radically different to each other.

[136] Popper Karl (2002) *The Poverty of Historicism* London: Routledge Classics p. 71.
[137] Popper Karl (2002) *The Poverty of Historicism* London: Routledge Classics p. 118.

BIOLOGICAL PROCESSES AND NOVELTY

The following section will discuss some of the theoretical points which are similar in Gombrich, Dennett and Dawkins as well some of the important aspects that make novelty possible. There is firstly a discussion on certain functions within language such as analogy, metaphor and bisociation which contribute to our understanding of art historical styles. Followed by this there is a discussion on how biological and historical processes are connected in particular theoretic ways to provide a better understanding of how we convey and interpret ideas.

The Function of Language

One way of understanding language comes from Julian Jaynes who believed that metaphor played a central and constitutive role in the production of language: "The grand and vigorous function of metaphors is the generation of new language as it is needed, as human culture becomes more and more complex."[138] He defines metaphor in two parts, firstly as *metaphrand,* that is the thing to be described, and secondly as *metaphier,* which is the relation or thing that describes it. He describes language as a 'rampant restless sea of metaphor' and goes to great lengths to show how endemic it is to even our most common of expressions, including the verb 'to be' which comes from the Sanskrit *bhu* which means "to grow, or make grow". According to this view, metaphors would seem to have a lot of generative potential, perhaps the same sort of potential as is said of memes. If this is so, then perhaps metaphors are a sort of 'generative tool' that have a central role within the

[138]Jaynes Julian (1993) *The Origin of Consciousness in the Breakdown of the Bicameral Mind*, Middlesex: Penguin Books, p. 49.

generator. Furthermore, it is worth noting that Jaynes points out that not all metaphors have the same potential fecundity, which is a quality necessary to define a meme. The example that he uses is the "ship plows the sea" which doesn't lend itself to any other correspondences. This is as opposed to a metaphor such as "a 'Mona Lisa' smile" which has more fecundity and correspondences to it. The way in which a metaphor or a meme can potentially refer to other things also seems to be an important factor as to the success or failure of it. Something similar occurs with memes since there are plenty of memes that aren't as successful as others. The meme of "Coke" as a cultural icon as opposed to "Pepsi" that isn't as successful is an example. This is a different point to saying that one brand is more successful at selling it's product. Rather the meme of "Coke" seems more successful as it is more commonly used to refer to a drink of cola than Pepsi.

Another means by which it could be said that memes interact is through analogy. As was mentioned earlier, analogy is the association of two concepts that were previously unrelated. The means by which such concepts are associated is the crux and force of an analogy, the use of which varies according to the context and concepts involved. Analogy is certainly of use in the creative process of seeing similarities that were once hidden and then later viewed as interesting and important to the discovery process. As an example of one such analogy, the meme for fatherhood has often in various contexts come to also be associated with the meme for a patriarchal society. Analogy also seems to create a frame of reference within which memes can operate as it provides a means by which memes can be directed in a particular way. As was also mentioned earlier, Hume had a similar understanding of how analogy works:

> 'Tis plain, that in the course of our thinking, and in the constant evolution of our ideas, our imagination runs easily from idea to

> any other that *resembles* it, and that this quality alone is to fancy a sufficient bond and association.[139]

Hume's notion of resemblance is suggestive and descriptive of the way that analogy seems to operate. For, analogy also runs from one idea to another that *resembles* it. Perhaps we can also imagine this way of thinking as being a function within the generator that brings these concepts closer together. Indeed perhaps the notion of resemblance has a greater role to play within the generator whereby one set of associations is matched and compared with another.

Symbolism is the notion that a thing can conventionally represent or typify something else. In *Art and Illusion* Gombrich discusses how animals have a tendency to react to and abstract from certain stimuli such as sea gulls, who when eggs have been misplaced from their nest will retrieve the nearby egg as well as other round objects that are egglike. Gombrich points out that we too are prone to abstract things beyond their rational group but unlike the sea gulls we are more complicated because we have an 'ego' which will test reality and shape impulses from the id as the psychoanalysts have described. "Our twin nature poised between animality and rationality, finds expression in that twin world of symbolism with its willing suspension of disbelief."[140] An example of biological importance for our own survival that Gombrich uses is the way that we become alert and respond to the recognition of a human face. We have a propensity at certain times to 'see' faces in things such as in wall-paper or perhaps in the clouds. The subjective ideas of an eye, nose or mouth can be used in a much broader way than an anatomist would see them.

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[139] Hume David (1984) *A Treatise of Human Nature,* London: Penguin Classics, p. 58.
[140] Gombrich E.H (1996) *Art and Illusion* London: Phaidon Press, p. 87.

Indeed in the 'Rorschach test' inkblots are provided for the subject to interpret, the same inkblot could be a butterfly or a bat as well as many other possibilities. For Rorschach there is only a matter of degree between ordinary perception, that is, the impression we file in our minds, and interpretations that are caused by projection. "When we are aware of the process of filing we say we 'interpret', where we are not we say 'we see'. From this point of view, there is also a difference of degree rather than of kind between what we call a 'representation' and what we call an 'object of nature'"[141]. It is important to understand our use of symbols in order to appreciate the background from which they herald in our culture as well as in art historical styles.

Although Gombrich is insistent at times that we must understand how language functions in order to grasp the symbolism behind art historical styles, his views on the development of artistic styles do not completely depend on it. For he also considers art as an evolutionary process as shall shortly be discussed. At the same time, it is with much gravity that we note the universal use of these functions in language, such as analogy, symbolism and metaphor, for they are structures that are common to all styles of art. Or to put it more succinctly, they are modes or *vehicles* of representation that are not bound by any particular culture. No matter whether it is Aboriginal or Middle-eastern artworks, there are certain familiar structures by which varying societies represent their culturally significant items or symbols.

Biological and Historical Processes

While Gombrich claims that it is important to acknowledge the role that culture plays in determining how we view and interpret images he should equally not be viewed as a

[141] Ibid, p. 89.

complete relativist. For when it comes to understanding the representation of images in art as well as our everyday use of symbolism in language and society, such as in street-signs or advertisements, he also asserts that our visual perception is not entirely contextual either. He believes in the notion that the best way to understand the operation of symbolism in art and society is by accounting for what is already pre-determined as well as the influence of conventions and traditions. He appeals to the necessity of our biological need to interact with the environment as a justification because:

> our survival often depends on our recognition of meaningful features and so does the survival of animals. Hence we are programmed to scan the world in search of objects we must seek or avoid. We are programmed to be more easily triggered by some configurations than by others. [142]

Elsewhere in Gombrich's *Meditations on a Hobbyhorse* he suggests that visual metaphors have a moral value because we make equivalences between the various perceptions of sensory experiences that are then transferred onto other such experiences.[143] He describes these synaesthetic metaphors as perceptions such as a "velvet tone" or "loud colour" for example. These sensory metaphors can become 'moral' when they are used to suggest a perceived characteristic or quality, that is value-laden, about someone or something. An illustration could be by equating the term "shady" to "character" or "smooth" with "tongue". Other values that we experience are readily converted into metaphors and these values include the experience of light and darkness and the taste of bitter or sweetness.

[142] Gombrich E.H (1971) *Meditations on a Hobby-horse*, London: Phaidon Press, p. 285.
[143] Gombrich E.H (1971) *Meditations on a Hobby-horse*, London: Phaidon Press, p. 13-27.

These are what he terms “biological values” which from early on get transposed into figures of speech. Even though they are formed from our sensory experiences, which for Gombrich, makes them ‘biological’, they may be transformed into moral values through the powers of metaphor. As an example we might speak of a ‘cold reception’ or a ‘luke-warm response’. He suggests it is through metaphor that values are expressed in the visual arts through the representation of equivalence between an object and the expression of its value. The identification and transference of values onto states of affairs is where this understanding of metaphor is most effective as a means of description. It is also here that Koestler’s notion of bisociation can be seen as the means by which such identification and transference is possible. The biological values that we learn from an early age become embedded and endemic in our use of metaphor perhaps because we all share the common experiences of the biology that such values derive from. For example, when we bisociate the biological value of “coldness” it is often in conjunction with other associations that we might otherwise describe as ‘distant’ or ‘emotionless’. The importance of the role of metaphor could hardly be overestimated and Koestler’s concept of bisociation is potentially a means by which to explain the psychology behind this use.

In order to understand the intrinsic role that bisociation plays in the formation of metaphors we must also remember what such metaphors are used for. It seems clear that the use of bisociation in the creation of metaphor is crucial to synaesthesia. Without the bisociation of distant comparisons synaesthetic metaphors could not be made. Furthermore, the importance of bisociation to synaesthesia is vital to an understanding of the psychology behind the formation of schemas in art historical styles. The use that our senses make of such things as the rendering of colour and tone is represented through the bisociative use of

synaesthetic metaphors. For the use of these metaphors that draw upon "biological values", not only makes sense of our collective experiences of the senses themselves but also of the broader context of their meaning in society. The significance of bisociation to metaphor and synaesthesia should also be seen in a wider context to do with how creativity works. The connection between bisociation and metaphor in the production of synaesthesia, and all that this entails, is a strong reason why they ought to be given a rightful place in the machinations of Dennett's generator.

Metaphor seems to require there to be some sort of bisociation process for it to operate. Metaphor commonly involves the use of symbols to evoke a description. Gombrich places a high value upon the role of metaphor in society because he claims that we use it to convey our appreciation of shared "general understanding". In *Ideals and Idols* he explains this link between metaphor and general understanding by firstly questioning the role and definition of general understanding in society. This link is explained as the source from which we learn to construct our metaphors. That is, without some assumed general understanding where else would we find the content of the metaphors and language that we use? He points to a lack of clarity in the notion of 'general understanding': How much 'understanding' does one need to have in order to be able to claim that they have 'general understanding' of a particular area? There is no clear way of quantifying or qualifying what such criteria would be needed and there are pragmatic concerns to be considered as well. Gombrich argues that many may pretend that they have more understanding or 'general understanding' than they actually do on any particular subject so as to not loose respect among their social class. Be that as it may, the important, pragmatic point that he also

makes is that there is much general understanding that we take for granted. According to Gombrich, this is because it would simply be far too laborious to explain the source of all the metaphors, puns, analogies and other uses of language in any given conversation or point in time. He argues that we rely upon assumed understanding without us even realising it:

> It is easy to see and easier to say that language is not everything. A society where everybody could only talk and nobody do would not survive a day. But a society without the assimilation of general knowledge, starting from language and reaching out into the sources of metaphor, would cease to be a society. I shall not waste your time by labouring this point, for nobody thinks this can ever happen.[144]

The way that memes are said to behave when they interact, seems shallow without mention or explanation of how these memes could be said to operate as 'general understanding'. In Gombrich's *Ideas and Idols* he reminds us of the indispensability of 'general understanding' to an apprehension of culture:

> Take my own field, the history of art: without some knowledge of the Bible and of the principle stories from the classics, the work of Michelangelo or Titian would become mute. If you do not connect the name of Moses with anyone in particular, Michelangelo's statue in S. Pietro in Vincoli would look odd indeed . . .This is not a matter of doing research in iconography, simply of knowing the

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[144] Gombrich E.H. (1998) *Ideals and Idols,* London: Phaidon Press, p. 13.

symbols current in a civilization [145]

It could be argued that memes serve the practical role of facilitating this interchange of metaphors that we share as a culture, and thus a deeper understanding of the importance of memes and their function can be understood if we equate what Gombrich describes as general understanding with memes. While 'general understanding' may remain an ambiguous notion, the reasons why we cannot do without it, as described by Gombrich, could be important to how we also view memes. Memes are often times described as 'viruses' or popular 'fads' by both Dawkins and Dennett, which tends to diminish the importance of the role that they provide within culture. The essential point that Gombrich wants to make here and elsewhere in *Ideals and Idols* is that, regardless of class or creed, we are all influenced by culture, whether that is by immediate family, schooling, local communities, radio, television, or other forms of media. As a result our parlance becomes intertwined with references and other metaphors. There is nothing surprising or shocking about this claim and both Dawkins and Dennett also assert something similar in their discussions of memes.

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However, Gombrich then argues that there is a large difference between this latter understanding of society, which we all share, and culture. He compares this as being like the difference between "jargon and language". Gombrich argues that everyone ought to have the opportunity to study the classics because "in the classical heritage we have an area of metaphor, a common market of symbols and ideas that transcends the boundaries of nations and periods in a way national literature never can."[146] His insistence that the

[145] Gombrich E.H (1998) *Ideals and Idols,* London: Phaidon Press, p. 113.
[146] Ibid p. 14.

classics offers us a greater discernment of culture is in keeping with his belief in the notion of schemata as structures that demarcate and shape future impressions and concepts in art. This argument surrounding the classics is one such example of the important role that schemas play. The reason why the classics reflect the role of schemas is found in his argument that the classics are important because people in the past studied them. It is the tradition that has evolved around the classics that has given us this 'common market of symbols and ideas' and provided a way of discerning culture. In many ways Gombrich's discussion of the opposing influences that govern our understanding of symbols can contribute an immense amount to our comprehension of memes because of his appeal to the historical processes that have laid the foundations, of such active symbolism, that we acknowledge today. By acknowledging the historical roots of such symbolism we can gain a fuller appreciation of, for instance, the origins of our current notions of 'beauty'. At the same time, Gombrich also emphasises that biology and the forces of evolution have a hand to play and would largely be in agreement with both Dawkins and Dennett on this. Nonetheless, what Gombrich has been able to show is that there is a way to combine Darwinian evolution with a historical perspective to provide an appreciation of how we interpret and convey ideas and concepts or, in other words, memes. What Gombrich doesn't provide however, is an understanding of what generative or cognitive faculties we have and how they function in the production of symbolism which is what Dawkins and Dennett contribute towards discerning.

Cumulative selection and creativity

As was first discussed in Chapter two, the proposed compatibility of schema theory and memetic theory should be addressed now in the context of a discussion centered around

creativity and cumulative selection. In a further demonstration of just how compatible Gombrich's schema theory and memetic theory are I will discuss Dawkins' understanding of cumulative selection, the apparent paradox that he finds with it and how this all relates to memes and creativity. As has already been mentioned, Gombrich's schema theory included evolution as part of its explanation. However he was careful to distinguish his position from that of the nineteenth century historicists and the tradition of historicism that Popper had condemned.

Cumulative selection is the notion that certain features are gradually selected for over time from the environment. In Dawkins' *The Blind Watchmaker* he discusses the way that cumulative selection is able to expound on how replication of compound designs could be possible, but cumulative selection cannot serve to clarify the *single step* that would have initially allowed for replication.[147] As an illustration, a thought experiment may service us at this point. Imagine that cybernetics were able to invent an android that was programmed according to Dawkins' theory of memes. What would our expectations be in terms of cultural output? Perhaps it could be programmed so that it cumulatively selected certain features in its cultural environment. But could it take or make a *single step* against this programming to allow a difference in what was replicated? Could it act in a way that would appear to singularly demonstrate independence of thought? Could it be possible to program an android to rebel against the very memes that would be inherent and peculiar to its programming or would these memes just haphazardly mutate thus showing how creativity is possible at all? Would such a program suffice to disclose the manifold nature of our cultural experiences as well as creativity?

