Finding Labyrinths in the Maze: An Examination of Some Aspects of Consciousness, Cognition, Perception, and Interpretation towards a Hermeneutics of Visual Art

Marius Paul O'Shea, American University of Ras Al Khaimah, United Arab Emirates

Abstract: The general approach of this paper is phenomenological and hermeneutic as a means of emphasising the embodied nature of all the levels of artmaking and experiencing. Its aim is to examine certain aspects of the processes of artmaking and art experiencing both from the artist's (ME1) point of view and from that of those who engage with the finished work (ME2). The paper presents a syncretic, consilient and speculative account of some of the complex interactions between the 'private' and 'public' psychosocial mechanisms involved in the understanding, making and interpretation of artworks. A syncretic approach is chosen in order to deal with the breadth of reference needed to encompass those areas of experience from a neurophysiological and neuropsychological point of view, as well as from the perspective of art as a sociocultural phenomenon and as viewed through the lens of hermeneutics. The central metaphor of the paper sees the act of interpretation as entering a multidimensional, shifting maze of possible meanings, which, if successfully negotiated creates a unicursal labyrinth that passes through all the abovementioned regions to arrive at the heart of the matter.

Keywords: Phenomenology, Consilience, Perception, Hermeneutics, Visual Artwork

> "Again, might it happen one day that neurophysiologists will discover a new, technical method for identifying artistic experiences (through brain scans or suchlike)…?"
>
> Dennis Dutton,
>
> The Art Instinct, p60

ALTHOUGH THE DAY postulated by Dutton may not be coming any time soon, there are interesting developments happening in the field of neuroaesthetics, developments which are building bridges across the gap discerned by Dilthey in the 19th century between *Verstehen* (understanding) and *Erklären* (explanation) when he distinguished the goal of the social sciences (*Geisteswissenschaften*), or hermeneutical disciplines, as that of looking for an understanding of human behavior in terms of life experience and inner motivation, from the natural sciences' (*Naturwissenschaften*) aim of explaining how objects and events, including human behavior, worked in causal terms.

While many artists have been interested in and drawn inspiration from the sciences, it seems that it is only fairly recently that scientists, in particular neuroscientists, such as Zeki

The International Journal of the Humanities
Volume 9, Issue 3, 2011, http://www.Humanities-Journal.com, ISSN 1447-9508

and Ramachandran[1], have begun to see visual art as both interesting and relevant to their research. As Zeki[2] puts it:

> Art has a biological basis. It is a human activity and, like all human activities, including morality, law and religion, depends upon, and obeys, the laws of the brain. To understand the biological foundations of art, we must enquire into the biological foundations of knowledge, for art constitutes a form of knowledge, indeed is knowledge.

Thus, to bring neuroscience together with aesthetics and aesthetic psychology is to enter the territory mapped by pioneering writers on perception and art such as Merleau-Ponty, Arnheim, and Gombrich,[3]but which has tended to be somewhat neglected in the past few decades since the virtual hegemony of the application to visual art of literary theories inspired by continental philosophy, such as structuralism, poststructuralism, postmodernism, etc.

Central to the theories explored in this paper is the not unusual idea, in either philosophical aesthetics or perception, that artworks are highly selected and amplified visual stimuli designed to exploit the interpretive nature of perception. My thesis is that at their most effective visual artworks trigger a discrete altered state of consciousness or d-ASC, as in Charles Tart's[4] theory. I postulate that the d-ASC is the central experiential process exemplified in Judith Langer's[5] theory of textual reading. These two theories are further conflated with a speculative, neurophysiological description of what is going on in the brain at the same time to provide a dense reading of the acts of artmaking/experiencing. The analysis is buttressed by reference to the theories of Deikman[6] (reception/action modes) and Csikszentmihalyi[7]
(Flow).

---

[1] For example SemirZeki (1999) *Inner Vision: An Exploration of Art and the Brain*. Oxford and New York: Oxford University Press; Vilayanur S. Ramachandran and William Hirstein (1999) 'The Science of Art: A Neurological Theory of Aesthetic Experience,' *Art and the Brain I*, *Journal of Consciousness Studies: controversies in science and the humanities*. Volume 6, June/July, pp 15-51. Also, V.S. Ramachandran (2003) *Reith Lectures: Lecture 3, The Artful Mind.*

[2] Semir Zeki (2002)'Neural Concept Formation and Art: Dante, Michelangelo, Wagner.' *Journal of Consciousness Studies: controversies in science and the humanities*. 9, pp. 53-76.

