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A Historiographical Discussion on the Origins of Visual Art

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Abstract

The purpose of this research is to identify a correlation between biological (materialist) origins and adaptations to the creation and appreciation of art, specifically through the development of the aesthetic sense. Most research in the historiography of art and the origins of visual art, come from a purely philosophical tradition. Here, the focus is on scientific historiography in conjunction with philosophy, as a lens for understanding evolutionary biological adaptation.

Premise

This discourse, concerning the origins of the fine arts (and more specifically the visual arts), is explored through Darwinian evolution and inherited traits. Using a primarily materialist philosophical ontology, and a scientific epistemology, I hope to explain art history from a biological historiography.

In this discourse, I will not propose a sole hereditary origin for the visual arts, but allow for a view that is also not solely anthropologically and/or sociologically driven. In other words, the creation and study of the visual arts, need not be originated in only as a social construct or cultural product, but might also be a genetically, materially originated function of the human as a material entity.

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An exploration of primate evolution will allow for a greater understanding of the philosophy of art, not necessarily the practice or purpose. That is, at some level we can speculate that deep-rooted in the human subconscious there is: 1) an instinct to create, 2) an instinct to value or appreciate beauty and 3) an instinct to imagine (by faculty of symbolic thinking, conceptualization and at some level deception).

I will rely on Thomas Kuhn, who pioneered the historiography of science, and draw parallels between his outline of revolutions punctuating the ontology of science. I will apply this historiographic methodology and when applied to the visual arts, art history becomes: 1) a discipline of knowledge (not just of practice) and 2) an evolutionary advantage (a survival adaptation by means of natural selection).

Adopting a perspective of art in a similar fashion to Kuhn viewing science as a series of paradigms disrupted by scientific revolutions; we are able to understand art as progressive and not merely aesthetically-orientated (based solely on cultural or population's taste). Likewise, by adopting a materialist perspective we are able to see the nature of artistic development, the patterns formed with visual art's origins, andneed not rely on only a progressive construct of art history but a thematic and contextual one, as well.

The Historical Dialogue

Thesis

By exploring the physical, paleontological evidence and anthropologic findings, this discourse will conclude there are three fundamental evolutionary adaptations which have allowed the higher primates to develop art: 1) the physical adaptations and success of the primate lineages (including the genus Homo), 2) the development of interdependence in the primate lineages and 3) the development of intelligence. These three factors will help us discover (at least in part) the origins of the visual arts. Combined, these faculties allow for not only the appreciation of the aesthetic, but also the manipulation of natural material to create the aesthetic.

Furthermore, the best way to analyze art through criticism or historical perspective, is not through abstract philosophy, phenomenology, or theory, but rather through a scientific exploration of evolutionary sources of the aesthetic sense.

This scientific methodology, owes much to the historiography of art history (and criticism) established by the great thinkers of the continental tradition. However, the next step in the progression of this thinking, is to embrace the rational, the testable, and the scientific.

Materialist Perspective

The Western worldview owes as much too continental philosophy, as much as it does to materialism. Specifically, the materialism which so embodies a scientific methodology (such as expressed by Darwinism), and that method's origin in Marxist dialectical materialism.

What we know as science or the scientific approach, is uniquely indebted to Marixsm, if not as its progenitor then certainly as science can be applied to the human, to the human mind, to the human condition, and to human sociology (psychology, behavior, culture etc.).

Under this model, all things – including human consciousness – are products of material. Materialism thus rejects idealism, and describes everything, including the faculties of mind, as processes of material. The human entity is thus a material entity, and its ability to sense the aesthetics, the ethics, the ontology, and the epistemology of the world, lie in physicalism not in some metaphysicalism. Matter is the explanation – in totality –for intelligence, consciousness, nature, space, time, history, culture, behavior, and cause and effect (Marx, 47, 96).

Although similar to theorists before him, Marx describes the progress of the human mind and of human history (its society, its culture, and its civilization) as moving forward. But unlike his predecessors, Marx argues that it is not human ideas that define succession, it is matter (Marx, 11). For Marx, this meant the drive lies in the material needs: the physical requirements for existence, happiness, justice and aesthetic.

Marx's materialism is rooted in his economic theories, specifically production, alienation and labor. The motivation of historical society comes from the antagonism between the classes and their pursuits of the material (Marx, 50 – 53).

The enterprise of humanity is the development of new societies through evolution of the material world: material needs, material existence. Spirit and idea have little place in Marx's theory of human nature (Marx, 10).

Though there are many objections to materialism, especially from disciplines in philosophy and religion, it would be hard press to argue that the Western tradition is not deeply rooted in materialism. The natural extension of Marxist philosophy of nature leads one to Charles Darwin and Sigmund Freud. Under these models, the human being – its nature and its consciousness – become reduced to the most fundamental matter. Under Darwin, the human is no different than any animal or living organism. The human's brain is nothing but the next progression of the ape's, the dog's, the reptile's, the fish's etc. His motivations and his enterprises are natural ones, defined by his material needs.

The human ceases being a prize of this world, and is diminished to matter – the interaction of his matter, either in body or brain. His love, his hate, his hunger, his fear, his deceptions, his desires are no different than any other animal's. The human is a creature of survival, and does what it can to survive best. Survival in this sense is the preservation of matter. And under this context, there is little room for idealism or spiritualism.

Freud takes us one step further in materialism, by reducing the human psyche to chemical processes and interactions of psychical processes. Not only is the human comprised of simple biology, but his personality, his character, his identity are mere expressions of the psychical apparatus. Such a reduction, brings the human being to the most elementary materialism.

It is because of Darwin and Freud, that I argue the Western tradition is materialist. It is so, not without objection, but as an age – as a society at this time and place – the Western tradition is post-Marxist, post-Darwinian, and post-Freudian. The worldview cannot escape its history. Even those who object to the purely materialist perspective, can only do so as a rejection of it, or a compromise under dualism. We cannot undo the theories of the preceding culture. And thus, we either must react to them, or embody them.

Our age is defined by this kind of materialism. A materialist historiography of the human knowledge is the next litmus in testing the path history and society takes.

Arguments for Materialism in Art History

I cannot overstate the importance of Marxist, Darwinian and Freudian materialism. This perspective is unique, to the modern and the postmodern, in that it allows for the overcoming of the vagueness of idealism, rationalism, and transcendentalism. The definitions of mind, nous, spirit and soul are certainly vague, because of their intangibility. In a post-materialist world, it is difficult to argue for properties that have no testable, repeatable, and/or observable presence.

Materialism corrects the issues of understanding how the phenomenal and the noumenal worlds interact. Often, materialism comes under such criticisms as conceivability, conditionalism, dualism, and disembodiment arguments.