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[147] Dawkins Richard (1988) *The Blind Watchmaker*, London: Penguin Press, p. 139-166.

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Dawkins' view on cumulative evolution and the insight that it might provide into creativity is encountered in his wanderings through "Biomorph Land" which was part of a program called EVOLUTION. He had developed this program to allow for the gradual or cumulative selection and variation of any one of many possible progeny. This is "artificial selection" as there needs to be someone who chooses a gene from the section called DEVELOPMENT that is then passed on to the section called REPRODUCTION where a new generation is born. Dawkins felt that he had demonstrated something about how natural selection works even though he was responsible for the selecting because he was limited in his choice of progeny as well as being "opportunistic, capricious and short-term" in his decision-making. Dawkins believes as a consequence of his experiment that cumulative selection is a "searching procedure", what I would describe as a fertile search engine much like those used on the internet that offer an almost infinite number of possibilities. The interesting point that Dawkins then goes on to make has directly to do with how he views creativity:

> What it feels like is a process of artistic creation. Searching a small space, with only a few entities in it doesn't ordinarily feel like a creative process . . . As the searching space gets larger, more and more sophisticated searching procedures become necessary. Effective searching procedures become, when the search – space is *sufficiently* large, indistinguishable from true creativity. . . . The computer biomorph models make these points well, and they constitute an instructive bridge between human creative processes, such as planning a winning strategy at chess, and the evolutionary

creativity of natural selection, the blind watchmaker.[148]

There is a significant problem with the way that Dawkins views creativity in terms of "the evolutionary creativity of natural selection" as it would seem to be a *category mistake* to attribute human creative processes, as we understand them, to the processes of evolution by natural selection. While we may describe what evolution produces as "creative", evolution, as a physical process itself, does not possess the property of "creativity", in the same way that evolution is neither, fat, thin nor shy. However Daniel Dennett, in "Could there be a Darwinian account of Human Creativity?" suggests that Darwin's theory can indeed account for human creative processes. Dennett argues from Darwin that creative skill is achieved the hard way by preserving the happy accidents that occur in the mindless search through 'design space': "This broadband process of Research and Development is breathtakingly inefficient, but this is Darwin's great insight – if the costly fruits of R and D can be thriftily conserved, copied, stolen and re-used, they can be accumulated over time to yield 'the achievements of creative skill.'"[149] Dennnett wants to argue that there is nothing that is intrinsically special about human creativity. Indeed, we have been able to build machines such as the chess champion computer built by IBM called "Deep Blue" or David Cope's EMI that at least appear to mimic creative processes. This is especially the case in the EMI example where many people have been fooled by the quality of the music that has been produced. Dennett does however argue that on the question of authorship Darwinism is not the complete and irreducible explanation. The extent to which *homo-sapiens* can be innovative need not be governed purely by the investments made by evolution in R and D.

[148] Ibid p. 66.
[149]Dennett Daniel (2002) (23/1/04) "Could there be a Darwinian Account of Human Creativity?" http//www.ase.tuft.edu/cogstud/papers/valencia.htm.

For authorship has a broader context to consider.

Cumulative Selection, Memes and Schemas

Dawkins argues that in the long run *cumulative selection* seems to be more efficient than *single step* selection which when viewed from the perspective of memetics may also provide an insight into how creativity works. He argues that it would take more time for a *single-step* event, such as a monkey being able to recite a line from Shakespeare: METHINKS IT IS LIKE A WEASEL, than for cumulative selection to select it incrementally. 'Randomness' is not primary to Darwinian evolution and Dawkins claims that "chance is a minor ingredient in the Darwinian recipe, but the most important ingredient is cumulative selection which is quintessentially *non-random*."[150] If indeed cumulative selection is an essential part of the "Darwinian recipe" then by analogy we should include this in a discourse about memes. Perhaps we could say that those memes that have "longevity" are those that are cumulatively selected for, generation after generation. There are for instance certain art historical styles and skills which are regularly employed when it comes to painting genres such as portraiture or landscapes.

In the wider society, cumulative selection can be seen in cultural contexts. While the last fifty years of the twentieth century saw a progressive rise in materialism and a lifestyle to match, ours is not the only era where materialism became a way of life. For many centuries the British and European noble classes enjoyed an opulent materialistic lifestyle, funded at the expense of the working poor. The cumulative selection of this creed culminated in revolts and revolutions by those who could not enjoy this lifestyle. However this did not happen over night, but rather it was something that progressively, indeed

[150] Ibid p. 49.

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cumulatively, caused dissent. The differences and injustice inherent in most, if not all, class systems has been something that has evoked ire in many societies, outside Western civilization, and yet it is still "selected for", though perhaps less stringent in its application than in previous eras. Perhaps this is another way in which we could be said to be "rule worshippers", as Dennett put it. If we were to think about cumulative selection in this way, Gombrich's schema theory would also be comensurate with it. For, he sees the cumulative use of schemas in the history of artistic styles to be at the very heart of how to understand the creative production of works of art. Perhaps we could think of this 'cumulative use' as the "cumulative selection", in the manner that Dawkins describes, of memes and schemas of a given artwork. Together they form the theme which is composed of a structure or schema, understood as the "vehicle of information", and the meaningful content, otherwise understood as a meme.

Chapter Four I ***CREATIVITY AND EVOLUTION***

The following chapter will present some of the interesting ways to view the role that memes and schemas are linked to each other in the creative process. Both Dennett and Dawkins help to provide an evolutionary basis for understanding creativity however there are theoretical similarities that can also be seen with Gombrich's schema theory which will be further investigated. The differences that exist between imagining and conceiving shall also be discussed at greater length as well.

Objective Standards and Evolution

If we take a look at Gombrich's argument in *Ideals and Idols* it becomes patently clear that the exclusive use of objective standards is an inadequate means of judging an artwork.[151]

> And yet it may be argued that this 'cold' appreciation of what we really do not like is a poor substitute for the experience a work of art can give us. . . . It includes a willingness to suspend criticism and to surrender to the work of art in exploring its complexities and its *finesse*. If we try to be merely unprejudiced in our approach we shall never find out what the work can offer us. . . But, if I'm right that, as far as the testing of artistic excellence is concerned, such a critical attitude may impede the test, it becomes clearer why dogmatism and subjectivism are so prevalent in

[151]Gombrich E.H. (1998) *Ideals and Idols,* London: Phaidon Press, p. 84-86.

> artistic matters. In this respect artistic creeds are indeed closer to religion than to science.[152]

Gombrich then goes on to claim that the same "awe and consolation" that many find in religious experience is also dependent upon the same initial willingness to suspend criticism which he claims is derived from tradition. Given this Dawkins' dependence on the objective view that Darwinian evolution provides would seem to suffer from the same problem in regard to both our experience of religion and art. When Dawkins discusses religion or politics in terms of memes he presents us as essentially passive in their wake. But clearly, if Gombrich is correct, we have a relationship to religion, and by inference to art as well, which is far from passive and that can be understood without a reliance on an objective position.

There is a connection here with Dennett's notion of "intentionality" for he states that there are certain ways of behaving or beliefs that we hold that are not based upon an understanding from the objective design or physical stances but rather from the sum of our cumulative experiences. For instance, I do not need to know all of the details about the physical transactions and techniques that went into producing an artwork to be able to relate to it, or indeed to surrender myself to it in some way. I may know something about the history of art, in that culture, but that is quite distinct from relating to it. The "intentional stance" is based upon our use of shared folk psychology which has relative success in understanding not only other people's behaviour but also our own. As Dennett points out, it is not always necessary to have an understanding from the other two stances, that is, the physical or design stance, in order to have an understanding of behaviour.

[152] ibid p. 84-85

It is here that Dawkins' notion of *simulation* can be of use, for we can *simulate,* or put simply, imagine a model in our minds of a situation where given belief, hope or desire X, the consequence in terms of behaviour is Y, and then use this format in order to predict the outcome in such cases. Dawkins suggests that:

> perhaps consciousness arises when the brain's simulation of the world becomes so complete that it must include a model of itself. Obviously the limbs and body of a survival machine must constitute an important part of its simulated world; presumably for the same kind of reason, the simulation itself could be regarded as part of the world to be simulated.[153]

It is interesting that Dawkins includes a notion that the body is an important part to simulate for the purposes of survival. Perhaps, for the purposes of survival it also became necessary to be able to simulate non-spatial and non-physical entities such as memes when we developed language. That is, we learnt how to represent ideas to ourselves and maybe this is what it meant to have a meme. Perhaps the ability to schematically represent ideas and not just our environment became important for the purposes of communication.

Simulation

In "Selfish Genes and Selfish Memes" Dawkins discusses the notion and role of simulation in the evolution of "self-awareness" and there is an interesting parallel between his views and that of both Gombrich and Dennett in this regard. Dawkins describes how computers

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Dawkins Richard "Selfish Genes and Selfish Memes", from *The Mind's Eye,* eds Dennett Daniel and Hofstadter Douglas (1981) Sussex: The Harvester Press, p. 141.

use simulation for a variety of different means such as forecasting the efficacy of economic policies or demonstrating mock battles. As far as humankind is concerned the survival advantage of simulation is that it allows the system in question to make future predictions and thereby have a better sense of control of their environment. It is a "Good Trick" as Dennett would say, developed in response to the environment. Dawkins describes simulation as occurring when:

> You *imagine* what would happen if you did each of the alternatives open to you. You set up a model in your head, not of everything in the world, but of the restricted set of entities which you think may be relevant.[154]

There is an interesting and important parallel here to Gombrich's notion of "matching and making" which should help to cement the connection between Dawkin's meme theory and Gombrich's schema theory. For, just as in Dawkins' notion of simulation he suggests that we "set up a model" in our heads, which implies some form of structure or indeed schema, so that we can then go about creating a scenario, Gombrich's notion of matching and making does precisely the same thing. Whether we name it *simulation, matching and making* or *generate – and – test,* Dawkins, Gombrich and Dennett, respectively were all pointing to the same phenomenon which demonstrates that creativity needs structure or a schema. This discussion establishes yet another connection between memes and schemas.

At this point perhaps it would be worthwhile to speculate how this latter discussion may bear upon the android that was mentioned in the previous chapter. As was first

[154] Dawkins Richard "Selfish Genes and Selfish Memes", from *The Mind's Eye,* eds Dennett Daniel and Hofstadter Douglas (1981) Sussex: The Harvester Press, p. 141.

mentioned, Dawkins has his own notions about how "self-awareness" came into being: "The evolution of the capacity to simulate seems to have culminated in subjective consciousness. Why this should have happened is, to me, the most profound mystery facing modern biology."[155] Dawkins also states that simulation is both reliable and efficient by comparison with blatant trial and error and this goes partly towards explaining why it is a Good Trick, but not why it should have developed in the first instance. Presumably then simulation *as well as* the presence of memes is a necessary requirement for our android. However whether or not our android could act "self-consciously" is really conjecture at this point. If it is simulation which led to a "subjective consciousness" that has allowed us to rebel against our own genes by choosing to not have children, as Dawkins put it, then perhaps it is also simulation which has allowed us to rebel against various forms of dogmatic memes by setting up a model of what might happen if they were adopted. Just as Koestler asserted that we need to break the frames of reference which guide our thoughts and beliefs in order to be creative, simulation, or whatever else we choose to call it, could be what permits creativity in the first instance. This is as opposed to merely tropistic behaviour as well as concrete operations that our android would presumably have. It is interesting that Dawkins has not made much mention of simulation in reference to memes, for surely it must be granted a rightful place in any discussion of memes.

The fulcrum of Simulation

It is interesting that in *Unweaving The Rainbow* Dawkins has some afterthoughts which also mention the importance of simulation:

[155] Ibid p. 141.

> However it began, and whatever its role in the evolution of language, we humans, uniquely among animalkind, have the poet's gift of metaphor: of noticing when things are like other things and using the relation as a fulcrum for our thoughts and feelings. This is an aspect of the gift of imagining. Perhaps *this* was the key software innovation that triggered our co-evolutionary spiral. We could think of it as a key advance in the world – simulating software . . . [156]

There seems to be a few lines of thought in Dawkins that are loose in his characterisation of the "poet's gift of metaphor "as being unique "among animal-kind" especially as he views simulation as culminating in "subjective consciousness". This is particularly germane because if it is indeed the fulcrum through which we express our thoughts and feelings then surely it should be given a rightful place in the theoretic background understanding of memes and therefore creativity. There is more to be understood about how and why our imagination manifests itself. Dawkins claims that human creative processes are "indistinguishable" from any system which has "effective searching procedures" given a large enough *space* where there are many options as in the example of *Biomorphland* previously discussed.

Dawkins attempts to negate the claim the we have a unique creative ability by saying that his experiment in biomorphland "felt" just like the process of artistic creation. Note that one of the criteria by which Dawkins determines whether it is "true creativity" or not is based upon the very thing that affords us the ability to be creative or imaginative in the first place, in other words, simulation as the fulcrum of our thoughts and feelings.

[156] Dawkins Richard (1998) *Unweaving The Rainbow*, London : The Penguin Press, p. 311.

Weaving a rainbow

How do memes and simulation interact? The account that I have given of memes and schemas has attempted to explain the necessity of having a model or structure of some sort especially when it comes to the creative process. In the same way that we can simulate our environment in order to forecast the future we can also simulate non-spatial entities such as concepts or ideas in our use of language and participation in culture. What is it to simulate an idea as opposed to simply having one? Just as we simulate models of our external environment we also simulate non-spatial ideas. It is the use of our imaginative capacities that enables us to hold in our heads a model of an idea and this is distinct from having one. To have an idea is more to do with the creative processes that go on within the brain that involve the combination of different schemas and memes. Our history of art is littered with examples that reflect our ability to simulate and use the schemata of other ideas in the meme-pool of art historical styles. This is also where Gombrich's schema theory meshes well with memetics as we can simulate a model of the concepts and ideas in our cultural environment, indeed in the history of art for instance.

The problem that remains for Dawkins is that although he is keen on the idea of simulation he does not clarify its function in evolution. The ability to imagine is indeed an important part of explaining how memes evolve. If it is the imagination that was the key innovation as he stated in the latter passage, then surely it should also be the thing that is celebrated. While there is indeed much complexity that science can explain, the poet's ability to gain inspiration from the merest of things such as a nightingale or a Grecian urn is equally remarkable. By utilising the available memes and schemas, Keats was able to

evoke his impression of the Grecian urn in *Ode to a Grecian Urn*. Indeed he drew upon the available memes. The scientific or physical explanation of the urn would provide only one level of description and to claim that any other level of description is inferior, which is certainly what Dawkins suggests in *Unweaving the Rainbow,* misses the whole point of having an imagination in the first place. Poetry is obviously not in any way a challenge to science, yet this is the way that Dawkins treats it. He states that anyone of "poetic sensibility" would have a drive to want to know about the universe, but he confuses curiosity with our ability to simulate in the world of the imagination. For one can be inquisitive about the reproduction of turtles without being sufficiently moved, interested or skilled to produce an ode to the reproductive system of a turtle.