[3] In such monumental works as, Maurice Merleau-Ponty (1962) *The Phenomenology of Perception.*trans. Colin Smith, London: Routledge; *Sense and Non-Sense* (1964) trans. Hubert L. Dreyfus and Patricia Allen Dreyfus, Evanston: Northwestern University Press; *The Primacy of Perception and other essays: the philosophy of art, history, and politics* (1964) James M. Edie, (Ed.) and intro. Evanston: Northwestern University Press; *The Visible and the Invisible: followed by working notes* (1968) Claude Lefort (Ed.), trans. AlphonsoLingis, Evanston: Northwestern University Press

Rudolf Arnheim (1954/1974) *Art and Visual Perception: A Psychology of the Creative Eye*; *The New Version*. Berkeley, Los Angeles, London: University of California Press.

Ernst H. Gombrich (1960) *Art and Illusion: A Study in the Psychology of Pictorial Representation.* Oxford: Phaidon; (1963*) Meditations On A Hobby Horse and Other Essays On The Theory Of Art.* Oxford: Phaidon; *The Image and the Eye* (1960/1982). Oxford: Phaidon.

[4] Charles T. Tart (1975)*States of Consciousness,* E.P. Dutton & Co., New York. Tart, C. T. (Ed.) (1969) *Altered States of Consciousness: A Book of Readings*. New York: John Wiley & Sons

[5] Judith Langer (1990) "Understanding Literature," *Language Arts* 67, pp 812-816

[6] Arthur J. Deikman (1980) 'Bimodal Consciousness and the Mystic Experience,' p 265, in *Understanding Mysticism*, Richard Woods (Ed.). New York: Image Books, pp 261-269

[7] Mikhaili Csikzentmihalyi. (1992) *Flow: The Psychology of Happiness*. London: Rider; Csikzentmihalyi. M. (1997) *Finding Flow: The Psychology of Engagement with Everyday Life.* New York: Basic Books

The thesis of this paper is, of course, highly speculative, for which I make no apology, as this would appear to be an appropriate forum for such activity. Again, the approach to the subject is an attempt to fuse the phenomenological, the hermeneutic and the scientific approaches in the crucible of my own experiences as an art practitioner of many years. As such, I do not presume to be scientifically objective although I have found that over the years, introspection on the processes occurring before, during, and after the creative acts of making my own work and experiencing the work of other artists past and present, has led me to neuroscience to look for some meaningful areas of research. Again, the purpose of this paper is not to provide definitive answers but is an attempt to give a short account in neurophysiological terms of some aspects of what is happening during the process of making and experiencing artwork, both from the position of the first maker/experiencer and subsequent makers through experience and which could be construed as "the aesthetic". At this early stage there is great potential for testing to see whether the neurophysiological actions and reactions postulated here are common across different cultures. If this were so, it could establish a sound biological base for the aesthetic. It would, of course, be equally interesting if it were not the case. As Wexler[8] puts it, echoing Zeki,[9] "…human alterations in the shared social environment include physical structures, laws and other codes of behavior, food and clothes, spoken and written languages, and music and other arts." Given the diversity with which these various manifestations of human activities have displayed, such a project would be useful.

It should be clear that I am not intending to make any grand statements about the nature of Art in general or its place in human society. Nor am I intending to say that because certain aspects of artmaking/experiencing, the aesthetic, could be considered as a sub-category of a biological process, the d-ASC, and therefore increasingly measureable by the sophisticated technical means of neuroscience, that this provides any explanation of what Art is or should be.