The conceivability argument is based on logical fallacy. If metaphysical phenomena are possible to conceive, then such phenomena are possible to exist – if not physically, certainly logically. However, what use is such an argument when trying to understand human nature? Simply because I conceive of something, does not mean that is exists, can exist, or will exist. In fact, quite the contrary is true. Materialism is not false simply because metaphysics can be conceived of – in fact, using the same argument, metaphysics can be unraveled.

The conditional argument is that some experiences or objects are difficult to classify because they are provisional, unconfirmed, or subjective.Materialism supports an objective expression of matter, and thus all matter should experience other matter in the same way. We know this not to be the case, from our own personal experiences, as well as the descriptions of experiences by others. However, like the conceivability argument, this is simply a logical fallacy. The apparent hole in the conditional argument is that subjectivity refutes the possibility of objectivity. There are scores of theories and thought experiments that argue our limited perception of reality is simply denying our senses the objective truth. Interestingly enough, such theories actually support the conceivability argument, in that if our perceptions are limited then other versions of reality are conceivable – especially metaphysical spheres.

Dualism and the disembodiment state that there is a division between the physical body and another sort of body (a transcendent body, a spiritual body, a virtual body etc.). Yet dualism or disembodiment, create intrinsic problems: violation of the conservation of energy, the simplest solution is the best solution, and most importantly, how does the metaphysical world interact with the physical.

I think the reason materialism has survived the Western consciousness, is due to its simplicity, its elegance, and its utility. Conditionalism, conceivability, dualism, and other arguments, almost always seem to not suffice in refuting materialism because they rely on premises that: 1) are not consistent with our experience with the world, 2) violate our intuitions and sense of order, 3) are not universally shared, and/or 4) are too vague. Materialism removes the "gray areas" between black and white.

With this said, it would be hard to refute that materialism has dominated the Western consciousness. Even though many reconcile materialism with metaphysical perspectives, what materialism offers is a worldview that does not necessitate itself on metaphysical ontologies.

In the postmodern era, the age has been defined by materialism or the reaction to it. As we live in the current age, it makes sense to incorporate materialism in our discourse. Materialism propagates, disseminated throughout our experiences. We trust in materialism when describing the world, phenomena, process, and procedure. It is appropriate then to use materialism, in any discipline. We are comfortable with materialist axioms in science, mathematics, and other empirical disciplines. But it is also a practical foundation for discussions of aesthetic disciplines such as art.

Major Thinkers on the Topic

Thomas Kuhn and the Paradigm Shift

In *The Structure of Scientific Revolutions*, Thomas Kuhn proposed a linear model for the progression of science. In this model science maintains a paradigm of accepted truths, and undergoes a violent change during a period of revolution ultimately concluding in a paradigm shift. Such examples include the Copernican, Newtonian, Darwinian and Einstenian revolutions – each time the accepted ideas underwent drastic change (Kuhn, 94).

For all intents and purposes, Thomas Kuhn's description of a paradigm becomes applicable to both philosophy (and historiography) and science. This is not as preposterous as it might sound, as these two disciplines historically were considered one in the same under the heading natural philosopher (up until the followers of Newton began practicing what we might call true science) (Kuhn, 19).

Kuhn's basis is that philosophy/science have quite a linear evolution; development moves from one paradigm to the next, crushing the preexisting mode of thought. Through advancement, paradigms shift, creating changes in the understanding/use of science. With each shift greater possibilities and circumstances arise. Kuhn writes: "Successive transition from one paradigm to another via revolution is the usual developmental pattern of mature science" (Kuhn, 12).

Kuhn's definition of paradigm relies on two philosophical standards: 1) ontology and 2) epistemology. "Ontology [and] epistemology used to be the major concern of philosophy" (Mayr, 78), but today they have been absorbed by science. As science's roots lie in natural philosophy, it is no surprise that a paradigm requires both: the accepted truths about existence and the methods by which we ascertain knowledge.

In this sense, we can think of the word paradigm as the metaphorical box. This box contains all the preexisting knowledge acquired (ontological views) and ways of using this knowledge (epistemological). Inside this box we would find a set of rules by which a society or group of scientists has accepted. These rules form a pattern (a set of practices) which defines the shape and size of the box (that is, the discipline itself in a particular moment in history). The paradigm shift is then thinking outside of the box.

Historically, the most widely accepted paradigms have had two key factors: 1) unprecedented achievement; which attracts new generations of scientists (steering them away from other paradigms) and 2) open-endedness; allowing these new generations to resolve new problems within the paradigm (Kuhn, 23-24). This allows for scientists to routinely work through research and experimentation within the paradigm (not having to develop a new paradigm). Slowly, scientists accumulate data to support (or in some cases deny) a broad theory. This description of science, the relationship of paradigms and paradigm shifts is defined as normal science by Kuhn.

Kuhn proposes that empirical data is only possible and meaningful through prior paradigms which shape the experience of that data (Kuhn, 121).Although some philosophers and historiographers of science disagree with the Kuhnian model of normal science, the paradigm serves as an organizing principle within science. The paradigm establishes criteria and parameters which is precisely the purpose of the Scientific Method – verifiability, and reproducibility which standardizes science. These qualities are what give science preeminent position in dictating truth, objectivity and fact in the Western, and the materialist, worldview.

Charles Darwin and the Evolution of Humankind

The current paradigm accepted by all scientific disciplines, is evolution. Although the current incarnation of evolution is a combination of Charles Darwin's natural selection and modern understanding of genetics, Darwin was unaware of the mechanism which drove evolution. At his time of publishing *On the Origin of Species*, genetics had yet to be discovered. But the mechanism is not fundamental to evolution, at least not in a philosophical or Western worldview.

When Charles Darwin first published his theory of natural selection in regards to species transmutation, he did more than develop a mechanism for evolution. The hypotheses proposed in *On the Origins of Species* have been applied to a multitude of disciplines, including: economics, sociology, psychology, education and eugenics.

In *On the Origin of the Species*, Darwin thoroughly outlines his theory. Natural selection is the process by which favorable traits are passed down through variation. In this model of evolution, organisms change, develop and advance through circumstances by which variation allows for the fittest creatures to survive and succeed. Darwin defines success based on reproducibility – that is, a species which is able to maintain a healthy population has been selected naturally to defy extinction (Darwin, 28).

The importance of this model lies within the mode by which organisms can be successful. Unlike other variations of development and materialism, evolution by natural selection places emphasis on two key components: 1) fitness and 2) inheritable fitness. The first of these components can be defined as the ability to succeed; specifically the mode by which an organism succeeds.

It is the collection of traits which allow the organism to continue and fulfill component two – the passing of heritable traits to future generations. A member of a given species survives mainly to produce more of its species. Those offspring will thus possess the traits which are best suited for fitness, as those organisms are the most likely to survive (Darwin, 238, 512). And those organisms which survive are able to reproduce (conversely, those organisms which do not reproduce must not have possessed the ideal traits).