The issue with Dawkins' account of the role that science plays in understanding creativity is that it is limited in what it is able to describe. The strong reliance upon this scientistic account of creativity seems to miss out on being able to describe the more intentional level of behaviour. For surely there must be other worthy levels of description of behaviour, certain 'patterns of behaviour' associated with the use of the imagination, that can be used from the folk psychological perspective that Daniel Dennett may be able to provide.

Creativity and Imagination

This latter discussion of Dawkins' treatment of creative processes and simulation raises the following question: What differences, if any, lie between our ability to be creative and our imagination? There seems to be an implied difference in Dawkins' work between these two notions that is never made explicit. For, as we have seen, he discusses creative processes

independently of our use of the imagination. In short, he views creative processes as being nothing more than the ability to use subtle searching procedures given a broad variety of options, whereas the "poet's gift of imagining" is somewhat more recondite or emotionally based. What do we do when we imagine? Imagination, from Dawkins' perspective would seem to be somewhat involuntary as opposed to his notion of "creative processes" where there is some notion of choice involved in the searching procedures.

In colloquial terms when we use our imagination we tend to rely upon the combination of input from our senses as well as our general understanding of things. Perhaps an example may help at this point. When asked to imagine what a red Double-Decker bus looks like we tend to do one of number of things. Firstly, we might pull from our memory a visual schema, as Bartlett proposed, of what such a bus looks like, which is based largely upon what we have already experienced. Irrespective of what sense modality we simulate, when we *imagine* something, whether it is a bus, a perfume or a culinary dish, there is a sense in which we *experience* these representations when we are engaged in *imagining*. Whereas, when we bisociate diverse ideas to produce something novel we don't always seem to be consciously engaged in that process. Nor do we seem to be in the same way reliant upon our memory of sense impressions when we are entertaining ideas as we are when we imagine things.

This leads us on to the question 'How are we to understand the relationship between imagining and conceiving?' My account gives memes and schemas a role in understanding the connection between imagining and conceiving. It will also become apparent that memory and recall, and in particular Bartlett's notion of schematic recall, as noted in Chapter One, is an important insight into both imagining and conceiving. Introspection and

the sensory modalities are also given a role to play in highlighting the differences between imagining and conceiving

Imagining and Conceiving

One way of understanding our ability to imagine things can be seen as an expression of the schemata involved in our perceptual modalities as well as memory. As discussed, Bartlett believed that there are schemata involved in recall that are based on social conventions as well as on idiosyncracies of character and that these form the basis for image making. Our ability to imagine is based on the environmental social setting. We could perhaps also posit "synaesthetic recall", borrowing from Gombrich, which involves other sense modalities but is at the same time subject to the schema of social conventions, attitudes, beliefs etc. This is basically the combination of the notion of synaesthesia that we saw in Gombrich's work combined with Bartlett's notion of recall. It is conceivable that something like this occurs, since social conventions, attitudes and beliefs can be found in our recall of all the sense modalities, not just our visual or conceptual memory. Our recall of certain sounds for instance, can have certain conventions attached to them. The ringing of a bell may for some people recall a convention associated with attending church or perhaps at the end of recess at school. This view of imagining would seem to reflect the schemas that we have developed and share with others in the particular social settings to which we belong.

Conceiving, it will be argued is reliant upon the processes involved in introspection. Memes are conceptual products and also need to be considered as part of what it means to conceive. William Lyons, who wrote *The Disappearance of Introspection,* has a number of ideas about introspection that I will draw upon in order to show that the similarities as well

as differences between imagining and conceiving are much the same as those between schemas and memes. Firstly Lyons developed a theory of "replay" which was the idea that when we introspect we 'replay' perceived events and report directly upon those. He believed that introspection was nothing more than memory and imagination used for different purposes: "memory might plausibly be construed, at least in regard to introspection, as more like an instant replay facility whose answers to questions comprise (continuous) replays of the original processes."[157] From the point of view of conceiving, to "introspect" Lyons believed was, among other things, to use "overt intelligent performances employing language, codes or calculi, or significant gesture, or expression."[158] Introspection is intimately tied to our ability to conceive, and indeed to memes, and Lyons would have agreed with Bartlett that the cultural background has a large role to play in both memory and imagination, which are necessary for introspection to take place. Lyons also claims that when we conceive we construct "modeling" of our cognitive life that is based on the folk psychological setting. Much of the structure that is a part of our ability to conceive may be innate, but much of it is also reflected in our use of language as Dennett had argued. Perhaps we could say that what Lyons is describing is memes and schemas working together where memes are the things being conceived and schemas are aiding by helping to model our cognitive life and thereby provide some kind of structure for this process. Lyons, by reference to Nicholas Humphrey, also makes the point that introspection was an evolutionally significant ability to acquire because it meant that we could have a greater understanding of other minds and it helped in the formation of society in general. Indeed, as far as memes are concerned, this is also significant because it meant

[157] Lyons William (1986) *The Disappearance of Introspection* Massachusetts: MIT Press, p. 79.
[158] Ibid p. 114.

that if we are able to understand other minds then our memes could be reproduced more efficaciously.

There is an interesting connection here between Bartlett's notion of the schema of recall being the foundation of image-making and the role that memory plays for Lyons in conceiving. Memes are conceptual products and just as the schemas of social conventions are involved in image making we can say that they are also found in the formation of concepts or memes, especially as Lyons relies upon memory in his notion of conceiving as well. Concepts are also reliant upon their schematic structure in order to be recalled. As has been noted, conceiving is intimately tied to our use of language which is structured and schematic and reflective of social conventions as well. Dennett also suggests that in the evolution of language we learned cognitive auto-stimulation which is where instead of talking to others to find out solutions, we learnt to ask ourselves: "And to the creature's delight it found that it had just provoked itself into answering its own question."[159] Perhaps this evolutionary Good Trick is another sense in which we can understand how we came to conceive and perhaps even first learnt to create. The ability to 'answer back', as it were, is perhaps where the generator first developed in evolutionary history. Memes are also part of this evolutionary understanding as software for the generator that developed over time. For, as memes are a part of the cultural landscape of a society, social conventions are just as much an influence upon them. In this way we can see how through our use of memory schemas provide memes with the vehicles for transmission of their cultural products.

An example of the way memes, schemas and memory appear to be interconnected can be found in the numerous examples of feral children. That is, children who have been brought up by wolves or monkeys or other such animals. In *The Myth of Irrationality*, John

[159] Dennett Daniel (1992) *Consciousness Explained*, London: Penguin Books, p. 195.

McCrone details the accounts of such children. He explains that these children have no facility for understanding human language and were only able to learn a small vocabulary which was patchy at best and lacked any real sense of grammar. In addition to this, the children appeared to have no memories of their life in the wild and only seemed to operate in the here and now. Many of the accounts described by McCrone of such children reported that there was a lack of self-awareness and affection towards humans in general. He states:

> a final charcteristic shared by the feral children was that they seemed somehow to lack memory and self-awareness. . . .They could make simple associations and learn to recognize familiar people and situations. But they seemed unable to reflect on the past or the future, or to have any insight into their own plight.[160]

The majority of behaviours that they learnt in the wild including walking on all fours and howling and defecating when and where they pleased, were difficult to train out of the children. There are also claims by those who studied and cared for these children that there was a certain amount of adaption as far as the senses went, such as a heightened sense of smell and sharp eyesight. Some famous examples of these feral children include Victor of Aveyron in France and Kamala and Amala from India. Given Bartlett's work, feral children such as these demonstrate the crucial role that schemata play in constructing the mind in order to provide a warehouse for concepts and memes that are a part of the moulding influence of society upon the developing brain. The ability to use our memory as a part of the construction of concepts and memes, that are found in human societies may also

[160] McCrone John (1993) *The Myth of Irrationality*, London: Macmillan, p. 104.

account for why these children, who were deprived of the influence of such a society, seemed to have no sense of self-awareness or intelligible memories of their time in the wild. Even if they had retained some kind of memory of their past lives in the wild, without the necessary schemata of language and other associated conceptual schemas in place communicating these memories would be nigh on impossible. The lack of a schema of language would render the content of such memories, even if they had existed, unintelligible. Schemas, in other words, provide a vehicle through which the content of memes can be made articulate, and memory, it seems, plays an important role in the construction of concepts and memes.

In summary, it would seem that memes, schemas and memory can be said to operate in both conceiving as well as imagining. Indeed, there is a sense in which imagining and conceiving are interconnected, through memory, in the same way that memes and schemas rely upon each other. Lyons believed that when we conceive, we also build models or schemas, whereas for Bartlett the formation of images which the sensory modalities help to provide is based on the ready-made and recalled schemas of social conventions. It is also clear from this discussion that when we consider what is happening within the generator, memory schemata and social conventions are important capacities to factor into the bisociative processes that go towards producing novelty.

Bisociation and Creativity

Bisociation would seem to be a crucial component to comprehending how the imagination works. We could speculate that both our ability to simulate as well as bisociate different

images from our sense impressions is necessary to the production of a novel outcome. Consider Hume's discussion of the fancy:

> nothing mentioned but winged horses, fiery dragons and monstrous giants. Nor will this liberty of the fancy appear strange, when we consider, that all our ideas are copy'd from our impressions, and that there are not any two which are perfectly inseparable.[161]

Hume clearly saw a strong correlation between our sense impressions and the imagination and the examples of winged horses and dragons illustrate how association can be seen to work in the imagination.

By what means can it be said that a meme that we are "infected" with *refers* to the alleged image of it in a given artist's work? This is where Koestler's "associations" become useful, for when we bisociate ideas we use diverse associations. When we associate different images or ideas we tend to be conscious of this internal process, though not necessarily aware of how this works cognitively. That is, we are aware of how metaphors or analogies function as a means of capturing concepts or memes that are too discreet for non-figurative language. However once we begin to mention 'bisociation' are we not on our way to describing mechanisms of creativity rather than just the surface content of the imagination? Perhaps some examples of our use of metaphor and analogy can illustrate this point more clearly as well as demonstrate how both associations and bisociation can be seen to work in the cognitive framework of the generator. For instance,

[161] Hume David (1984) *A Treatise of Human Nature*, London: Penguin Classics, p. 57.

artists often use colours metaphorically to convey moods, the colour blue is often used to convey sadness as in the idea of feeling 'blue' in the sense of being low spirited or of having 'the blues'. This is an example of bisociation as the artist is using two different contexts, that of blue as a colour and blue as a mood, to convey something in their artwork. These contexts should be seen as merging together, as bisociating, within the generator to produce the final product that could only have been possible because of our interaction with cultural norms and traditions as well as memes. An example of an analogy can be seen in Van Gogh's *Sunflowers* where he uses the brightness of the yellow hues that we tend to associate with cheerfulness to convey joy. Associations should also be seen as playing a role within the processing of the generator, as it would seem to be a common cognitive tool that we employ in our daily lives as well as a tool for creative expression. Perhaps they may not be as cognitively impressive as the processes involved in bisociation, however associations do nonetheless have their uses, as the latter Van Gogh example demonstrates.

Colloquially speaking, the main criterion upon which we tend to judge whether a work is "creative" is the extent to which it is novel or original and departs from what was the norm in a particular context. In *A Discourse on Novelty and Creation,* Carl Hausman suggests that metaphor, as we have already mentioned, plays a significant role in promoting novelty:

> A metaphor, then, calls attention to what, for established concepts, is not the case; and in doing so, it emphasises a tension between determinate and familiar concepts. . . It negates the past viewed as the *status quo*. And in offering an unprecedented meaning through

> disclosing a gap in the rational pattern, a metaphorical expression manifests itself to us as an instance in novelty. [162]

Metaphor for Hausman would seem to act as the conduit through which novelty can emerge. It is interesting that the same processes that have been described in Koestler's notion of bisociation are also close to this definition of the function of metaphors. For the products of the bisociation process also offer "an unprecedented meaning" by taking advantage of this "tension". When it comes to the perceptiveness or insight of the artist in relation to metaphor many bisociative possibilities may present themselves. However those artists who are most insightful will grasp the ideas and concepts that are most profound or interesting, and they will select such bisociative arrangements that fit this description.

Creativity and the Self

Dennett argued in *Consciousness Explained* that we possess a "center of narrative gravity", much like physical objects can be said to have centers of gravity, by which we weave stories and represent ourselves in the same automatic way in which a spider is "programmed" to weave its web or a beaver to build its dam. Dennett explains that we create a narrative selfhood about ourselves which is a kind of abstraction that is nonetheless remarkably efficacious. He points out that we are also capable of creating more than one self such as in Multiple Personality Disorder, which he notes seems to be a reaction to particular circumstances in childhood where one or more other selves is used in order to

[162] Hausman Carl (1975) *A Discourse on Novelty and Creation*, Albany: State University of New York Press, p. 104.

cope with environmental influences. The construction of our selves would on this argument seem to follow along evolutionary lines by analogy in that such construction is done automatically and without reflection and this can be seen to be one sense in which we are "creative". Dennett clearly rejects the line that there is a self that does any creating at all. So if there is no sense in which there is a self lurking behind our ability to create, how else are we to understand creativity?

One of the most important things to figure out is that there is a generator which generates ideas and to then come to an understanding of just what this generator is composed of in order to understand how it might work. Perhaps autosimulation, the Good Trick we discussed earlier, which may have a role in creativity, explains not only why we are able to create in a conscious manner but also the illusion of there being a self which has authorial control over such creativity. When we ask ourselves a particular question which then solicits a creative response, the response is from, as Dennett argues, a "Head of Mind" which represents the notion of a self.

The example of the wolf-children that McCrone describes sheds an interesting light on what we conceive of as having or not having a self. These children appeared not to have self-awareness as we understand the notion, and it is interesting to speculate what it must be like to have the kind of consciousness that they developed. If their behaviour was anything to go by, the sense of self that these children had developed was very much defined by the behaviour of the wolves that had brought them up. Hence all the intentionality that they have is derived from their needs for survival and behavioural rules of the animals that brought them up. If these children also have a derived intentionality of

sorts, then perhaps this suggests that we all possess at least an intrinsic inclination to develop some form of derived intentionality depending on environmental circumstances. In *Freedom Evolves* Dennett asserted:

> Human consciousness was made for sharing ideas. That is to say, the human user-interface was created by evolution, both biological and cultural, and it arose in response to a behavioural innovation: the activity of communicating beliefs and plans, and comparing notes. This turned many brains into many minds, and the distribution of authorship made possible by this interconnectedness is the source of not only our huge technological edge over the rest of nature but our morality.[163]

The ability to act creatively has an evolutionary history, it was a behavioral innovation of sorts that was shared with others but nonetheless there is still an explanation needed in terms of the generator and what happens within it. The generator is the source of our culturally inspired creative endeavours, it is where our use of language and introspective capacities converge. It is also because we have agency, whatever that ultimately amounts to, that we are able to exercise authorship in our creative use of memes. Dennett argues that memes depend on human brains. We can't just say "my memes made me do it!" as we still exercise control over these parasites through our thinking processes. Indeed he argues that memes rely upon our abilities to think. Thinking is a way of putting a meme to the test as natural selection does a gene. In a similar vein when a meme comes into being it cannot just be that we are unwitting hosts that are at the mercy of memes, we

[163] Dennett Daniel (2003) *Freedom Evolves* London: Penguin Press, p. 259.

also play an active role in their creation which is why an explanation of the workings of the generator is necessary. A further investigation into the generator will be taken up in the next part of this chapter.