The ancient but still potent metaphor of the labyrinth[10] featured in the paper's title encapsulates in a visual trope both the inherent ambiguities and hard-won disambiguations of the interpretive process. It is itself essentially ambiguous, a sort of 'metaphor duplex' in that it refers to two related but radically different structures, the unicursal labyrinth and the multicursal maze. The unicursal labyrinth winds along a convoluted path from a single opening to a central space from which one must return to the opening via the same path, now known therefore changed because of the initial journey. This is a metaphor for successful reading of the work. The maze, on the other hand, has many entrances and many paths, most leading to dead ends, unfruitful readings, but hidden in the multicursal maze is a labyrinth, a path which, if successfully negotiated brings one to the central space of an interpretation/understanding which is synchronous with the meanings embedded in the work. Any single interpretive maze is but one element in the vast multi-dimensional, constantly changing maze of reality itself, and any single interpretive labyrinth

[8] Bruce E. Wexler (2006). *Brain and Culture: Neurobiology, Ideology, and Social Change*. Cambridge, Mass: The MIT Press.
[9] See above.
[10] Hermann Kern (2000) *Through the Labyrinth: Designs and Meanings over 5,000 Years*, Munich. London and New York: Prestel. Jacques Attali (1999) *The Labyrinth in Culture and Society: Pathways to Wisdom*, trans. Joseph Rowe. Berkeley: North Atlantic Books

The structure of the paper is collage-like. The various parts have been arranged in such a way that the information in each segment contributes to an overall gestalt while still retaining, as collage elements do, strong traces of their individual origins.

Deikman's Active and Receptive Modes: the Yin and Yang of Artmaking

Artmaking is a dynamic combination of the reception and action modes as described by Deikman–periods of contemplative analysis alternate with bursts of concentrated activity, the rhythmic flow of which increases with growing proficiency until, at the expert level[11] there is oneness with one's tools that allows an untrammelled ease of expression. Deikman describes the typical creative process as:

> …an initial stage of struggling with the problem. A sense of impasse develops and the struggle is given up. Sometime later, while completely occupied with a less important activity, or perhaps waking from sleep, the answer suddenly appears. Often, it is in a symbolic or spatial form and needs to be worked over to make it coherent and applicable.

Deikman has identified consciousness as existing in two complementary modes. He sees a human being as an organism composed of components having both psychological and biological dimensions, which are organized into an "action mode", and a "receptive mode." The creative act is a successful fusion of the two modes.

Action Mode: "Perception For"

The action mode is a state organized to manipulate the environment, with the striate muscle system as the dominant physiological agency, leading to a physical increase in base-line muscle tension and a predominance of beta waves in the brain. This is characterized by focal attention, heightened boundary perception, object-based logic, and the dominance of formal characteristics over the sensory, with shapes and meanings have a preference over colors and textures. Deikman, in describing the experience of "effortful" thinking as reflecting the involvement of our muscle system, cites Piaget[12] as showing that thinking develops in association with the manipulation and perception of objects and object-oriented thought is especially associated with eye-muscle activity. This mode would suggest links through Piaget to the Intentionality of Brentano's[13] and Husserl's[14] Phenomenology and to Heidegger's[15] concept of 'Handedness (*Zuhandenheit*/*Vorhandenheit*).' The ergonomic advantages of the action mode's ability to manipulate the environment for enhanced survival are immediately obvious. The action mode can be thought of as "perception for." The action mode can also be associated with what is broadly described as 'left-hemisphere' or 'left-brain' thinking: a

[11] See, Peter Dormer (1994) *The Art of the Maker*. London: Thames & Hudson, for an application of the novice-expert concept to the acquisition and use of craft skills.
[12] Jean Piaget (1951). *The child's conception of the world*. London: Humanities Press. Piaget, J. (1954) The Construction of Reality in the Child. New York, Basic Books
[13] Franz Brentano (1995). *Psychology from an Empirical Standpoint*, Trans. Antos C. Rancurello, D. B. Terrell, and Linda L. McAlister. London and New York: Routledge.
[14] Edmund Husserl (2001). *The Shorter Logical Investigations*. London and New York: Routledge
[15] Martin Heidegger (1962) *Being and Time*, Trans. by John Macquarrie and Edward Robinson. New York: Harper & Row.

tendency to dominance of the left brain hemisphere for language, particularly the syntactic and denotative aspects of language and language output; linear, logical, thinking; responsibility in large part for collating somatosensory information into a special awareness of the body (body image). It is the executive part, the yang, of artmaking, where the body is primed to respond to the commands of the active imagination.