Frogs, which secret a poison in their skin, can evade predators. Their bright coloration warns predators of their toxins and therefore allows them a better chance at survival.

Those frogs which have a similar coloration but do not possess the toxin, are also likely to survive because predators will be less inclined to take a chance and eat these frogs (for fear of poisoning). The trait then of bright coloration is a trait of fitness. And has been naturally selected to be passed on to generation after generation because it: 1) works as a deterrent to predators, 2) increases the chance of survival and 3) those frogs that are not eaten are able to reproduce.

"[Evolution] has encountered considerable resistance… among essentialism-committed philosophers" (Mayr, 34). "Essentialism, with its emphasis on discontinuity, constancy, and typical values, dominated the thinking of the western world" (Mayr, 38). In this view, all bodies or materials have a specific set of characteristic properties (essences). These essences are comparable to Plato's forms or ideals – essentialism is an extension of Platonic idealism: all objects can be quantified and qualified by their substance (or in Platonic sense, their ideal form).

We can see disciplines both in Darwin's time and the current era which adhere to such idealism and shun the transmutive changes proposed by On the Origins of Species. Such debates permeate culture through religious and societal values. However, the lasting revolution of world-view, that Darwin has created, is not in the acceptance of change, necessarily, but is in the idea of change.

That is, in a post-Darwinian society, the Western world can no long simply accept essentialism. In order to uphold essentialism and denounce Darwinism, the Western world has to: 1) acknowledge that change is believed by some, 2) muster evidence that change is impossible and 3) conclude the Darwin is in error. This is an extremely different world-view than merely accepting essentialism.

The language in the previous statements is quite deliberate. Acknowledgement is crucial; otherwise an argument cannot be had. Evidence is needed; otherwise the argument is lost. Once the essentialist acknowledges that some believe in change and has gathered evidence against change, s/he must prove that change is impossible. If s/he cannot prove change is impossible, then change is possible – quite the "slippery slope" to probable and likely. Finally, the essentialist must prove Darwinism is in error. The word evolution need not be used here, again deliberate. Darwinism is subtly different from evolution, in that it bears a philosophical connotation (such as Platonism or Marxism).

And for the essentialist it is a fundamental difference in philosophy that forbids him or her from accepting Darwinism, not a scientific differing.

Either accepting Darwinism and/or evolution or denouncing Darwin, the hypotheses of On the Origins of Species, have had sweeping effects on modern society and modern world-views. "The question is therefore legitimate as to what role evolution and Darwinism play in modern thought. It is perhaps fair to state at the outset that no well-informed biologist doubts evolution… …[and] the vast majority of well-informed lay people accept evolution as readily as the fact that the earth circles the sun and not the reverse. Whatever opposition to evolution survives is restricted to… …fundamentalist sects" (Mayr, 625). "A rational debate between scientists and fundamentalists is impossible because one camp rejects supernatural revelation, the other camp scientific fact" (Mayr, 626).

As a world-view or as a scientific mechanism, Darwinism affects all aspects of the human species. "In the initial pages of [Darwin's] first transmutation notebook (Notebook B), he observed that even mind & instinct become influenced as the result of adaptation to new circumstances" (Mayr, 92).Darwin proposed that over long periods of time, the human mind, morals and emotions had progressively developed out of animal origins.

A multitude of theorists have furthered this idea. Darwinism, as applied to the human being, allowed Herbert Spencerto develop Social Darwinism. Joseph A. Schumpeter's the Theory of Economic Development was the forerunner of evolutionary economics. The works: *Sociobiology: The New Synthesis* by Edward O. Wilson and the *Selfish Gene* by Richard Dawkins are seminal in the joining of Darwinism with psychology, philosophy and sociobiology. In this light, human behavior and the human psyche can be seen, as Darwin had imagined, as adaptations and environmentally selected.

Psychological characteristics of the human being, including: memory, perception and language, are now viewed as evolutionary adaptations no different from other physical adaptations such as walking upright or using tools. If behavior and communication can be viewed as results of Darwinism, other disciplines can also find their origins in evolution. Psychology, sociology, economics, sociobiology, anthropology, philosophy, morals, and ethics are among the multitude of disciplines which describe facets of the human being.

No one discipline has sole reign over the nature of humanity, nor does any one discipline seem to be untouched by the theories of Darwin. At some point, each of these fields can either directly see the impacts of evolution on the human being or can indirectly use Darwinism to explain how the human being behaves.

The hard and soft sciences are no longer the only fields which can use Darwin's mechanism and evolution. Once the human mind and human behavior can in some sense be reduced to evolution, then all products of the human can be reduced to evolution. In order to avoid, oversimplifying the complex processes which formulate culture and society, this discourse merely argues that culture and society are products of evolution. This is not to say that culture and society are only products of evolution, but that evolution played a role (and somewhat significant role) in their formation.

Darwinism can thus be applied to three specific realms of the human social construct: 1) the capability to symbolically think and social learning which is used primarily to transmit knowledge, beliefs and behaviors, 2) the set of attitudes, values and practices shared by a specific group, and 3) the appreciation of aesthetics and the tastes of a specific group. In short, these three criteria comprise culture and the disciplines of the humanities. Darwinism is no longer remitted to the sciences alone, but music, language, literature, history and the visual arts (as products of the human social construct and human behavior) can now be viewed within the Darwinist framework.

This is the legacy of Darwin's theory and its application to the modern, world-view.

Evidential Support

Evolutionary Theory

Darwin illustrates a great many examples and justifications for "evolution by means of natural selection" (Darwin, 99). Darwin refutes ideas like those of Lamarck's in which animals respond to their environment, develop a physical trait and then are able to pass it on to their offspring. Instead of this mode, it is the fight – the competition which creates fitness and natural selection.
All life forms thus undergo this same process:

1. Organisms of a species produce more offspring than can grow to adulthood. Organisms of this species will continue to produce offspring until they themselves are unable to (death being the chief reason).
2. However, even though organisms continue to produce great numbers of offspring, populations remain approximately constant. There are little fluctuations in natural population sizes.
3. Organisms within a species mate within their species. If populations remain constant, mating must be limited. Mating resources within a species are therefore highly sought after.
4. Likewise, food resources are limited and also stay approximately constant. Constant populations of organisms must compete for the same, limited food resources.
5. Competition creates a struggle for survival. Organisms must struggle with members of their own species in order to obtain food resources and to obtain rights/opportunities for mating.
6. No two individual organisms of a species are identical. There is variation within every species – although less variation in members of the same species as with members from differing species.
7. Variation is inheritable as illustrated by artificial selection. Domestication is the isolation of variations that are favorable for man's usage. If man is capable of such isolation, nature is certainly capable of the same.
8. Some variants in a species will be more favorable than others. Like domesticated organisms (whose variations are deemed more fit by man's needs), wild organisms will express variations which are better modes of fitness based on resources, environment and circumstance.
9. Those organisms with superior traits and are better suited for the environment will gain an upper-hand in obtaining food resources and mating resources. These organisms will breed, where those organisms with variations which are less suited for the environment will not breed.