Chapter Four II ***CREATIVITY AND EVOLUTION***

CREATIVITY AND THE GENERATOR

The following part of this chapter will attempt to unpack the generator and look much more closely at the role that schemas and memes play. The focus will be on creativity and how it is achievable within the generator. The role that the design stance plays in creativity will also be investigated at greater length.

Turing Machines and Intention

In "Computing Machinery and Intelligence" Alan Turing put forward the mathematical notion of a computational device which has a complex input - output relationship that can be functionally describable.[164] Turing proposed in his "imitation game" that if a human subject could be fooled into believing that a computational device behaved as a human then that is sufficient for it to be considered to possess a mind. However, Turing cautions that there are some questions that the computer would be incapable of answering. He asserts that a computer would not be able to answer the question "What do you think of Picasso?" This is not a germane argument against the computer for the "human intellect" is not without fault either. Nevertheless, one cannot help but to think that such a question appeals to our ability to form judgments or opinions which are not so strictly viewed as either "right" or "wrong" as the "Yes" or "No" responses that are issued forth from the machine in the "imitation game" (although these are not the only type of response we can expect

[164] Turing Alan (1950) "Computing Machinery and Intelligence", from *Mind*, , vol 59, in *Mechanical Intelligence* (1992)Ed D.C Ince, Holland: North-Holland Press, p. 433-60.

from such a machine). A large part of Turing's aim is to debase the idea that "Man is in some subtle way superior to the rest of creation" as well as to computing machines. This is a point that is reiterated often by both Dennett and Dawkins in their respective works on intention and Darwinian evolution.

A further point of interest that Turing makes is through Lady Lovelace's objection, which couldn't be more pertinent to the thesis at hand, "that a machine can 'never do anything new'". This objection is basically that the machine can never divert from its programming. Yet Turing defines it more psychologically as the argument that a machine "can never take us by surprise". This way of interpreting Lady Lovelace's objection seems to miss the point that the internal computation of a Turing machine cannot be thought of as being able to act at variance from its programming and produce novelty. The "surprise" element would seem to be secondary. In many ways this very point is central to the problem of understanding how intention and design are able to work together to produce novelty. In the following I will explore the issues of interpretation, function, intention and novelty through Dennett's analysis of Turing.

In Daniel Dennett's discussion in 'The Abilities of Men and Machines' he argues that the Turing machine should be open to more than one interpretation of its functions and possibilities.[165] He puts forward the notion that the intention of the designer of a Turing machine does not determine how we should interpret the output of a given machine. In other words, the original intention of the machine need not determine the interpretation because:

[165] Dennett Daniel (1997) 'The Abilities of Men and Machines' from *Brainstorms*, England: Penguin Books, p. 256-267.

> a Turing machine specification is in terms of syntactic relationships and functions only, and *ex hypothesi* Jones and Smith agree on which features are symbols and on the rules governing the production of the output strings. In principle a particular Turing machine could thus serve many purposes, depending on how its users chose to interpret the symbols.[166]

Dennett clearly argues that the purely syntactic operations of a Turing machine can be subject to more than one semantic interpretation, in this case depending upon how either Jones or Smith *chose* to interpret the symbols of a system. That is, it is always open to Jones and Smith to, given the syntactic symbols different semantic interpretations. To put it another way, the original *design,* and *intention* for a computational system does not determine the final interpretation, even given that all parties agree on what parts are symbols, and the rules that govern the output.

We are justified in using this Turing machine account analogously when we begin to discuss memes, as Dennett believes that it should be possible to "interpret any man as a Turing machine" on the basis of his biological design and interaction with the environment. How do we marry *intention* and *design* in this account of the production of memes, since, as has already been discussed, memes are not just the result of interaction with the environment, for they also require the generative capacity of the mind's laboratory. Do an author's original intentions count for so little when we view a work of art? On the other hand, is the production of symbols in such an artwork only dependent upon how the

[166] Dennett Daniel (1997) 'The Abilities of Men and Machines' from *Brainstorms*, England: Penguin Books, p. 258.

audience *chooses* to interpret them? Memes are not just the sum of their syntactic relations, for what a symbol represents also comes down to it's meaning in its prevailing usage. Perhaps we could say that rather than symbols being completely open to interpretation that there is a kind of normative way in which we tend to view their meaning.

Gombrich certainly had similar ideas. His structuralist argument regarding creativity can now be seen to be so very important with respect to Dennett: "It is because art operates with a structured style governed by technique and the schemata of tradition that representation could become the instrument not only of information but also of expression."[167] Gombrich reminds us time and again that the progression of art historical style is a two sided affair, "the artist who makes them and the public which is ready to share the game". By espousing skill and tradition as important to all styles of art he was able to demonstrate that his notion of matching and making was the best way to generate new ideas. This idea of matching and making is the same, in principle, as Dennett's notion of generate-and-test.

In regard to the interpretation of symbols produced from a Turing machine, the notion of a lack of criteria produces problems according to Gombrich. As has been discussed elsewhere, he sees the rejection of the standards of a post-modern society grimly, for he argues that we need some sort of criteria by which to judge 'good' from 'bad'. The notion that the interpretation of symbols depends upon how you *choose* to interpret them can be seen, by analogy, to suffer from the same problems. It is for this very reason that an agreement upon what the *design* of such symbols represents is important. For, such an agreement should not hinder other interpretations, but rather form a basis, a standard, upon which other interpretations, in other contexts, can be creatively used. You can, as it were,

[167] Gombrich E.H (1996) *Art and Illusion*, London: Phaidon, Press, p. 319-20.

'have your cake and eat it' too. There is nothing to stop there being a determinate design, in a Turing machine, as well as new interpretations of the function and probabilities of such a design. However we also need to account for the evolution of criteria from without. Such criteria come about through a process of evolution where language, along with input from the environment, is able to order and install new structural software. This software is in turn able to provide order to our use and interpretation of symbols. A new schema can be formed through the bisociative combination of syntax and semantics, or in other words, schemas and memes. The challenge for Dennett is in how to find common ground between *intention* and *design* with regard to creativity without compromising his view of "intentionality". Although a *design* has to account for its *intentionality* there is a difference between the meaning of symbols and the extent to which we *choose* to interpret their function.

In continuing this chain of thought, linking *interpretation* with *intention* and *design,* I want to re-introduce the contribution that Skinner made to learning through conditioning and Dennett's response and criticisms of this account. In our attempt to understand the relationship between *intention* and *design* it is necessary to draw together again the thoughts of Skinner, generate-and-test and Darwinian evolution, along with the Turing machine. The aim is to come to some kind of appreciation of how novelty is possible, given the constraints of our make-up.

Dennett and Skinner

What would it mean for our view of the symbols used and meaning of an artwork if there is no sense in which the role of memes could account for creative processes as more than just randomly generated?

It is indeed necessary to provide an account of mental phenomena from the perspective of engineering, but the latter question poses a problem for the relationship between intention and design. Skinner also had questions over the nature of intentions and science in his work in *Beyond Freedom and Dignity* and in 'Skinner Skinned' Dennett raises the issue as follows:

> Here we see Skinner going beyond the correct intuition that it is in the nature of scientific inquiry that ultimate appeals to intentional idioms must disappear as progress is made, to the bolder view that as this occurs intentional explanations will be rendered false, not reduced or translated into other terms . . . Skinner's whole case comes down to one question: can intentional explanations (citing beliefs, desires, etc) on the one hand, and proper, ultimate, scientific explanations on the other hand, *co-exist*? Can they both be true or would the truth of a scientific explanation *exclude* the other?[168]

[168] Daniel Dennett; 'Skinner Skinned' from *Brainstorms*(1997) London*:* Penguin Books, p. 64.

Dennett is, to a large extent, opposed to Skinner because he disagrees that psychology is riddled with "mentalistic" terms which are non-explanatory or in other words that these mentalistic terms could never be included in a view of psychology that is thoroughly scientific in practice.

The *homunculus* story of the little man in the head is, as Dennett describes, a "*virtus dormitiva"* because it offers no explanation. However Dennett proposed that his notion of homuncular functionalism can accommodate these intentional idioms that Skinner had believed are non-explanatory as was discussed in Chapter 2. Dennett is satisfied that a computer programmer can *explain,* without *explaining away,* why a computer behaved in the manner it does and names such an explanation "*explaining how"* as theorised in the "Deep Blue vs Kasporov" example and discussed in Chapter 2. On the other hand Skinner simply argues that intentional idioms ought to be abandoned. Dennett proposes that indeed intentional idioms and science can co-exist without one swallowing the other.

One of the main issues that arises in Dennett's discussion of Skinner is the equivocation over what counts as "learnt behaviour". This is a salient point because Skinner defines learning as the behavioural effects of reinforcement, in the history of pigeons as well as humans. That is, learning is a change in response probability for Skinner. As was earlier discussed, Dennett argues that we are not mere "Skinnerian creatures" which can only learn through actual behavioural trial and error in response to the environment. However at least these behavioural responses are conditionable, which transfers considerable survival value over a hard-wired or tropistic creature, which has no such

capacity. At some point, Dennett claims, certain Skinnerian creatures adapted an *inner environment*. This inner environment, which is meant to be benign and non-intentional, allowed for greater plasticity and therefore a greater ability to learn. Dennett appeals to Herbert Simon's notion of *generate-and-test* which, he suggests, is what this inner environment amounts to. Dennett's interest in learning and generate-and-test has parallels with the Turing machine as Turing had identified it as a salient feature that his machine needed. If there is an ability to learn then we can surmise from Turing and Dennett that there would need to be a generative capacity or in other words a "generator".

The Generator

In the following I will add to an earlier discussion of what features a "generator" might comprise and how best to conceptualise it's role and function within any given system.

The generator throws up ideas and the tester has the job of selecting the designs that are the most appropriate given the presence of old design features. Dennett describes it like this: "either the new design *exists ready made* in the old design in the sense that its implementation at this time is already guaranteed by its old design, or the old design does not determine in this way what the new design will be."[169] Although there isn't yet an account of what comprises the "generator" in this generate-and-test model this relationship between the old and new designs that are gathered from the environment seem to be an important aspect of how to understand its likely functioning. We have seen that the generator needs to be endowed with a "high degree of selectivity" when it picks up information from the environment and in terms of the creation of new memes there would

[169] Dennett Daniel 'Why the Law of Effect Won't Go Away' from *Brainstorms* (1997) London: Penguin Books, p. 84-85.

need to be certain other features. In the previous chapter, I have suggested that functions such as that depicted by Koestler's notion of "bisociation" would be useful as well as other general features such as metaphor and analogy, in addition to Gombrich's notion of schemata, would help to elucidate the contents of the "generator" in Dennett's model of the "Tower of Generate-and-Test". Additionally, it would be fair to call the processes that occur within the generator, that are absent from our direct thoughts and intervention, as comprising the work of the "unconscious". That is, the work that the generator does in spewing forward new designs based on old designs and the aforementioned use of analogy, metaphor, bisociation and so forth are essentially unconscious processes.

Dennett and Simons' account of invention defines learning as a "process of self-design" and is defined by the new design that is created. Needs can also change depending on the situation and that is why the interpretation of the *function* of an old design can change thus heralding a new design. The tester when judging new designs against old designs in the inner environment needs to know why this particular fortuitous impingement as opposed to any other is significant. Plasticity is the main feature that makes learning possible. Dennett explains that: "We humans have used our plasticity not just to learn but to learn how to learn better, and then we've learned better how to learn better how to learn better, and so forth".[170]

It is necessary to distinguish between the processes of self-design within the generator of a person and arriving at a concept of the way that society at large "creates" new ways of understanding different memes. The phenotypic effects of a meme will differ in its representation and derived meaning to the original conception of that meme. So it would make no sense to equate the original meaning of the meme to its representation or

[170] Dennett Daniel (1993) *Consciousness Explained,* London: Penguin Group, p. 193.

phenotypic effect. This now begs the question: If new designs are arrived by this process of generate-and-test in the individual at the micro level of description how are we to understand the way that society, at the macro level, can be understood to "create"? Perhaps the best means of describing the way to view how society "creates" new symbols or designs on the basis of old designs is through Darwinian evolution by natural selection. As an example the swastika was once a religious symbol in Indo-European culture but its meaning changed dramatically during the 1930's to be the symbol of a political party which was and still is reviled by the rest of the world. Or consider the various symbolic uses that the hammer and the sickle have. The traditional meanings of the hammer and sickle are as tools but for the purposes of Communism these two tools together were intentionally used to refer to the working class who were oppressed. The symbol of the "hammer and sickle" was then adopted by other nations for the purposes of representing their political and social situations, so that this symbol can remind us of the flags of what was the USSR. Both the hammer and the sickle signify tools and this does not change, for without this original understanding of what they signify the later use of the "hammer and sickle" in Communism would not make sense. We cannot explain this change by pointing to some kind of agency or collective consciousness as Hegel had with his notion of the "geist". These examples can be seen as Darwinian insofar as they are adaptive to the time, place and purposes of those who have the power to make a difference to society. There is nothing contradictory so far as Darwinian evolution is concerned to posit that human creativity requires some form of agency, whatever that may be, while also arguing that social changes and "creativity" are Darwinian. In *Consciousness Explained* Dennett made the following point: "Cultural evolution, and transmission of its products, is the second new medium of evolution, and it

depends on phenotypic plasticity in much the same way phenotypic plasticity depends on genetic variation."[171] Hence Dennett would argue that the notion of "agency" is a fiction because he sees directionless evolution as the governing principle for not only culture but for the individual as well.

What does it mean to be an agent of your creative efforts? That is, how can we explain the idea that our creative efforts are in some way "directed" and not just random mutations as Dennett suggests? Perhaps the best place to start is, ironically, in Dennett. We have so far argued that there exists a sort of "generator" that is responsible for spewing forward ideas, which uses certain devices such as metaphor, bisociation, analogy and so forth. This generator is essentially the unconscious at work. Perhaps we could also posit other embedded tools such as certain reasoning processes, drives, memory and of course generate-and-test that are a part of its composition. Given the central role that this generator plays perhaps we could argue that being an agent can be explained, at least in part, by the presence of this generator. That is, we can explain how an agent is the cause of her own thoughts which have a creative end, in this case, because we possess this unconscious generator that is able to process and produce new ideas *based on structures* that are inherent to its composition.