10. Those organisms which breed pass down traits to their offspring. Again, this can be seen in domesticated animals as this is the process of domestication. Inheriting traits from parent organisms is how a species is manipulated for man's use. Likewise, nature is able to manipulate a species phenotype to suit the environment.
11. Surviving organisms which breed and obtain food resources continue to produce offspring while less-fit organisms die out.
12. Over great periods of time, populations continue to adapt to their environment. They slowly and gradually evolve in response to the environment. Each generation gaining slightly better traits and passing these traits on to their offspring. Accumulating these traits over time allows for the development of new species.
13. This is evolution by natural selection.

(summarized from Darwin, Chap 2 – 5)

Although Darwin was trying to explain the diversification and development of life through transmutation, his work, itself, was also a catalyst of transmutation – a world-view shift of society as a whole. Any discipline, post-Darwinian thought, must address the idea of change. In a Kuhnian framework, change can be organized through paradigms.

If Kuhn's paradigms are not actual constructs, but simply theoretical arguments used to describe change, it is irrelevant to the materialist worldview. But furthermore, understanding the origin of art as a biological function, can be represented like Kuhn's succession of revolutions and paradigms. Visual art can be seen as progressive, from step and development to step and development. And just as so many of our cultural and sociological paradigms can follow Kuhn's map, so can art as purely biological (the ultimate expression of materialism).

Art is an evolutionary adaptation.

Primitive Ancestry

Although experts disagree, the oldest primate ancestor may be *Purgatorius*, a small, lemur-like, insectivorous animal from the late Cretaceous period (approximately 65 million years ago). By the Eocene Epoch (54 million to 33 million years ago) the ancestors of tarsiers (Tarsiidae), the ancestors of lemurs and lorises (Adapidae) and the ancestors of monkeys and apes (Omomyidae) had evolved.

These groups would eventually evolve to include the approximately 350 different primate extant species, including the prosimians, monkeys and apes. As a group, primates are incredibly successful, demonstrate a high amount of adaptive diversity and have colonized the tropical and subtropical regions of South America, Africa and Asia. Although the 350 species differ, there are common anatomical adaptations which have helped the Order succeed (Elton. 283 - 309).

Of the primate characteristics, there are five key sets of adaptations, which originally played in a role in survival, but have subsequently allowed for the development of art. These include: 1) spatial and depth perception, 2) high degrees of movement, dexterous hands and sensitive fingers, 3) stereoscopic and color vision and visual acuity, 4) extremely enlarged brain equipped with: sensory processing, nervous integration, enlarged cerebral cortex, and brain tissues arranged in folds and fissures, and 5) highly social societies consisting of hierarchies, pair-bonding and paternal care (Elton, 283).

Originally each of these five sets of adaptations was specifically developed for either: 1) food gathering or 2) mating, the two primary functions of any living organism. However they eventually became integral to the creation of art (without any one of the above adaptations, art as we know it, could not be). Each of the five sets of adaptations listed above was integral to the primate order's success and survival. Below, Table 1.1 illustrates the primary evolutionary advantages and purposes for each of the five sets of adaptations (Spuhler, 509 – 561).

Table 1.1: Primary Functions of Primate Adaptations

spatial and depth perception	ability to see dimensions, judge distance and view space; vital for an arboreal animal required to leap branches, ascend/descend trees quickly and view the forest canopy
high degrees of arm movement, dexterous hands and sensitive fingers	ability to manipulate and use the environment, as well as grooming; vital for both a foraging animal (aids in food gathering) and a social animal (grooming creates bonds and aids in establishing hierarchies)
stereoscopic and color vision and visual acuity	ability to see viable food sources and judge quality; vital for animals which rely on fruit as a primary source of nourishment (to this day, most primates find the deepest shades of purple unappetizing, most likely linked to rotting fruit)
extremely enlarged brain: enlarged cerebral cortex and brain tissues arranged in folds and fissures	ability to understand what the hands are doing, connect senses, communicate threats, make decisions, relate to others, express emotions; integral to sensory processing and nervous integration; fissures and folds maximize brain surface area without placing a higher demand on skull size for the enlarged brain
highly social societies consisting of hierarchies, pair-bonding and paternal care	ability to learn from past generations, communicate with others and understand the environment; integral to the development of social groupings, hierarchies, sharing food, warning members of danger and creating communication

These primary functions of primate adaptations eventually allowed for secondary functions, which in turn allowed for the development of the three specific realms of human culture (and the visual arts): 1) the capability to symbolically think and social learning which is used primarily to transmit knowledge, beliefs and behaviors, 2) the set of attitudes, values and practices shared by a specific group, and 3) the appreciation of aesthetics and the tastes of a specific group.

A parallel can be drawn to insect flight. "Insects owe much of their extraordinary evolutionary success to flight. Compared with their flightless ancestors, flying insects are better equipped to evade predators, search food sources and colonize new habitats. Because their survival and evolution depend so crucially on flight performance, it is hardly surprising that the flight-related sensory, physiological, behavioral and biomechanical traits of insects are among the most compelling illustrations of adaptations found in nature" (Sane, 4191).

The insect wing is thought to have evolved from moveable abdominal gills as found on mayfly juveniles. These gills, filled with nerve endings and veins, may have been used to: 1) sail along the surface of water, 2) as a form of temperature regulation and/or 3) to actively push water over the gill while in still water. As these gills became larger they functioned much like a sail, carrying the insect to other locations. Over time sailing became gliding and gliding became flying. All of these movements were an advantage to the insect, allowing it to migrate greater distances and evade predators (Sane, 4196).

Like insect flight, which was originally a function of temperature regulation or breathing, the adaptations for primate art were originally a means of foraging and communication. The spontaneous generation of Picasso did not happen, but instead he is a culmination of millions of years of adaptations. So by inference of the above insect model and the original five primate adaptations used for survival; this second Table 1.2 (as seen below) illustrates how the primary adaptations can be used in the secondary, cultural purposes.

Table 1.2: Secondary Functions of Primate Adaptations	
spatial and depth perception	ability to see and use perspective, proportion and dimension to create representations of the world and its objects
high degrees of arm movement, dexterous hands and sensitive fingers	ability to use tools for mark-making, control mark-placement and develop strong eye-hand-coordination
stereoscopic and color vision and visual acuity	ability to use the elements of design: color, texture, line, shape
extremely enlarged brain: enlarged cerebral cortex and brain tissues arranged in folds and fissures	ability to use the principles of design: contrast, emphasis, movement, balance, unity, pattern and rhythm based on structuring the above elements of design in meaningful ways by using conceptualization, imagination and appreciation
highly social societies consisting of hierarchies, pair-bonding and paternal care	ability to use art as a communicative tool through the use of symbols, artistic voice, and representations; ability to share these uses and teach younger generations how to be successful artists

It is from the original five sets of adaptations that these secondary functions are possible. Evidence for this lies not only in the evolution of our own species, but extinct species most closely related to us.

Further, evidence lies in our closest ancestors. Approximately, three million years ago, an *Australopithecus africanus* noticed a peculiarly shaped jasperite stone. It was water worn and cracked, a reddish-brown hue, and approximately two-and-three-eighths of inch wide. *Australopithecus africanus*, an ancient and extinct relative of the human species, is thought to have had many ape-like and human-like characteristics (Kleiner, 2). Like other australopithecines, s/he was bipedal but *Australopithecus africanus* had a slightly larger brain than *Australopithecus afarensis* and more humanoid facial features. This particular *Australopithecus africanus* carried the peculiarly shaped jasperite stone for twenty miles. The immediate question is: why would this *Australopithecus africanus* carry a random pebble from a riverbed to his/her cave dwelling? (Kleiner, 2 – 3).

In 1925 Raymond Dart discovered the peculiar pebble with the fossil remains of the *Australopithecus africanus* in the Makapansgat cave dwelling. It was immediately speculated, by Dart, that the *Australopithecus africanus* who had found the Makapansgat Pebble had kept it because of its "uncanny resemblance to a human face." The implication of such a find is that Australopithecus africanus, and perhaps other australopithecines, was capable of symbolical thinking and had developed an aesthetic appreciation (Kleiner, 3).

The discovery of the Makapansgat Pebble is uniquely important for two reasons: 1) it is direct evidence that the origin of art may have been an evolutionary process and 2) that symbolic thought and aesthetic appreciation may have been evolutionary adaptations. The Makapansgat Pebble predates the first examples of art by millions of years. This means that the Makapansgat Pebble may in fact be a step in the evolutionary progression of symbolic thought and aesthetic appreciation; both in themselves adaptations and stages in the origins of art. This can be concluded based on the fact that the australopithecines were in fact human ancestors (or close relatives) and the adaptations they would have evolved would have been past into our own gene-pool.

The first citing of true art doesn't happen until 30,000 BCE: cave-paintings found in Lascaux, France, stone fetishes found in Willendorf, Austria and mammoth-ivory carvings found in Hohlenstein-Stadel, Germany are but some examples of the "artistic explosion" occurring around 30,000 BCE. This remarkable time-period showcases some of the earliest humans' artworks which unlike the Makapansgat Pebble, show an actual manipulation of the environment with purpose. Cave murals depict prey animals and hunts, fetishes depict women with engorged breasts and hips, ivory icons depict feline-headed humans, and carvings depict shamans with caribou antlers – all examples of symbolic thinking.

There certainly is a gap between these works and the Makapansgat Pebble. If the cave-paintings and stone-fetishes represent the culmination of millions of years of symbolic thinking and aesthetic appreciation, then the Makapansgat Pebble represents the starting place for that three million year progression. There is an artistic link between our most ancient ancestors and cousins with our more closely related Cro-Magnons, whom responsible for the Lascaux cave-paintings and the Willendorf fetishes. Cro-Magnon peoples moved into Europe and replaced the Neanderthals, ushering in a culture that was no longer comprised merely of tool-makers but of artists. Cro-Magnon developed true art, and three million years prior australopithecines developed the appreciation for the beautiful and/or important. Why did such time pass between the Makapansgat Pebble and the creation of the Willendorf fetishes? Perhaps it three-million years is the precise amount of time it takes to move from the step of appreciation to the step of creation (Kleiner, 5 – 9).

If we think of art as evolving, it is quite plausible that aesthetic appreciation stayed constant for millions of years and was punctuated 32,000 years ago by a quick revolution of artistic discovery and creation. This also fits the Kuhnian model, of a lengthy period of the paradigm intact and then a period of crisis sending aesthetic appreciation into paradigm shift. The two paradigms then being: merely the act of appreciation becoming or being replaced by the act of manipulation. This is consistent with the findings, as there seems to be a moment in history when our ancestors became compelled to take control of the process as opposed to being passive partakers. From 30,000 BCE onward, there was a "powerful outburst of artistic creativity" (Kleiner, 9). Across the world, the descendants of Cro-Magnon would litter the caves, the hills and the rocks with symbols, pictographs, drawings and carvings. Was this no less of a revolution than Copernicus claiming the sun was the center of the solar system or Einstein questioning the proven Newtonian laws of physics? Was the Makapansgat Pebble the catalyst for such a Kuhnian revolution?

The Makapansgat Pebble cannot be called a fetish or sculpture because the facial impression was created by natural erosion, not by deliberate work of the *Australopithecus africanus* who had found it. But what it does represent is the ability to perceive something more than just the environment, as is. *Australopithecus africanus* was able to create a meaning – however base or simplistic that meaning was – around an object, that otherwise had no use. The Makapansgat Pebble could not be used as a tool for gathering food and was too insignificant to be used as a weapon – but what it could be used for was that it could be appreciated. And the act of appreciation is considered one of the formal steps in creating art.

In order for our ancestors to think symbolically and develop aesthetic appreciation, a variety of evolutionary adaptations were necessary. Return, to our most primitive ancestors, and therein you will find the groundwork laid. The evolutionary adaptations undertaken by *Purgatorius* would allow for secondary adaptations necessary for *Australopithecus africanus* to begin the steps of art appreciation. Eventually, that appreciation would become manipulation. Examples of this, can be seen in our closest extant relatives, today.

The Human Animal

British artist, Desmond Morris, was at one time the Curator of Mammals at the London Zoo, after he was awarded a D.Phil. from Oxford University for his doctoral thesis on *the Reproductive Behavior of the Ten-Spined Stickleback*. He left the zoo in 1966 to pursue a career as a surrealist painter and author.

Morris' work, *the Naked Ape: A Zoologist's Study of the Human Animal*, is in partial a result of his studies at the Universities of Birmingham and Oxford and his work with the London Zoo primates. *The Naked Ape* focuses on humanity's relationship with other primates and our striking similarities to the other great apes.

"There are 193 living species of monkeys and apes. 192 of them are covered with hair. The exception is a naked ape self-named Homo sapiens. This unusual and highly successful species spends a great deal of time examining his higher motives and an equal amount of time studiously ignoring his fundamental ones. He is proud that he has the biggest brain of all the primates, but attempts to conceal the fact that he also has the biggest penis, preferring to accord this honor falsely to the mighty gorilla. He is an intensely vocal, acutely exploratory, over-crowded ape, and it is high time we examined his basic behavior" (Morris, 9).