This explanation is completely in keeping with the idea that cultural evolution is Darwinian in nature. Yet even though the latter may go some way towards explaining agent creativity we are still very much a part of culture and influenced by the phenotypic effects that it produces. Hence there does need to be some way of accounting for our interaction

[171] Dennett Daniel (1992) *Consciousness Explained,* London: Penguin Books, p. 193.

with culture in the creative processes of the individual. We could argue, partly along with Dennett, that the Darwinian nature that cultural transmission is subject to explains why we believe what we ought to believe and desire what we ought to desire because it is rational to do so. Since evolution is rational from the perspective of the intentional stance, and the very notion of rationality can often be context dependent, it would seem to make sense to understand rationality in terms of its effects in culture when discussing cultural evolution. Perhaps we could also argue that culture provides the reinforced content of our intentions and that the generator produces or is the *cause* of such intentions. Furthermore, the way that culture can be said to reflect the content of our intentions rather than the source or cause of those intentions, can be explained by the Law of Effect where the most appropriate cultural artefacts are reinforced and repeated. As we saw in Chapter 1 the Law of Effect is a non-question-begging causal theory of behaviour which Dennett describes as roughly analogous to natural selection. Indeed, the view that there are memes infecting our culture reinforces Dennett's notion of the Law of Effect since they are subject to natural selection.

Yet our intentions are not always based upon optimal rationality either. In the context of creative processes what is rational may be beside the point of why and how an artwork develops which means that the intentional stance is of no use to understanding this creative process. Especially in the twentieth century there have been many movements which have highlighted how irrational the creative process is and they have encouraged people to understand art on a more abstract, instinctive and emotive level rather than just what is rational and predictable. As a consequence, Dennett's intentional stance would seem to be limited in what it can describe when it comes to understanding the psychology behind or involved in creative processes. For if the bedrock of the intentional stance is our

rationality then behaviour which aims to express what is irrational as is found in the creative arts, doesn't fit and isn't describable by this rational framework. This would seem to suggest that the generator is not just responsible for generating what is rational given the effects of culture and so forth but also what is irrational. Or at any rate what can only be understood from a non-rational artistic perspective. While the Darwinian explanation goes some way towards understanding creativity it is not a complete explanation which is where the generator is helpful. For, what art seeks to describe is not necessarily normative in terms of how we understand beliefs and desires. It is often partly based upon how we respond to life's experiences and the empathy with which we respond is not best understood in terms of normative and rational belief or desires.

Intention and Need

What motivates our actions? Perhaps the best way to define it is as a reason why. Oftentimes the reason why we believe or desire things is because they serve a *need* and these can vary depending upon the environmental conditions. Needs can vary in the way that they are defined. What are our basic needs? Dennett defined behaviour in terms of "functional probabilities", that is: x behaves in y manner because it is a reflection of its probable internal functional state at the design level. There is also the intentional stance to consider, of course. Skinner, on the other hand, was a "greedy reductionist" who saw behaviour strictly in terms of operant conditioning. Dennett later states that:

> ascriptions of beliefs and desires must be interdependent, and the only points of anchorage are the demonstrable needs for survival,

> the regularities of behaviour, and the assumption, grounded in faith in natural selection, of optimal design.[172]

Clearly, Dennett defines our needs in terms of biological functions and necessities. Yet, what about our need for communication? Dennett has argued strongly for a Darwinian account of language which does not lead to question begging or "sky-hooks" as he calls them, as opposed to others such as Searle who argues for "original intentionality" which is opposed to a Darwinian account of language. Dennett argues that a combination of generate-and-test and natural selection is sufficient for explaining how a language developed. Our need to communicate is demonstrably reflected in our use of various kinds of media and in the very notion of a meme. If we had not developed the ability to communicate, whatever way we choose to define our development of language, human culture would not have thrived in the way that it has. What seems to make humans different from other organisms is the strong desire to communicate or express our ideas, to create with the purpose of communication. If beliefs and desires are based upon the "optimal design" of an organism then this also poses a problem for communication because, especially in the arts, communication is not always based upon optimal rationality.

Yet this may not be as troublesome as it sounds. For with the inclusion of Gombrich's schema theory, which presupposes a structure, or in other words a kind of rationality behind it, then perhaps the optimal design principle could work. However the *need* to communicate is not resolved by schema theory alone because the sense in which *need* is used presupposes some kind of "mentalism" or sky-hook at work. The need to communicate is however resolved by Darwinian evolution insofar as the *need* to

[172]Dennett Daniel (1997) 'Intentional Stance' from *Brainstorms*, London: Penguin Books, p. 8-9.

communicate must have evolved over time for the needs of survival but also as a cultural trait. Communication is important to our physical survival, but the question remains: How does our physical survival reflect our need to use memes and schemas in culture (especially since our physical survival is not in immediate danger)? The best answer to this question is that culture is just a more complicated means of ensuring survival, from the point of view of evolution. However it is this complicated picture that I hope to contribute towards elucidating.

SCHEMAS AND MEMES

As we saw, Gombrich discusses earlier in his work on synaesthesia the way in which we interpret different sounds is very much dependent upon the local conditions and culture in which it is found. An example that he sites is the noise that a hen makes when crowing in the morning such as “cock-a-doodle-do” in English and “keriki” in Chinese. A further and more complicated example is also found in both music and language. In the same way that certain paintings can be said to “speak to us” music can also have this ability. By way of comparative analysis the music produced by various cultures illustrates just how differently sense perception is used in expressing ideas, especially in the case of how we “sense” rhythm and timing. The music that came out of Africa to then influence musical movements such as “The Blues” has a strong “feel” of audaciousness and lively expression of rhythm. In juxtaposition to this, Russian classical music from the eighteenth century onwards expresses itself as very serious and almost morbid at times. Perhaps one could

argue that this is just my opinion and what seems audacious and lively is to others just loud and annoying but this is precisely the point that was made earlier. The fact that we form judgments which move us in certain ways, whether that be for, against or neutral, is sufficient to illustrate that interaction with the environment is a necessary part of creativity for both the artist and audience. Indeed, whether our judgements are real or imagined is not so important because for creativity what becomes more important is whether what is expressed reflects our folk psychology. Indeed, how do we differentiate between what is real and what is imagined? Since both the imagination and the intellect seem to be operations of the mind this does not seem at all clear. The role of sensations in the creative arts must surely be taken into account when discussing the use that we make of our imagination. For when it comes to creativity we employ the use of various sensations such as visual and auditory acuity in order to derive meaning. That is the phenotypic elements that are perceived to signify aspects of our cultural understanding seem to build upon the meme-pools that already exist in culture. These elements seem to be derivative in some sense. While I have tended to concentrate on art historical styles, this same process seems to happen in music where there are certain memes and schemas that are regularly employed in the poetic rhythms and auditory perceptions in the creation of music in a given cultural setting. The role that schemas play in this story is of equal importance. For the derivation of meaning from meme-pools and shared folk psychology requires a syntactic structure in order that such meaning can find a suitable mode of expression. The role of this syntactic structure is also necessary so that the intended audience is able to understand the artist, that is, the work needs some form of language or grammar. This is why the often much maligned conventions and traditions of society play a crucial role in the development of

new ideas by utilizing both memes and schemes. Dennett's notion of creativity, as a product of cumulative random mutations doesn't seem to completely satisfy the concerns about our interaction with and perception of memes in the processes of creativity. There is perhaps a sense in which memes build upon other memes in culture and so could be thought to be cumulative but this is not a sufficient explanation of creative processes. Rather, some combination of Gombrich's and Dennett/Dawkins views of memes, folk psychology and schemas is better at satisfying the concerns over the production of meaning and syntax in creativity.

We may wish to ask of an artist: do the impressions gathered from our cultural milieu express the beliefs, desires, hopes and likely reactions to situations that we all tend to experience in society? Furthermore, as Gombrich would argue, the manner by which we tended to "judge" an artwork in the past was whether it was able to provide a solution to the "tasks" that tradition asked of it. Such a task might be framed in the following question: 'Does the artwork reflect the hopes/aspirations or beliefs of the time?' Depending upon the schemas at work in a particular culture, the music or language similarly tends to reflect the folk psychology of the time and place. This is where certain established schemas influence how a culture expresses itself through its language and ideas. Both grammar and the various conventions of society provide a vehicle through which the transmission of ideas can find their ultimate expression. Likewise with music, if there was no established chord structure then Beethoven or Mozart would not have been able to fulfill their musical genius in the forms they did. The rhythm and melody in music is only made apparent through some form of structure. Without a scheme within the internal embodiment of music *as well as* the schemes that we find in the milieu of a given culture, as represented by the

conventions and institutions of the time, memes would have no structure, no *syntax,* as it were.

Just as memes are internally realized and are externally expressed through phenotypic effects, schemas are similar insofar as they are also internally realized as well as expressed externally. However, just what the relationship is between this internal realization and the external expression of a schema is another matter entirely and it is not clear just what this may be. One thing that we should be clear to avoid however, is in thinking that the external expression of a schema such as the syntax used in a poem is the same as the way that schemas are realized internally. In other words we don't literally carry around in our brains the structure of a poem or the architectural principles of a pyramid or some other external realization of a schema. It would be simple minded to think that the relationship between schemas and their expression worked in this way. Just as memes and their phenotypic effects are different realizations so we must also be sure to differentiate between schemas which are internally realized and their expression. What we can say is that there are certain structural tools or media that are used in the expression of a schema, so a meme such as Christianity will be internally realized by a schema in a particular way, although the expression of this schema may take on different forms, such as the design principles of painting or the syntax and framework of a poem of this meme. The question still remains about how we should approach this relationship between the internal realization and external expression of a schema and perhaps with more understanding of genetics we would have a greater understanding at some point.

Indeed, without some structures in place our sense impressions have no format within which to express themselves. That is, in order to interpret what our sense impressions

perceive there needs to be a framework which can order and translate these impressions into cultural content that we can then comprehend. This is why Gombrich's schema theory is so important to memetics, for schemas provide a means by which to communicate the cultural content that is important to us, by drawing upon both our known conventions as well as whatever our sense impressions tell us. In other words, our visceral impressions of the environment are not enough, for there also needs to be a means by which to comprehend them. It is not sufficient to assert that our physical interaction with the world can explain the way the world *really* is, just as it is also not sufficient to assert that all that I can know to be *real* is what my mind tells.

Perhaps this is where creativity becomes important, for it provides a new way of comprehending our experiences, a different perspective that is often called 'profound' if it leads to *learning*, not only for the one who creates but also for the audience. Furthermore, when such a new perspective is derivative from what we already understand we are better able to grasp it because it communicates something with which we are at least partly familiar. For Dennett believes that learning is basically a "process of self-design" and he defines this process by the product: a "new design". These are not premeditated responses or designs, for because we are educated from an early age to respond to certain stimuli in a certain fashion, dependent upon what culture we belong to, we cannot help but to respond to sensory stimuli in a roughly normative way. For instance the colour red in western countries is affiliated with 'warmth', 'heat' and 'anger' whereas in Japan the same colour has other connotations, namely the rising sun, especially as it is used in the national flag that are absent in the Western 'popular cultures'. Likewise, Western audiences fail to appreciate traditional Japanese music, because they lack an understanding of the traditions

and structures of the artform, and cannot appreciate the creative expression inherent within this schema. What needs to be decided by the creative artist is how to use this basic set of conditioning to describe some idea or concept in a novel fashion. Perhaps this early education or conditioning is what Dennett is describing when he asserts that there is a trade-off between a new and old design where there is a balance to be met between the plasticity and tropism of a system. This "inner environment" of a system which has some "plasticity in its input-output relation" was described by Dennett in "Why the Law of Effect Won't Go Away".[173] We may be tempted to ask: Where did this "old design" come from in the first place? Dennett suggests that innate or instinctual "behavioural dispositions" are to be explained by the same principal that explains the well-designedness of the bird's wing.

Meaning and Creativity

Does the search for some kind of truth, whatever we conceive that to be, mean that there has to be actual intentionality rather than the intentional stance that Dennett adopts? This is the issue that separates how Gombrich and Dennett/Dawkins approach creativity. Furthermore, if we are all conditioned by our environment, what does it mean to imbue 'meaning' in the production of art? Perhaps following Dennett, we could say that anytime a 'new design' is achieved, that is a new idea, a process of 'self-design' or learning has been achieved. 'Meaning' for the individual could be conceived of in terms of learning. While it is true that not all that we learn is meaningful, the combination of all that we learn as well as particular themes that run through all our lives comprise who we are and how we

[173] Daniel Dennett (1997) "Why the Law of Effect Won't Go Away" from *Brainstorms*, London: Penguin Books, p. 71-90.

respond, within a given context. We are conditioned by certain schemas in a way which lies beyond our consciousness, and we use them in our daily interactions with people. Consider the conventional conversation about the weather when we are bereft of anything better to say. Following Gombrich's line of thinking, the problem for art historical styles seems to be that individual artists can become too obsessed with their own 'learning' and forget that they are also influenced by the conventions of the time. This is perhaps another point about Gombrich's argument against the avant garde. These conventions can cover a broad range of structures such as the forms that he found in "synaesthesia" and language as well as the more obvious conventions found in our behaviour within a given context or culture.

Yet it would still seem to be the role of meaning to break these conventions if we are able to learn a new way of expressing what is otherwise mundane such as what Surrealism had done for dreams. Where is the role of intention in this process of breaking and reconstructing conventions into another form? Does Dennett resolve the issue of meaning in his intentional stance? Dennett says that we can make 'meaningful' predictions of behaviour by adopting the intentional stance, as opposed to believing we really have intentional content. Nevertheless, our best attempts at making predictions of this sort would seem to fail, almost by definition, when it comes to predicting the outcome of creative processes. At best we could surmise that certain issues may be more meaningful for an artist given her history but not the form which it will take. This new form would draw upon enough folk psychology as to communicate something in order that the idea leads to 'learning' in the audience, as it had for the artist. This requires a change of emphasis from the individual artist to encompass and embrace her culture as well. This notion of learning that the audience and artist engage in rests upon interpretation to some extent and the

demand from our culture to produce artwork that could be deemed unique. Yet, if we all responded uniquely to any given situation then that would render the very notion of 'folk psychology' and normative behaviour asunder. Uniqueness should not be defined as being able to produce something ex-nihilo, for that is unattainable; rather uniqueness is best viewed in terms of the artist's own idiosyncratic expression, as Gombrich would suggest. Thus an artwork that is creative is dependent to some extent rather than completely independent, for it depends upon structure or schemes. It is dependent in the same way that a meaningful response to an objection relies upon there being an objection in the first place. Even when we have an argument with ourselves, we need a contrary point of view in order to formulate a response. It is also dependent because of the nature of the way we use language or understand the chord structure of music. Meaning and Syntax would seem to be reliant upon each other and this is why the combination of memes and schemes makes sense. Syntax, for Dennett operates internally, which is below the level of the intentional stance.

Since Gombrich and Koestler can be criticized for not accounting for intentionality while the Dennett/Dawkins account suffers for not considering meaning, the best option that we are left with is to find a way of combining the two positions. So, what are the combinatorial options available between memes and schemes? Is this a manageable demand at all? The role that Dennett and Dawkins can play is to view the idiosyncrasies of style as predictable using the "intentional stance". This is not the same as understanding the content of an artwork as possessing actual intentionality for perhaps the issue over whether this 'actual intentionality' exists or not is unexplainable rather than non-existent as Dennett would believe. Consider the example of the Surrealists who attempted to describe

their dreams. Clearly it is predictable that any painting that flies under the banner of "Surrealist" could be predicted to have 'dream states' as its theme. Once we become acquainted with a particular artist we could interpret or predict that that artist will express her work in the idiosyncratic style that is the signature of her individual style of artistic expression. It could be argued that this idiosyncratic style fulfills the modern demand for individual uniqueness without having to abandon the idea of schemas. We could also make "design stance" predictions if we are aware of the likely patterns of idiosyncratic style where certain design elements are functional in the sense that they operate to signify important concepts or memes. For instance, metaphor, allegory, analogy and simile all have a particular structure in the sense in which they reference ideas. Perhaps we could argue that these referencing tools are the means by which to understand an artwork from the design stance. One idea was that we can come to an understanding of the structures inherent in these language and referencing tools in order to better comprehend the use of particular memes from the design stance. In doing so, we might be able to learn why some memes are given more significance than others.

Chapter Five ***DADA – A Case Study***

The following chapter seeks to outline the history and significance of the Dada movement as a case study or example of how memes and schemas operate. The philosophy behind the rebellious spirit of the Dada art movement and the way that it spread is a case in point for many of the ideas that both Gombrich and Dennett have put forward. Though it was a short lived movement its significance to the history of art has certainly not been forgotten; the extent of the influence that the memes and schemas of Dada had were apparent in twentieth century art and are still felt in present day works of art.

First World War

The Somme Valley is marked by nothing more than a wooden cross that was put there by the Germans. The Germans first held the Somme Valley, then it was overrun by the British and Australians and by the war's end it had been captured and recaptured numerous times by both the Allies and the Germans. This landmark of destruction with churned clay in which so many young lives were buried was the meeting ground upon which all hope born of the turning of the millennia and modernity were so brutally destroyed.

Before World War I no-one had had any conception of what trench warfare might be like and the devastation that the machine, that symbol of the promise of modernity in an industrial age, might bring about. The machine meme of modernity was that it was to make life easier, not cause terrific carnage. The Great War was sold to the public in chivalric language. It was the "war to end all wars", a battle between Good and Evil as though it were Armageddon. The propaganda that was used looks somewhat naïve now, but it had the effect of conditioning sufficient men to join the army and fight the "good fight" at the time. The truth behind this propaganda however was entirely different as Corporal Joe Hayles remembers:

> There was a terrible smell. It was so awful it nearly poisoned you. A smell of rotten flesh. The old German front line was covered with bodies – they were seven and eight deep and they had all gone black. These people had been lying there since the First of July. Wicked it was! Bodies all over the place. I'll never forget it. I was only eighteen, but I thought, 'There's something wrong'.[174]

The true reality of the war was also hidden from the public and this was to cause turmoil once the battle fatigued soldiers were to arrive home. There was no way of effectively communicating to non-combatants the horrors that they had witnessed. Hence, there developed a tremendous gulf between the experience of the young now crippled combatants and their elders who had sent them there. This was a generation who had been lied to. The effect that this would have on society was clear. As Robert Hughes in "Shock

[174] *http://www.johndclare.net/wwi_somme_docs.htm*

of the New" pointed out, "Thus the war started the first of the exacerbated conflicts of generation that would mark modern culture right through to the 1960's."[175] This was a generational divide that was also represented in the art which followed on from the war, Dada.

Dada: A Short History

There remains some controversy about where and how Dada originated, but nevertheless the backdrop to this movement was that it began during the First World War around 1916. The tension and meaningless destruction of the war certainly had an effect upon the way that artists and poets had begun to see the world. It is in this climate that the development of Dada should be understood, for many poets, artists and philosophers had begun to see fault with the received understanding of the time.

On the 1st of February 1916 Hugo Ball, a poet and performer, had founded the Cabaret Voltaire in Zurich. Here artists, poets and performers would have the opportunity to present their ideas and works and Ball soon attracted a group of kindred spirits to the night club. Some of the main personalities of this movement at this time were Hans Arp, Tristan Tzara, Hugo Ball, Richard Huelsenbeck, Francis Picabia and Andre Breton. The word *Dada* was discovered by accident by Tristan Tzara, a poet at the Cabaret, one afternoon in a Larousse dictionary. The word "dada" meant a hobby-horse. It seemed to Tzara and his colleagues that this was a nonsense word that seemed to have no significance at all which made it all the more appealing as a word that could capture the spirit of their ideas.

[175] Robert Hughes (1980) *Shock of the New: Art and the History of Change*, London: British Broadcasting Corporation, p. 59.

> The activity of Dada was a permanent revolt of the individual against art, morality and society in general. The means were manifestos, poems, writings of various kinds, paintings, sculptures, exhibitions and a few public demonstrations of a clearly subversive character.[176]

This movement was aimed at "liberating" the individual from all forms of dogma such as those imposed by the church as well as what was perceived as bourgeois art. From this perspective it was as much a movement of the mind as it was of language and art where tradition had become a dirty word and notions of beauty, truth or love were abandoned in favour of the ugly, the coarse, the absurd or vulgar.

The Dada movement had also produced work such as cartoons which were widely distributed that gave these artists, poets and philosophers an opportunity to reach a wider audience for their message. The Dada performances had had mixed responses, many of which were booed and some even had eggs thrown at them in protest. However, since Dada is forever seeking to liberate the mind this did not perturb them too much, for they would rather such a response than the punctiliousness of a bourgeois audience. Furthermore "a true Dadaist rejects Dada". That is to say, Dada never sought to codify itself into some sort of tradition, for that would be a new type of dogma. Instead it was forever chasing what was novel. Indeed, some of these performances had left the audience wondering whether Dada was art or sacrilege. Nevertheless, with the regular publishing of their periodicals and the exhibitions, protests and performances, Dada eventually became a world-wide

[176] Georges Ribemont-Dessaignes (1981) "History of Dada (1931)" in *The Dada Painters and Poets: An Anthology* ed; Robert Motherwell, Boston: Harvard University Press, p. 102.

movement with Dadaist activity to be found in New York, Cologne, Hanover, Zurich, Paris, Barcelona and Berlin.

Dada was also fundamentally based on the idea that art and artists are a reflection of the epoch in which they live. Consequently this inspired the Dadaist's to produce works that reflected the age in which they lived and their society. As a consequence of the horrors of the First World War, the Dadaist is an atheist in so far as he has given up the search for ultimate moral guidance for one's life. This is one of the main memes which runs through Dadaist thought at the time. Subsequently, the Judea-Christian position, of there being a "Law of Human Nature"[177], that is a law which places a demand upon us in terms of how we "ought" and "ought not" to behave was abandoned. This notion of a law which everyone is subject to was able to provide a framework or schema by which to conduct one's life. Indeed, irrespective of one's belief system this law was thought to be inherent in people's thinking on matters to do with morality. Traditionally, the position of the European church was that this is a law which was not only reflected in social norms but was argued to be part of the human condition. However the main meme in Dadaist thought is that good is no "better" than bad and right is no "better" than wrong – there is only simultaneity or relativity in values, as in everything else. Indeed the Dadaists believed that the framework or schemas inherent to social norms could all be overturned. To put it bluntly, there is no ultimate value to anything and morality is abhorrent according to this view. It is this meme of the rejection of values in all their forms, including of course the schema of aesthetic values, which was at the heart of Dadaist thought. As we have

[177] C.S Lewis (1999) *Selected Books: Mere Christianity,* London: Harper Collins, p. 324.

discussed, a meme is a unit of selection, in the same respect as a gene, except that it is an idea or concept that is generally cultural. This rejection of aesthetic values was a culturally determined manifestation of the period.

Aside from the rebellious spirit that Dada had fostered, it was also based on the principles of "bruitism" and "simultaneity";

> Simultaneity (first used by Marinetti in this literary sense) is an abstraction, a concept referring to the occurrence of different events at the same time. It presupposes a heightened sensitivity to the passage of things in time, it turns the sequence a=b=c=d into an a-b-c-d, and attempts to transform the problem of the ear into a problem of the face. Simultaneity is against what has become, and for what is becoming.[178]

So for instance, while I become successively aware that I tripped over yesterday and had a shower today, at the same time as a streetcar screeches and my neighbour slams his door shut which then reach my ear simultaneously I start to perceive either inwardly or outwardly a swift meaning to life. In this way, simultaneity is meant to be a reminder of life which gives it a highly variable value, but a value nonetheless. The performance of "simultaneity" was the idea of incorporating into performances of poetry and the like the sounds of life, of the streets, all at once.

[178] Richard Huelsenbeck (1981) *En Avant Dada: A History of Dadaism* from *The Dada Painters and Poets: An Anthology* ed; Robert Motherwell Boston: Harvard University Press, p. 35.

"Bruitism" is described in Robert Motherwell's *The Dada Painters and Poets: An Anthology* as a sort of returning back to nature, and is elsewhere described as "noise music". Noise was considered to be a call to action rather than something to be judged as such. In the same way that Dadaist art had rejected the human figure in favour of the more fragmentary forms which began to appear, the abstraction of poetry took the next logical step which was a rejection of language itself and all the schemas such as grammar that are inherent to it with the invention of the phonetic poem. "The abstract phonetic poem, which was later to find numerous imitators and continuers and to reach its close in French *Lettrisme,* was born as a new art-form."[179] One of the points of such radical poetry was to awaken the bourgeois from their complacency and reliance on tradition and to make art accessible to all.

Dadaism and Communism

In many respects, the Dada movement was also a political movement, for it was opposed to the values and dogmas that the bourgeois and their art stood for. It represented the principles of radical Communism and at this time Lenin was even known to have attended Dada performances. It is easy to see why Dada was attractive to the Communists as they were interested in all forms of social upheaval and the destruction of bourgeois social values, though it is fair to say that the political message of Dada was probably more of an interest than the art itself. The very philosophic heart of Dadaism was based on Communist ideology. It was the radical rejection of any notion of a moral framework by which to run one's life and therefore present one's art.

[179] Hans Richter (1997) *Dada art and anti-art,* London: Thames and Hudson, p. 43.

The ideal of the 'New Soviet Man' or *Homo Sovieticus* is another name for the schema inherent in Communism which was to replace religion. In this schema, 'New Soviet Man' was conceived as someone with no ethnic or religious affiliations and who treated everything as communally based. He was to be a materialist, and to direct his religious devotion away from the church and onto the Communist party and its leader instead. An example of the Communist basis to Dadaism came from the demands that the German Dadaists made as drawn up by Raoul Hausmann and Richard Huelsenbeck. Some of these demands included: "The international revolutionary union of all creative and intellectual men and women on the basis of radical Communism" and "Introduction of the simultaneist poem as a Communist state prayer."[180] It was the meme of "the bourgeois" that was rejected because of the values that they stood for. The idea of improvement or of paradise was abhorrent to the Dadaist for they were no longer trying to discover fundamental religious principles for how to conduct their lives. The Dadaist was atheistic in approach to life, choosing to live for the here and now of experience rather than appealing to idealistic views about how the world might be. Dadaism was described as a state of mind rather than a movement in art. As such it didn't give itself to anything, but rather it esteemed instinct and rebellion as an artistic movement as well as a way to live. It was in this way that Dadaism sought to make itself representative of the common man by appealing to emotion and instinct which are common in the experiences of all men rather than structured rules and schemas the understanding of which was the preserve of the elite intellectual classes.

[180] Richard Huelsenbeck (1981) *En Avant Dada: A History of Dadaism* from *The Dada Painters and Poets: An Anthology* ed; Robert Motherwell Boston: Harvard University Press, p. 41.

Duchamp's "Ready-Mades"

Duchamps "ready-mades" were mass produced objects that Duchamp claimed were works of art. Some of the most famous examples were his urinal and bicycle wheel, which he called "anti-art", the irony of course being that he was himself an artist. "Ready-mades" were everyday objects that were chosen partly because of their ordinariness and commonality of experience (which suited their communist creed), but also because they served a new purpose for the artists. Whether it was a bicycle wheel, bottle rack or urinal, the ready-made eventually became an object of art because of an essentially intellectual notion of the 'subjectivisation' of the world of objects. This is where and when ordinary objects once placed in the grandeur of an art gallery come to represent a rebellious notion of anti-art. This is the conscious rejection of bourgeois art and in its place the exultation of the world of ordinary objects which gives them value, now as objects of a new kind of art. The avant garde meme that Duchamp was trying to express was controversial in his time because people were unconvinced that a chosen object could be "art" just because the artist had decided that it was. As a consequence his work entitled *Fountain* (the urinal) by R. Mutt was rejected in New York by the *Salon des Independants*. This avant garde meme that Duchamp was advocating in his ready-made succeeded to the extent that it caused offence. However he had insisted on his artwork being accepted nonetheless. "He declared that these ready-mades became works of art as soon as he said they were. When he chose this or that object, a coal shovel for example, it was lifted from the limbo of unregarded objects into the living world of works of art: looking at it made it into art!"[181] It was in this way that the ordinary and the mundane were exalted as having worth in themselves beyond our

[181] Hans Richter (1997) *Dada art and anti-art,* London: Thames and Hudson, p. 88.

everyday experiences. The meme of Dadaism was to spread around the world, which is in keeping with the behaviour of successful memes, as Dawkins describes them.

Duchamp's Dadaist philosophy was concerned with the overthrow of all that was bourgeois and for freedom from the constraints of morality and all that high society cherished and valued in their views on art and religion. In its place what the Dadaists valued instead was all that was vulgar, rude, rebellious and generally offensive to society at the time. Dadaism sought to find meaning in the ebb and flow of everyday life, in the mundane and ordinariness of existence. The main meme to have come from the horrors of the First World War was the idea that man is no more sophisticated or enlightened than a barbarian ape. The Dadaists thought that this is what man is in essence. It is probably not surprising that this meme replicated successfully, given that the rest of the world had just witnessed this aspect of mankind as well. Duchamp was also influenced by the rise of Communism at the time and revolutionary doctrine that went with it. This meme, along with the idea of 'man as barbarian', were the main memes that influenced Duchamp. In discussing memes and schemas in Duchamp's work perhaps the best place to start is with a couple of his most famous works.

The Fountain by Duchamp was clearly a shocking artistic statement to make at the time for various reasons. Firstly, it was a mass-produced object that was now given the status or value of "a work of art" once it appeared in the context of an art gallery. Nothing could have been more offensive to a traditional conception of what art aimed to achieve.

For this mass-produced object contested the accepted meme of art as a craft, and all of the high ideals or schemas which lay at the foundation of examples of perfected artistic technique, by calling it 'art'. It was also an irrational statement by comparison to the traditional schemas that high art had inherited. It was irrational because representational art has particular guidelines as to how best to represent the world, such as the rendition of light and shade, perspective, tone and observation that are considered skills that need to be acquired. According to representational art, there is a right and wrong way of representing the human figure or face, for example, which is based on the reasoning behind these guidelines or schema. *Fountain* was also a shocking statement because, as a urinal, it represented something which in polite society was about as mundane and vulgar as you could get. All of the accepted rules or schemas of representational art had suddenly been abandoned with this one offensive object. Indeed the new rule or schema was that there are no rules. For Duchamp it was a way of making a philosophic statement about art - an "anti-art", anti-bourgeois statement in fact.