As a professional zoologist, Morris wrote the Naked Ape for laypeople, making the biology and behavior of humans more accessible. Morris simplifies human behavior and habits to the most fundamental animal instincts. No subject is left untouched, including science and religion. "At first sight, it is surprising that religion has been so successful, but its extreme potency is simply a measure of the strength of our fundamental biological tendency, inherited directly from our monkey and ape ancestors, to submit ourselves to an all-powerful, dominant member of the group" (Morris, 121). Morris draws correlation between groups of humans, submitting, kneeling, closing their eyes, prostrating themselves, chanting and begging the most dominant member of the tribe – the one they call god. Morris speculates that this all-powerful being may have in fact been a super-dominant and successful member of our ancestor's tribe.

Religion and science are not the only disciplines that Morris establishes an evolutionary origin. Morris believes art, too, can find its origins in our primitive ancestors – as evidenced by Congo the Chimpanzee. One of Congo's earlier compositions, Morris described as "lyrical abstract impressionism" (Morris,124).

At the age of two, Congo grabbed hold of his first pencil and began making marks on paper. Congo had an innate sense of composition – creating circles and balancing his drawings without training.

Morris pushed the chimpanzee, testing his artistic sense: Morris would draw on Congo's pictures, forcing the chimpanzee to draw more shapes to achieve balance, Morris would take paintings away from Congo before he was finished sending the chimpanzee into a fitted rage filled with tantrums and Morris would try to coax Congo to continue painting, thought the chimpanzee would refuse when he felt he was finished. Congo displayed personal tastes, often choosing reds to complete his paintings.

Though chimpanzees, like Congo, are not our ancestors, we do share a common ancestor. It is estimated that between five and eight million years ago our common ancestor diverged into the two lines which would ultimately become the modern day chimpanzee and bonobo, and we humans (Elton, 3).

It is by studying modern day relatives, that many primatologists hope to glean a better understanding of our more primitive ancestors. Traits common to all primates could result from two plausible scenarios: 1) convergent evolution in that both species developed similar traits coincidentally (ie. bats and pterodactyls both evolving wings from their finger-bones and being able to fly) or 2) sharing a common ancestor, as chimpanzees and humans do, which evolved that trait and past it on to the subsequent species. When concerning primates, the latter of these possibilities is typically more likely, as the extant groups of primates are more closely related to one another than to extinct groups.

Behaviorism from Modern Theorists

Like Desmond Morris, Alison Jolly studies a modern day primate in order to better understand human evolution. Though she attempts to dig far deeper into the primate past, by studying a far-removed group from the human ape. Alison Jolly began studying lemur behavior at Berenty in 1963-64, and has for the past two decades returned to Madagascar every fall for the birthing season. She focused primarily on the demographics of ringtailed lemurs and studied particularly their inter-troop and territorial behavior (Lucy, 1 – 4).

Her studies have confirmed that primates have the capacity to deceive in order to obtain food. Like lemurs, capuchin monkeys also demonstrate this behavior.

A capuchin, lowest in the hierarchy wishes to steal the food of its higher brethren: In order to do so, the capuchin will call out the vocalization warning for "snake" and watch its brethren retreat to the trees. As they do, the lowest capuchin will gather the dropped the food and quickly consume it before being caught (Lucy, 149).

Alison Jolly explains these behaviors displayed by capuchins and lemurs as a result of intelligence evolution. "Primate society preceded the growth of primate intelligence, [making intelligence] possible, and determining its nature" (Lemur, 495). Jolly argues that primate societies and social instincts, led to the need for communication and thus, evolved intelligence (as a capacity for communication). She cites deception, social structures, vocalizations and "language" as all indications of social intelligence. Because lesser, more primitive primates, such as lemurs display such social traits, though do not have the hand dexterity nor display the complex tool usage of their higher counterparts, the monkeys and apes, it is likely that social structures evolved before the faculties of intelligence.

Jolly, like Morris, applies her research of primates and primate intelligence to the evolution of humanity. In her book *Lucy's Legacy: Sex and Intelligence in Human Evolution*, she emphasizes a different "evolutionary story" than is commonly accepted. Unlike traditional Darwinian views of humanity's struggle, Jolly emphasizes cooperation and social networks as opposed to violent, selfish, competitive struggles (Lucy, 212 – 216). Jolly describes the evolution of intelligence through the social structure of early humans (or even more remote ancestors, like the australopithecines like Lucy).

Lucy was an *Australopithecus afarensis*, discovered in Ethiopia by Donald Johanson (Lucy, 357). The three million year old fossil, discovered in 1973, was named after the famous Beatles song (popular at the time). Like the australopithecine that found the Makapansgat Pebble, Lucy is thought to be either an ancestor or cousin to Homo sapiens.

Jolly speculates that Lucy and other australopithecines lived in cooperative groups that shared food, migrated with one another and developed links between generations. Like the lemurs Jolly studied in Madagascar, it is likely that the australopithecines would have needed to develop greater verbal capacities in order to communicate with one another in the social grouping (Lucy, 180).

Natural selection would have worked differently in these early human tribes. Creative mating practices would have outranked mere competition and fighting for mates. Those australopithecines that could show higher intelligence, higher creativity and higher communicative skills would have been more desirable.

There are three different reasons this may have been true: 1) communication helped pass information which would have lead certain australopithecines to be better at finding food and water, 2) australopithecines who had the "time to waste" on such things as communication and symbolic thinking were not preoccupied with foraging and perhaps displayed better constitution and health, and/or 3) cooperating with friends and allies to outsmart rivals (Lucy,210).

Jolly proposes that some of the earliest forms of "wooing" the affections of mates may have included: endearments for desired individuals, insults for enemies, remembering which foods were safe and which ones were not, being able to perform comedy or music, feeling jealousy and developing ways to steal a desired mate or trick a rival, and deception (Lucy, 106, 297). For Jolly, the struggle for survival of the fittest was not in speed or strength, but in wits – which mind was creative and ingenious (Lucy, 10).

This mate-driven development of intelligence could have perhaps contributed to the development of art. Denis Dutton, an art professor in New Zealand, builds on this idea in the *Art Instinct: Beauty, Pleasure, and Human Evolution*. Like Jolly, Dutton believes that the adaptation of intelligence and interdependence helped our ancestors pick winning mates (Dutton, 45). Dutton lists a set of behavioral adaptations which lead to better chances of mating: being good at sex, understanding facial expressions, using logic, being able to acquire language, and appreciating beauty (Dutton, 31, 56). For Dutton these traits had a primary function in survival, but ultimately lead to a secondary function in art.

As illustrated in previous sections, these primary adaptations once used for a singular purpose, could be later applied to new situations. Face to face copulation forces the couple to look at one another while being intimate. By looking at one another, there is a greater chance of being aware of the other's feelings during the act of sex (Dutton, 100). This brings new meaning to sex as opposed to being a simple act of procreation. Understanding the other's facial expressions (especially during this intimate act) is crucial to connecting – something also crucial for a social species.