Nowhere is Duchamp's "anti-art" view more apparent than in a later work known as *L.H.O.O.Q*. In this work he took a reproduction of the great Leonardo Da Vinci's *Mona Lisa* and simply drew a moustache on her in a childlike gesture of graffiti. In much the same way that *Fountain* had drawn offence from high society, *L.H.O.O.Q* was designed to be just as much of an offensive statement since Duchamp did not care about the schema of the skill of execution and technique that went into this most revered of artworks, but rather he saw it as representing all that was bourgeois and elitist in art as in life. The meme here is clearly an anti-art statement, in so far as it was against the established aesthetic values of the time, as well as an anti-bourgeois statement as it was in *Fountain*. *L.H.O.O.Q* could

possibly also be seen as a comment upon Leonardo Da Vinci himself insofar as it was a rumour at the time that he had been homosexual and this was a way to tarnish his reputation among those who saw this as "sinful". This would have been especially poignant since the Church was a patron of Da Vinci in his time. A further point to make about *L.H.O.O.Q* is that when it is translated in French it reads: "Elle a chaud a cul" which means "She has hot pants", or colloquially "She has a hot ass". This was clearly another means for Duchamp to cause as much offence as possible.

Dada and Schemata

Aside from the guideline or schema of subverting the paradigm, that Dada was the first to institute in the art world, there are other examples, in both their poetry as well as the visual arts, where schemas have been employed by Dadaist artists. Take, for example, Tristan Tzara's "To Make a Dadaist Poem":

Take a newspaper.
Take some scissors.
Choose from this paper an article of length you want to make your poem.
Cut out the article.
Next carefully cut out each of the words that make up this article
and put them all in a bag.
Shake gently.
Next take out each cutting one after the other.
Copy conscientiously in the order in which they left the bag.
The poem will resemble you.
And there you are – an infinitely original author of charming sensibility

Even though unappreciated by the vulgar herd.[182]

This is really a set of guidelines, indeed a schema, for how to construct a Dadaist poem. By using this formula, a poet can produce a work that is in the spirit of Dadaism, and in this way we can see that Dada poetry did use schemata, in spite of their desire to be free from all such constraints. It is not so much the end product of this schema that is of interest here, as it is the fact that there was clearly methodology in their artistic approach. This is a good example of the way that schemata and memes are necessary to each other in the formation of creative artworks, even within Dadaist art.

Another example of the use of methodology in the approach to artistic endeavours was known as the *cadavre exquis,* or the Exquisite Corpse. The method aimed to exploit the mystique of accident and was more often used by the Surrealists who proceeded from the Dadaists. It was based on an old parlor game where each individual would write a phrase on a piece of paper, fold it over so as to conceal it, then, pass it on to the next person for their contribution. The *cadavre exquis* got its name from the initial results of the first game that was played - ("The exquisite corpse will drink the young wine".)[183] This same technique could also be applied to drawing, so as to produce a hybrid of images. Clearly, this is a formula for how to create a work of art in the Dadaist/Surrealist way. It is, indeed, a schema, by which the collective creative potential of a group, can organize itself, so as to create an artwork that is a reflection of the group dynamics. It is not the resulting hybrid of

[182] Alberto Rios "Make a Dada Poem" *http://www.public.asu.edu/~aarios/magicalrealism/assignments/page2.html.*

[183] "History of the Cadavre Exquis" *http://www.cyberstars.com/ron-mike/history.html*

words and images that are of concern here, but rather the manner or methodology by which they become possible. There is clearly method and structure to their "irrational" works of art. The Exquisite Corpse can be seen as another example of the indispensable need of schemas for the construction of creative poetry or images. Indeed, it is not only in poetry that schemas were used, but even the very idea of the 'ready-made' had to fit certain criteria as well. Firstly, it had to be something that was common to the everyday experiences of most people, and secondly it had to be an object of no artistic significance or status. This was the schema that was necessary for a 'ready-made'.

Although the Dadaists were against notions of there being any kind 'natural order' to things, it is clear from some of the Dadaist's views at the time that they were nonetheless seeking some sort of order in their art. For instance, Hans Arp wrote:

> Revolted by the butchery of the 1914 World War, we in Zurich devoted ourselves to the arts. While guns rumbled in the distance, we sang, painted, made collages and wrote poems with all our might. We were seeking an art based on fundamentals, to cure the madness of the age, and a new order of things that would restore the balance between heaven and hell.[184]

Hans Arp had not seen any contradiction in his view at the time, but with the benefit of hindsight we can see that the use of words such as 'fundamentals' and 'new order', seem to be appealing to some kind of ultimate schema or structure. Dada was rebelling against the

[184] Alan Young (1981) *Dada and After: Extremist Modernism and English Literature,* New Jersey: Manchester University Press, p. 14.

memes and schemas of 'high culture', but could only proceed by inventing new schemas to carry its revolutionary memes.

Longevity and Dadaism

Since its birth in the early part of the twentieth century, Dadaism has remained a popular means of expression in the arts, especially in Western countries. It is a meme which has had longevity and it is interesting to speculate why this may be the case. The context in which Dadaism first emerged was as a reaction to the horrors of the First World War. One explanation of this reaction is that Dadaism seems to question how there could be ideals in art, and indeed in life, when human kind is capable of inflicting so much suffering on itself. It could be that as the war created a generational divide any time that a similar generational divide emerged in the future, Dadaism as a meme would come to symbolize this disharmony between generations. The longevity of this meme can be explained by this denial of ideals, indeed this denial of the value of structure and tradition as represented by schemas in this thesis.

Perhaps it is best to explain the cultural milieu of the time in order to understanding how it was that traditions and the value of structure became obscured and denied. At the turn of the century, with industrialization in full swing, the mass-produced object was omnipresent in culture which was and still is a new means of providing essentials to society. Everything from the glass bottle to the kitchen sink was now being mass-produced on a scale which had never been seen by previous generations. Prior to this manufacturing of everyday objects there was no other means of reproduction except through craft, which

by comparison was time-consuming. Craft was the main means of producing clothing, paintings and metal products in this pre-industrial era where nature was the supreme inspiration for many a work of art. However, with the Industrial Revolution came the inevitable decline in craft.

> In the nineteenth century, the Industrial Revolution began to appear in landscape painting, slowly pushing its way into a fixed aesthetic category of the pastoral world, like an intruder in Paradise – manufacture invading nature.[185]

It was also during the late nineteenth century that Expressionism had begun to emerge as a movement with artists such as Vincent Van Gogh and Paul Gaugin leading the way. The central meme of this movement was the idea that it is the Self, the interior world, which is being reflected in their paintings. A painting was something that should be felt not just intellectually appreciated for its aesthetic technique. The schema in Expressionism still advanced art as a craft but "the artist's presentation of his emotional reaction to the subject in the boldest colour and strongest linear pattern is more important than any attempts at objective representation"[186] according to the Expressionist philosophy of art. Here we see that although the Expressionists still advanced recognizably traditional schemata, it was in a form that looked crude to refined sensibilities of the past. Hence, this was the backdrop meme to the Dadaist movement in the artistic community and it was the movement which the Dadaists were also rejecting. Once World War I had finished and the truth about the

[185] Robert Hughes (1980) *Shock of the New: Art and the History of Change,* London: British Broadcasting Corporation, p. 326-7.
[186] Helen Gardner (1980) *Art Through the Ages (seventh edition)*, New York: Harcourt Brace Jovanich, p. 811.

war was becoming more apparent to a society which had been kept in the dark, the meme of Expressionism was despised for being too introspective and escapist. It did not seem to describe much about the clear suffering that many crippled soldiers had endured. In other words, the meme of Expressionism did not reflect this changed reality. The Dadaists mocked this inwardness and, as Robert Hughes describes, "the 1918 Berlin Dada Manifesto was a sustained attack on Expressionism, which, in abridged form, began:

> The highest art will be the one which in its conscious content presents the thousand-fold problems of the day, the art which has been visisbly shattered by the explosions of last week, which is forever trying to collect its limbs after yesterday's crash. Has expressionism fulfilled our expectations of such an art, which should be an expression of our most vital concerns?
>
> NO! NO! NO!
>
> Have the expressionists fulfilled our expectation of an art that burns the essence of life into our flesh?
>
> NO! NO! NO!
>
> Under the guise of turning inward, the expressionists have banded together into a generation which is already looking forward to honourable mention in the histories of literature and art."[187]

Clearly, we see here the abandonment of the meme of the subjective, introspective "inner world" of Expressionism and in its place Dada asserted the meme of an objective, highly

[187] Robert Hughes (1980) *Shock of the New: Art and the History of Change*, London: British Broadcasting Corporation, p. 70-71.

intellectualized philosophy of art as reflected in the "ready-made". In short, it was the displacement of the subjective for the objective.

However it was not only Expressionism which Dada was rejecting, it was the very structure or schema embedded in it which was the technique of art as craft. From the Impressionists on there had been a partial rejection of the refinement of craftsmanship in art which had been at the forefront since the Renaissance. Instead the Dadaists believed in irrationality and the desire to be free of all values and what they saw as constraints upon their art and creativity. The rule or "schema" was to be that there are no rules, the contradiction implied appealing to the Dadaists because they were asserting irrationality as their standard. They had overturned what was the dominant paradigm or schema of art for many centuries, which is why it was described as revolutionary. It was from this point onwards, through the twentieth century, that the exultation of the irrational as the main meme took on many varied forms. The Avant Garde movement, as it came to be known, went through various movements such as the Cubists, Surrealists, Futurists, Cubo-Futurists, Abstract Expressionists, Pop Art, Realists, Minimalists, Modernists, Post-Modernists and so on. All of these movements, though they may vary according to what they aim to achieve, have the same fundamental meme of subverting any existing paradigm. Another thing that they all share in common is the lack of a persuasive, non-contradictory theory, which is also apparent in Dadaism. As Tom Wolfe sarcastically points out in *The Painted Word* "In short: frankly, these days, without a theory to go with it, I can't *see* a painting"[188]. What happened with these various movements was that theory after theory, a whole plethora of theories in fact, to do with art abounded to the extent that an artwork could not, and still cannot, be understood without them. In this regard, Dada's effect on the history of

[188] Tom Wolfe (1975) *The Painted Word*, New York: Bantam Books, p. 4.

art up until the present has been profound and although it as a movement did not last all that long, it certainly inspired the intellectualization of art. In this sense the memes and schemas behind Dadaism have had longevity, even though it hasn't been an altogether coherent history, as has been shown. The dominant schema of the rule that there are no rules is still apparent today, and so it can be said that it has had longevity as a schema.

Dada and Fecundity

Dada was the first movement to carry the revolutionary banner of the "Avant Garde". That is, Dada invented the meme of subverting the dominant paradigm in art, and it is a notion which is at the very heart of the Avant Garde movement, right up to the present. Dada is, metaphorically speaking, the abundantly fertile mother of twentieth century art that has given birth to various art movements ever since its inception. We only have to count the number and variety of art movements, which have abounded since Dada began its revolution, to see how influential it has been. A meme is, afterall, defined by Dawkins as a unit of selection that is generally cultural. Given the number of movements in art since Dada, it would seem, at this point, that it's survival as a meme is strong. This is because there are many points of reference from which other movements and memes could be formed, based on the same essential idea of subversion. If ever there was an example of Dawkins' notion of "fecundity" in a meme, Dada must surely fit that description. Indeed, Dawkins describes fecundity as being even more important than longevity, because it is what will ensure the survival of the meme or gene in the long run. Take Pop Art, for example, where Andy Warhol used images of Campbell's Soup cans as a work of art. This was very much in the tradition of Dada, where an ordinary object is elevated to the status of

an artwork, in the same manner as the urinal was by Duchamp. It is also important to point out that this meme of subverting the paradigm, at the heart of Dada and later the Avant Garde, progressively became entrenched, as the twentieth century progressed, and the art world was pregnant with new movements, that all conformed to this basic idea.

Dada and Copy-Fidelity

We have seen that many of the irrational elements which are the hallmark of the Dadaist movement have continued through the rest of the twentieth century until the present. This suggests that the revolutionary principles or schema that Dadaism created have copy-fidelity in so far as they have been replicated by the many and various art movements. The memes which are apparent in modern art are: art as irrational, subversive and theory-dependent. Dadaism had all of these elements to it to a greater or lesser extent than the dominant art of today. These memes are carried and sustained by the overarching schema: The rule is there are no rules, and this essential schema is the same today as it was then. There has not been a coherent or persuasive theory since then and even then it was seen as contradictory as it remains today. The many and varied representations of this same schema in the twentieth century are a demonstration of the extent to which copy-fidelity has occurred. In this way, it is the schema and memes that comprise the aesthetic values of Dadaism itself, which has survived and still informs the art of modern times. Indeed, if there was no schema to Dadaism, then, copy-fidelity on the scale that has occurred over the last eighty years, would not have been possible in art. However, not all the memes of Dadaism have been as successful in terms of copy-fidelity. Instead they have been replaced

by new memes from the art theory which emerged with each new movement. In many respects the anti-bourgeois meme in Dadaism has been left behind by the art movements that followed, especially with the plethora of art theory that emerged, which make it difficult for the common man, that the Dadaist thought they represented, to understand art today.

Dada and Bisociation

Dada achieved its effect through the bisociation of ordinary, mundane objects with an intellectual notion of what constituted art. Dadaism is a clear example of how bisociation works because it takes mundane objects, such as Duchamp's bicycle wheel, out of their usual context and gives them a new meaning and frame of reference from which people can come to understand them as art. Ordinarily mundane objects would not be viewed as art but with the use of bisociation we can come to understand them as Dadaist works of art. Dada became shocking because, instead of employing established schemas from the history of art, it instead produced the ready-made object which reflected a new schema, which was 'the rule is break all the rules!'.

The shock of this new object of art is not captured by Koestler's "Aha, Ah and Haha" reactions discussed in "The Three Domains of Creativity". The elitist artists and thinkers of the day may have privately found this new 'art' amusing but it is not designed to create the "Haha" reaction because it is not using two frames of reference and associating them as the "Haha" reaction does. Rather than these three reactions that Koestler speaks of as being in the domain of creative production, we need a fourth reaction which is more fitting of the 'shock' reaction that was generated by the ready-made. This reaction could perhaps be

better described as “Arrgh” in its effect upon the audience. This reaction is unlike the “Aha” reaction which is that moment of understanding or truth which signals comprehension. The initial reaction to the ready-made was not a moment of illumination. It is also quite distinct from the “Ah” reaction which is an emotional response that is generated by the sublime as a thing of beauty in art: “the moistening of the eyes, perhaps a quiet overflow of the lachrymal glands, the catching of one’s breath, followed by a kind of rapt tranquility, the draining of all tensions.”[189] Clearly the ‘shock’ of the ready-made does not fit into this reaction either. Unlike the “Haha” reaction which is described by Koestler as a “paradox stated”, this new reaction, the “Arghh” reaction, is better described as “disgust stated”. Instead of rules in one frame of reference we have a new frame of reference or schema which employs a schema – “the rule is there are no rules”- that is paradoxical. This really is a subversive use of schemata in the creative use of bisociation because it employs a schema that attempts to negate itself in order to produce a new conception of art. This is precisely why Dadaism is ironic.