Furthermore, the use of meaning and reasoning are functions of logic and problem solving. All of which leads to the use of symbols and language (Dutton, 161 – 163). So for Dutton – this expression of one biological need links too many other needs and intellectual stimulus.

As Jolly argues that our intelligence and social structure were functions of Darwinian selection, Dutton argues that art and aesthetic appreciation are functions of evolution. Furthermore, Dutton speculates that the creation of art can be a useful trait in seducing a mate. Modern humans joke, sing, tell stories, play games, give gifts and create tokens of affection in order to woo a mate. Dutton argues that the same was true for our distant ancestors (Dutton, 218).

The act of creating a piece of artwork requires skill. Often our primitive ancestors found a stone or piece of ivory to create their piece of art out of – and this material was precious. Using a unique skill combined with a precious item, the person was able to create something that others could not. For Dutton, this skill was not only valuable but desirable. Dutton does not necessarily explain why humans appreciate beautiful things or have a sense of aesthetic, but argues that because we have one there must have been an evolutionary advantage (Dutton, 87).

Dutton goes on to claim that humans are genetically predispositioned to appreciate landscapes – and not just any landscape, but those that depict a piece of grassland, near a water source and accompanied by a few sparse trees. It is not a cultural taste preference, but inherited fondness for savannah-type landscapes (Dutton, 21 – 23). It is not some socially constructed enculturation which gives us our tastes, or our art appreciation. Aesthetics is a taste shaped by natural selection. The human draw to art and beauty is innate. Furthermore, cross-culturally there is a universal appreciation for landscapes – especially those most similar to those oases sought most by our ancient and primitive ancestors (Dutton, 14).

For Dutton, art criticism and the appreciation of the aesthetic has little to do with abstract theory, noumenal philosophies, or premises of phenomenology. Rather, art criticism has more in common with evolutionary biology, than any other discipline.

In his seminal work, Dutton build the "Savannah Hypothesis" using such a methodology. He claims that humans have a fondness for certain land types as they tend to support human life. These lands should include: "open spaces of low (or mown) grasses, interspersed with thickets of bushes and groupings of trees; presence of water directly in view, or evidence of water nearby or in the distance; an opening-up in at least one direction to an unimpeded vantage on the horizon; evidence of animal and bird life; and diversity of greenery, including flowering and fruiting plants" (Dutton, 25). This is not just a vague preference, but it happens to describe the African savannahs that our ancestors most likely evolved in.

Dutton claims, though over millions of years humans left the African savannah to new lands, we are still emotionally connected to those landscapes. As such, humans from every culture, in every time period, across the planet tend to depict similar landscapes in their art. This commonality across cultural lines seems to imply that somewhere in our ancient lineage this preference was adopted.

Analysis of the Premise

Interpretation of the Premise

The primary adaptations Dutton identifies which benefit choice of mating and were once used for a singular purpose, could be later applied to new situations. One of the premier advantages selected for in human evolution was the imagination and language capacity. "Creative storytelling – perhaps the oldest of the arts – is found throughout history and, like language itself, is spontaneously devised and understood by human beings everywhere," (Dutton, 8). "Universal themes of love, death, adventure, family conflict, justice and overcoming adversity" surface in stories and images cross-culturally, and form the archetypal repertoire of the imaginative species (Dutton, 8).

Dutton justifies his evolutionary model of art through: "the universality of art and artistic behaviors, their spontaneous appearance everywhere across the globe and through recorded human history, and the fact that in most cases they can be easily recognized artistic across cultures suggest they derive from a natural, innate source: a universal human psychology," (Dutton, 32). One such universality is the symbol and its first incarnation, artistic expression – both tied intimately to human nature (Dutton, 33).

"Human beings are born image-makers and image-enjoyers" (Dutton, 35). If this is the case, then a natural question arises: is "every universal human behavior pattern disposition an adaptation or the result of adaptations?" (Dutton, 43). Humans have evolved faculties which allow for: intuitive physics, tool-making, personal psychology and the sense of self/otherness, intuitive sense of space, intuitive sense of numbers, understanding of probability, precision in movement, a sense of logic and an ability to read facial expressions, among others, (Dutton, 46 – 47).

Here Dutton is not suggesting a Freudian explanation for the creation of art, rather he is claiming that use of symbols, developments of language, and the creation of art are products of what Jolly calls the social intelligence and technical intelligence. Through the altruistic sharing of products created using socially and technically intelligent skills, mates became more desirable.

The Darwinian criterion for a successful species or member of that species is its ability to mate – those that mate pass on their DNA and thus are successful. For our earliest ancestors, mate-choosing was intertwined with art because on a subconscious level, art implied higher social and technical intelligence. The mistake of associating intelligence with fitness should not be made – evolution does not choose for progression of intelligence. Rather, at a particular time in human evolution social and technical intelligence were as strong of adaptations as large tusks, sharp fangs or thick hides. "Sexual selection explains the will of human beings to charm and interest each other," (Dutton, 163).

At this time, charm and skill were as or more desirable than size, strength and aggression. One way in which our ancestors were successful at charming one another was offering an object of art; even though "the arts squander brain power, physical effort, time and precious resources" which is counterintuitive to natural selection which favors economy and efficiency (Dutton, 136). The brain is a selfish organ – so selfish to run it requires incredible power and large quantities of protein. In fact, it is possible that such protein-needs may have caused our ancestors to change from a vegetarian diet to a carnivorous one. As the brain sucks resources, it constantly craves more in order to operate with more complexity. And one of the operations it desires most is information – the brain seeks stimulus. So although symbolic thinking and beauty appreciation is far less useful an adaptation, then say redirecting resources in order to develop fangs or claws, it does feed the brain its cravings. A byproduct of intelligence evolution is stimulus need.

Humans place a high priority on mental fitness – "on the serious question of choosing a mate, men and women on average place kindness first on their respective with both naming intelligence as number two," (Dutton, 151). It is this fact which creates such a demand for communicative ability. The greater vocabulary creates a greater amount of communication and a greater repertoire of thoughts to be communicated, thus demonstrating higher intelligence. Contemporary English speakers have at their disposal an "excess vocabulary of sixty-thousand-plus words" which is directly proportionate to the "evolutionary function of language [which] is not only a means of efficient communication but a signal of fitness and general intelligence" (Dutton, 153).

Intelligence, knowledge and information have replaced size, strength and brutality in human natural selection. This fact has lead Dutton to speculate that the human animal has undergone self-domestication. "Every direct prehistoric ancestor of every person alive today at times faced critical survival choices: whether to run or hold ground against a predator, which road to take toward a green valley, etc." yet their most important choice was "whether to choose this man or woman as a mate with whom to rear children and share a life of mutual support," (Dutton, 164 – 165).

Assessment of the Premise

Expression is a way of looking at the world, art is a reflection of that expression. The creation and aesthetic of art is: understanding and relating social issues and events; understanding emotions, developing emotional intelligences, and developing empathy and sympathy; communicating ideas visually, sensuously, emotionally, and intuitively; and deeply challenging ourselves.

Dr. Betty Edwards, Professor of Art at California State University, is perhaps one of the most famous researchers in the area of creativity. In her seminal work, *Drawing on the Artist Within*, Edwards quotes Albert Rothenberg saying: "The problem of creativity is beset with mysticism, confused definitions, value judgments, psychoanalytic admonitions, and the crushing weight of philosophical speculation dating from ancient times" (Edwards, 7). In lieu of such statements, it would seem impossible to come to a conclusive definition of what creativity is.

For Edwards, creativity is "the force that drives problem-solving, informs effective decision-making, and opens new frontiers for ambition and intelligence." Like Dutton, Edwards believes the creative drive is innate. It is a Darwinian, Freudian force contained within everyone. Furthermore, Edwards argues that every single person can be taught to be artistic, that it is not a skill reserved for a special, gifted few. This would also support Dutton's premise, which in turn supports the materialistic, biological origin of art and aesthetic.

The act of creation is willful but also cognitive. When one engages in creation or creativity, that person is doing two things: experiencing the aesthetic and learning. Explaining how animals evolve or how galaxies move; painting a landscape; writing a sonnet; or solving an impossible equation – all of these are acts of creation and are creative. But more so, they tell a story – each of these activities communicates meaning. This is how creativity relates to learning – it is a willful act of understanding and examining the nature of things.

Inherent in all of these skills, is the ability to "look." Edwards claims that there are two main components to creativity: 1) looking at problems in new, innovative ways and 2) focusing on connections that might not be apparent (Edwards, 12 – 17). "This special way of seeing includes the ability to see a whole field while at the same time perceiving parts within the field in relationship to each other as well as the whole…" (Edwards, 34).

There is an undeniable link between the way we think and the ways we use creativity. We are conditioned to use words and numbers to express concepts. Yet, expressing something visually can sometimes open new doors and opportunities. Creativity is a form of problem solving that requires thinking in a different language – a visual language. This visual language can be observational and perceptual, meaning it is carried out by physical acts like: seeing, studying, drawing etc. or it can be conceptual meaning it is carried out in the "mind's-eye" and through visualization.

Edwards is a major proponent of this vision of creativity, based on her years of teaching and her studies of the artistic process.

Edwards says, "Drawings, like words, have meaning – often beyond the power of words to express, but nonetheless invaluable in making the chaos of our sensory impressions comprehensible," (Edwards, 2). For Edwards, creativity and art are behaviors of looking at problems in new, innovative ways and focusing on connections that might not be apparent.

Again, I am reminded of Dutton and his explanation of an intelligence selection for primates. Jolly, Morris and Dutton all celebrate the primate's development of communication as integral to its survival. Art is simply another extension of this communicative ability.

For Edwards, creativity requires intense study, practical application of theory and methodology, and a philosophical basis. She claims that creative success is based on: training in observation and seeing, practicing methods and techniques, and developing ways to represent the world through models (not unlike scientific models or equations).

Creativity is about the thinking process and education, for instance: no college student would accept an Introductory French Course in which the instructor expected students to speak French on the first day and those students who had no "talent" (or prior knowledge of French) were unable to continue in the course. Creativity and perceptual skills are no different than arithmetic or language skills, they must be introduced, studied and practiced. No one is born creative (Edwards, 5).

"The right half of the brain functions in a nonverbal manner, specializing in visual, spatial, perceptual information" (Edwards, 91). The 20th century placed special emphasis on left-brain thinking – logic, rationale, sequencing etc. The process of creativity is a conscious, deliberate effort that must be decided in the right-brain. Edwards says "creative solutions come more easily to a mind prepared with knowledge" (Edwards, 126). When a person is saturated with research and resources, ideas sort of spring up on their own – Edwards calls this "looking around for information" (Edwards, 126).

The fact that art can be seen as a form of aesthetic information – something that can be transmitted, translated and received, only furthers the hypothesis that creating art is universal. By extension it is plausible that appreciating art is also universal.

Concluding Thoughts

On the Origins of Art

The appreciation of beauty corresponded to symbolic thinking and the development of language. The development of language allowed for communication and the formation of symbols. Symbols, intelligence, religion and culture are functions of human society. At some level all extant primates show these characteristics and primatologists now believe that primates, other than humans, transmit culture. So too can be said for extinct primates, our ancestors and primitive cousins. Thus, we can infer a biological origin of the aesthetic sense. A biological origin implies a universality that is built on shared senses of beauty, passed down from our ancestors to today.

Although the validity of the theory of materialism and by extension, evolution, is opposed by many camps, it is important to establish that as a model it is very comprehensive. There are different versions, but the most widely accepted is the synthesis between natural selection and genetics. This means biological changes occur in a class of organisms over time. These adaptations are physiological, instinctual, and cultural. For humans, all of these point to why we act the way we act and why we think the way we think.

For decades, arguments concerning the impetus for human evolution have emphasized: the increase in brain size, the shift to bipedilism, the use of tools, the organization of tribes and even the shift to carnivorous diets from vegetarian. But I think another impetus plays an important role: developing meaning.

For the human species has been and is consistently and constantly in search of descriptions of the world: models, symbols, and representations. Through a greater understanding of space, time, causality, perception, awareness, and consciousness, humans continue to develop systems of knowledge intended on answering fundamental questions about nature. This is the true human history – a perpetual seeking of this information to make sense of the seemingly nonsensical reality.

Just as we maintain an inner drive to eat fatty and sweet foods as an evolutionary adaptation, so too, is communication, artistry and creativity.

Our ancestors lived in vegetation-rich environments, but when it came to proteins and complex-sugars, well those were rarities. So when one of our ancestors located a sugary fruit or a piece of meat, they devoured it ravenously – even if they were already full. Today, when we crave a fast food burger or double-chocolate, chocolate chip cookie it is because biologically we need to sustain the need of protein and sugar. This is why we eat beyond capacity, because in our prehistoric days such treasures were scarce and needed to be seized upon.

The truth of the aesthetic is perhaps no different. The pleasure of art might be tied to charm and choosing mates, it might be tied to the prized landscapes our ancestors sought, or it might be tied to our need to communicate and understand – to feed our hungry, cognitive brains.

Ultimately, physical adaptations, the development of intelligence and the development of interdependence lead to the success of the primate order. This success eventually set the foundations for the creation of art. As an evolutionary advantage, art became desirable among the human ancestors. And thus, the visual arts can trace their lineage along the same biological lineages of humanity.

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