This is an example of how the bisociation of schemata can be seen to be co-operating within the generator to produce a work of art. For the ability to bisociate is dependent upon the presence of memes and schemata within the generator. The generator rejected the structure of previous conceptions of art in favour of a new idea. Dadaism developed a complex set of memes that constitute a new form of art and inherent in this understanding are other schemas and memes such as the avant garde philosophy and communism which contribute to this intellectual interpretation of art. In many ways this intellectual interpretation had idealized the very notion of what art stood for. The very

[189] Arthur Koestler (1964) ‘Three Domains of Creativity’ from *The Act of Creation,* London: Pan Books, p. 7.

notion of "art" remained as idealized as in bourgeois art. For, the mundane object would have stayed mundane if not for its exultation by the artist into the realm of "art". The theme which linked unregarded objects to the idea of them as art was the Dadaist's notion that all objects of experience have inherent value which went along with their belief in wanting to live in the here and now. In this way we can understand Dadaism as a theme which is essentially a result of the convergence of new memes and schemas.

Dada and The Generator

As we saw in Chapter 4, in creative production and the generation of ideas, the work of the mechanism that Dennet calls the 'generator' is largely the work of the unconscious process. On the semantic level, the generator recombines mimetic materials according to certain principles, such as analogy, metaphor, bisociation and so forth, while at the syntactic level is a generative process operating with schemata. In Dennett's basic process of generate-and-test, the generator then feeds its unconsciously generated products into testing regimes that basically carry out a conscious selection process, which chooses and selects from the generated candidates by using explicit (or sometimes tacit) criteria. This process of generate-and-test is also used to establish a fortuitous bit of information from the environment as more significant than any other. There is a sense in which Dadaist artwork was very much a conscious rather than an unconscious process as described by Dennett's the generator.

For example, the production of formulaic poetry as described by Tristan Tsara's "How to make a Dadaist Poem" is very much a conscious use of criteria or schema – a recipe - as it were, for creating a poem, with the detailed content of the poem being

otherwise left to chance. Once formulated, such a schema allows the work of generation to occur almost mechanically, with the selection of compositional elements left to chance, being whatever happens to be drawn from the bag; and with no suggestion of selection between different poems that might emerge as finished products. Duchamp's "ready-made" also conformed to more-or-less consciously applied criteria. Such criteria included (a) a proletarian item with an everyday use, (b) a machine-made mass-produced item rather than a product of individual craft, (c) an item of no conventional artistic or aesthetic significance. These criteria had to be consciously obeyed. While not exactly a recipe for the production of ready-mades, these criteria certainly provide a framework for the selection of suitable objects and will govern the suggestions thrown up by the generator.

Having said this, however, there certainly was a deeper sense in which Dadaist artwork used the unconscious processes of the generator. For, Tristan Tsara had to initially conceive of his idea of the Dadaist Poem, just as Marcel Duchamp came up with the conception of the "ready-made". It is the genesis of those initial conceptions that requires explanation. In order to begin to explain how they may have come by these ideas, it is important to note that the Dadaists were working under the influence of a number of memes. These memes include Communism, the associated idea of exulting the everyday, commonplace and utilitarian object over the refined and merely aesthetic object, in public and the notion of subverting the existing artistic paradigm. These ideas provided a background mimetic configuration within which Dada artists conceived their work and it was upon this basis that artists such as Duchamp generated artwork such as the "ready-made". Through the process of self-design Duchamp generated and tested new ideas within the constraints of this mimetic background. By using the unconscious generative processes

of analogy, metaphor and bisociation certain objects came to be imbued with new meaning. This constellation of memes had informed what the generator produced in the form of Duchamp's "ready-made" by providing the criteria by which a common place item could gain artistic significance. In effect, these criteria, provided the generator with implicit principles through which any particular creative suggestion was initially formed.

These new designs produced by the Dada movement, such as the "ready-made", were also to have a phenotypic effect upon the twentieth century throughout western society and did much to explain the emergence and fecundity of the Avant Garde throughout most of that period. A succession of art movements since then have used similar memes and schemas to engineer their artworks such as Andy Warhol's use of the ready-made commercial art image of Campbell's Soup Cans in the development of Pop Art. Other examples of the influence of the Dada movement in twentieth century art and culture include the Beat poetry and literature of William S. Burroughs and the Conceptual Art Movement. For instance, in Beat poetry poets and writers such as William S. Burroughs used what was known as the "cut-up" method of producing work, where paragraphs would be cut up and then used randomly, beginning in work such as the novel *Naked Lunch*. This literary method was influenced by the Dada movement, following the example of Tristan Tsara's "How to Make a Dadaist Poem", where words are randomly selected and then mechanically composed for a poem. The only difference between this Dadaist method and the method that Burroughs used was that he applied this idea to the use and selection of whole paragraphs, chosen randomly in his composition of *Naked Lunch*.

Another example of the influence of Dadaist memes and schemas came in the example of the Conceptual Art Movement. In this movement, artists were more concerned about their own thought processes than they were about the art object itself. As a consequence, the "art works" of Conceptual Art barely resembled traditional notions of what an art object was. What the audience of Conceptual Art saw was a document of the artist's thinking, the memes of Conceptual Art, and this was especially the case in linguistic artworks that took the form of words on a wall. One such example, from Tom Wolfe's *The Painted Word*, is of a linguistic artwork by David R. Smith called "Vacant", the meme of which was intended to make the viewer conscious of the emptiness between the letters in the word. Conceptual Art was influenced by Duchamp's ready-made in the way that it emphasized the artist's thinking over the object itself. Dada provided the schematic background to Conceptual Art. It was the intellectualization of art, that the Dada movement first introduced, that would more than any other influence, become important to the Conceptual Art Movement. This intellectual approach provided the backbone or schema to the Conceptual Art Movement as a whole. All of the examples above demonstrate the longevity and copy-fidelity of the schemas and memes that Dada introduced to art and culture. In this way we can see how society at the macro level is creative, as the ready-made is still drawn upon as a schema by which artist movements can express themselves today.

A further point that is worth making about movements in twentieth century art such as the Conceptual Art Movement has to do with making sense of the "Argh" reaction that was discussed in the previous section. Why didn't the Conceptual Art Movement create within people the same kind of reaction that the Dada movement had, when it also

challenged society's notions to do with art? Perhaps the answer to this is that: whereas Dada was really challenging high society's view of art, the context of how art is placed in the twentieth century is very different. Due to the fecundity and prevalence of the influence of Dada on twentieth century art, every new movement is not revolutionary, in the same sense as Dada was, it is rather yet another take on this same set of schemas and memes. What happens when people encounter art today is that rather than the "Argh" reaction that Dada received, the reaction has been transformed so that, artwork which is influenced by Dada, gets a "Aha" reaction, given that the audience is knowledgeable to some extent about the history of art. Indeed, instead of revolutions in art what we have instead is what Robert Hughes, oxymoronically, called "the tradition of the new". There is nothing new, outrageous or appalling about this "tradition of the new".

The all pervasive fecundity and longevity of the memes and schemas of Dada in twentieth century art also seem to demonstrate the kind of "combinatorial explosion" that was mentioned in Chapter One. To recap, this is where the challenging of a boundary can cause a vast amount of possibilities to surface for every available pathway. Perkins believed that there needed to be some principles which would prevent this situation from becoming unmanageable. The avant garde movement in art has been full of confused and incoherent theories which haven't provided much in the way of governing principles. The absolute plethora of movements that are governed by one main pathway, ie "the rule is there are no rules", are a clear demonstration that something like Perkins' description of "combinatorial explosion" happened to twentieth century art.

Artists throughout the twentieth century seemed to want to delve deeper and deeper into what the unconscious is, and to somehow make it conscious to the public. Surrealism,

for instance, used Freudian psycho-analysis of dreams as the main inspiration behind the movement. The Surrealists took memes such as sex, the unconscious and dreams and gave them a psychological interpretation, thereby popularizing Freud. Surrealism was the direct outgrowth of Dada and it used similar ideas of experimentation with chance and accident, fascination with found objects and the idea of pictorial free association in its artwork. In this movement they were trying to elucidate what unconscious art forms may look like if we had access to them. It was clearly using an intellectual approach, through the use of Freudian psycho-analysis as the inspiration in the formation of artworks within the generator, in the same manner that Dada had used Communist theory in its artwork. The Surrealists aimed to describe psychic experiences which were meant to depict something that was "more real than reality" as we understand it. It is the combination of the memes which the Surrealists were concerned with along with the use of schema that were to produce the bizarre, hallucinatory works of Salvador Dali among others.

> Since, in dreams, objects and situations collide and interpenetrate in ceaseless metamorphoses, Dali uses multiple images of multiple symbolic meaning to suggest evocations from his subconscious. He has also developed a fundamental Surrealist method, the juxtaposition of seemingly irrelevant and certainly unrelated objects in unexpected situations.[190]

This is really bisociation in action. Nowhere is this technique more obvious than in Dali's *The Persistence of Memory*. Here, the intricate nature of watches is transformed into organic substances that are devourable by hungry ants, which is set against the background

[190] Louise Gardner (1980) *Art Through The Ages*, New York: Harcourt Brace Jovanovich, p. 831.

of a setting sun. This method of pictorial bisociation and free association was to act as a schema for producing a Surrealist artwork. It gave the generator criteria by which it could operate in the generate-and-test process of creating a work which was Surrealist. It is the combination of memes such as the unconscious and dreams along with this schema of using multiple symbols in bisociation that resulted in a Surrealist artwork. Surrealism also used the generative processes of analogy, metaphor and bisociation to produce its symbolic juxtapositions of ideas that were meant to be suggestive of the unconscious from the Freudian perspective.

Though these symbolic juxtapositions were meant to suggest the Freudian notion of the unconscious, a better way to look at what is happening creatively, is that much like Dada, Surrealism uses an intellectual interpretation of the processes that contribute toward the production of art, and consciously bisociates it with other pictorial memes. It makes more sense to think of the symbolic use of memes as being used consciously to reflect Freudian ideas of the "unconscious", than as the same memes really being a demonstration of this Freudian notion of some inner hidden unconscious. The ability to bisociate memes is a reflection of processes that occur within the generator, as we have discussed, which in this case are used to suggest the meme of a Freudian "unconscious".

Gombrich and Dada

Perhaps this is where we can see some further similarities between Gombrich's schemas, memes and Dada. For, in this thesis have been variously described as being instances of the milieu from which they herald. Memes and schemas embody their social surroundings just as Dadaism was a reflection of the chaos of its time. We can therefore speak of Dadaism as consisting of memes and schemes. Apart from the rule that Dadaism must be "anti-art"

there were other principals that Dadaism stood for such as the meme of radical communism and a rejection of all that was perceived to be bourgeois. These principals also helped to provide the schema behind Dadaism. Dadaism was also very much a movement of the mind - it pursued intellectual freedom from all social constraints and in this sense we can see that memes played an important role in the life of this movement. Nowhere in Dadaism is this better expressed than in Marcel Duchamp's ready-mades.

There is a respect in which Gombrich was very much against what Dada stood for. As discussed in Chapter Three, Gombrich believed that art which defined itself as "progressive" or "avant garde" or any such style of art which rejected traditions tended to leave the historian without a means by which to understand the psychology of style. He believed that it was rejecting a means by which to judge what is good and what is better, that is, it seemed to reject the very notion of skill. Gombrich would also view Dada as being historicist in its approach because of the underlying notion that art is either progressive or antiquated. However, it is also important to mention that the place of schemas in art can also be problematic for creativity, when taken to an extreme. For the over-reliance upon a structure or schema only serves to produce replicas much as in mass-produced industry. Indeed, in a sense Duchamp's ready-mades being mass- produced objects would seem to fit the profile of a movement which, contrary to how it appeared, was actually heavily reliant on different kinds of structure or frames of reference in order to make the mundane appear meaningful. Because it was very much an intellectual movement, Dadaism was governed by the logic that this movement employed in its rejection of art-historical styles. It is also worth pointing out that in spite of Gombrich's objections to the avant garde it is likely that even he would see that Dadaism is as good an

example as there is that art styles require schemata, because in spite of its ostensible rejection of schemas and rules it nonetheless was governed by them.

The Dada paradox

Structure or schema was omnipresent in the production of Dada's works. It is here that we see that even Dadaism, which at least ideologically is the very antithesis of the view of schema theory, proposed as necessary in this thesis, was unable to prevent itself from being subject to rules or schemas of some kind. Dadaism is a combination of memes and schemata despite all that the Dadaists may protest about such ideas inherent in traditions and morality which reflect schemata of various sorts. Once Dadaism had rejected the social norms of the time the Dadaists merely substituted their own notions of what is right and wrong in their various manifestos and represented in their artwork. They merely replaced one schema about life and aesthetic values with another. Indeed, if even Dadaism, the "anti-art" movement, the movement which despised all former structures or rules inherent in art historical styles, was nonetheless unable to be free of schemata of some variety in order to promote its conceptions or ideas, then this is a clear demonstration that memes and schemas always work together. It is an example of how memes and schemas have a necessary connection to each other, that memes cannot be communicated without the schemata, just as in language, semantics cannot be operative without syntax. This is the essential message of the thesis and Dadaism is its best example given that this inherent paradox could not be overcome or denied.

CONCLUSION

This thesis has argued that in order to gain a complete understanding of the process of creativity, both memes and schemas are required. Evolution, as characterized by meme theory, cannot be seen as the only principle by which human creativity is defined, but when combined with an overall structure or architecture, as provided by schema theory, memes can be channeled into recognizably creative forces. In other words, the role of tradition in society is important for the creative process because it helps to make the more chaotic forces of evolution, as typified by memes, more intelligible and ultimately meaningful.

As E.H Gombrich argued in Chapter Three, art historical styles all seem to have a schema to them which helps to provide structure to the creative process, and a language by which to express creative ideas. The only art historical style which did not have a schema to it was the avant garde, which Gombrich was particularly critical of, arguing that schemas provide much of the meaningful content of art and that without rules there is no language by which to communicate these ideas. The notion that schemas provide a language is important because just as language has semantics, it also needs syntax. This analogy forcefully demonstrates the way in which memes and schemas are so necessary to each other. This relationship between memes and schemas plays a central role in the creation of new ideas, as demonstrated in the role that tradition plays within art historical styles and society at large.

It was also argued that Daniel Dennett's concept of a "generator," which is responsible for generating new ideas, is a major contributor to how we can best come to understand how creativity works from a cognitive perspective, it is necessary to define more precisely what attributes this generator might possess. It was argued that notions such as bisociation, association, schemas, memes, analogy, metaphor and symbolism are all component parts or aspects of how the generator can be said to function to produce a creative output, and that these component parts can be said to work together towards this production of a creative product. The workings of the generator provide the internal understanding of how schemas can be understood as operating within the creative individual.

In a way, this thesis should itself be seen as an example of how memes and schemas can unite to produce original and creative work, as it combines the schema of structured argument to bring order and intelligibility to more chaotic jumble of competing memes, such as the "schema"-meme and the "meme"-meme, to produce a novel and creative output, which is that "creativity is the result of both memes and schemas."

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