Receptive Mode: "Perception of"

The more inclusive side of Phenomenology seems to present itself in Deikman's other, "receptive," mode, whose purpose is receiving, or being at one with the environment rather than manipulating it. The receptive mode can be thought of as "perception of." In this mode the sensory-perceptual, rather than the muscle system is usually the dominant agency. Here, there tends to be a decrease in base-line muscle tension compared to the action mode, and brain waves tend to the slower frequencies of alpha and theta. The attention is diffuse, boundary perception is decreased, there is strong evidence of paralogical thought processes, and sensory qualities dominate over the formal in a coordinated maximization of environmental intake. The receptive mode seems associable with so-called "right-hemisphere" or "right-brain" thinking, which appears to be specialized for some aspects of higher-level visual perception, spatial orientation, and route finding (sense of direction). It probably plays a dominant role in the recognition of objects and faces; it also seems to be more attuned to the rhythm and the subtle, connotative aspects of speech, such as jokes, puns and tropes

This complex interaction of perceptual, motoric, emotional and cerebral activities ostensibly begins once the aim of the work has been decided on but is probably being continuously enacted at an unconscious level. When the process is going well there is an easy movement into 'flow', where one feels in unity with the materials and processes such that a thought or impulse is translated with kinesthetic ease into an appropriate configuration and there is a general sense of well-being and control. Actions are "felt" and "sensed," rather than "thought about" in a consciously structured way. At certain moments, which most of the time do not appear consciously willed, there is a movement out of flow, a standing back from the work so that it can be critically assessed and evaluated. At these points, instead of being "inside" the creative process in a "no-mind" state, a much more cerebral, analytical facet of one's person takes over. The work is seen critically as an artifact of a certain type, to be compared and contrasted, both with the art maker's own previous work and what s/he knows of the work of h/is peers to see whether things are "on target" as to quality; while this is happening the previous state of mind is kept "simmering." These evaluative interludes vary in length from a microsecond to much longer periods. When decisions have been made, the flow experience is re-entered and the process continues until ME1 reaches a point of homeostasis when there is a distinct feeling that the work is finished. Of course, this again may not be final and the process can start again after a further gestation period.

Csikszentmihalyi's Flow

There are strong parallels between Deikman's action and reception modes, the novice to expert continuum, and Csikszentmihalyi's concept of "flow." Csikszentmihalyi describes flow as tending to occur when a person faces a clear set of goals that require appropriate responses, in a fine balance between one's ability to act and the available opportunities (high-

level skills plus high-level challenge = possibility of flow; low/medium level skills plus high-level challenge = possibility of frustration, worry, and anxiety), and immediate relevant feedback. When flow does occur, attention becomes ordered and fully invested; focus on the task in hand is complete; there are no distracting thoughts or irrelevant feelings; self-consciousness disappears, yet there is a sense of greater personal (psychic and often physical) strength; the sense of time is distorted; whatever activity is being engaged in becomes its own justification. Flow could be described as a perfect fusion of the action and receptive modes.

Tart's Experiential Criteria for Detecting an Altered State of Consciousness

Tart distinguishes a number of major subsystems (collections of related structures) that show important variations over known d-ASCs, which he terms Experiential Criteria for Detecting an Altered State of Consciousness. These criteria are: Exteroception; Interoception; Input-Processing; Emotions; Memory; Time/Space Sense; Sense of Identity; Evaluation and Cognitive Processing; Motor Output; Interaction with the Environment; All of these to a greater or lesser degree can be recognised as taking place during the four stances, especially during the first two.

The variations in Exteroception (sensing the external world), are characterized by alterations in various sensory characteristics of the perceived world, such as intensification of color, sharpening of detail, attenuation or accentuation of visual depth, glowing lights at edges of things. These are also effects which can be found in accentuated form across a range of paintings, for the most part intuitively developed by artists in different cultures and eras, firstly as records of their own experiences when making the artworks and then acting as triggers for ME2. Variations in Interoception (sensing what the body is doing), are characterized by alterations in perceived body image, such as shape or size changes; alteration in detectable physiological parameters, for example, accelerated or retarded heart rate, respiration rate, muscle tonus, tremor. These changes are accentuated by changes in scale and proportion as well as by colour, shape, form and subject matter. Variations in Input-Processing (the seeing of meaningful stimuli), are evidenced by greater than normal sensory excitement, involvement, sensuality; enhanced or decreased sensory intensity; alterations of dominance-interaction hierarchies of various sense modalities extending at the extreme to illusion, hallucination, perception of patterns and things otherwise known to be unlikely to actually exist in the environment. In Emotions (alterations in emotional response to stimuli), there is a wide spectrum of reactions, from overreacting, under-reacting, not reacting, reacting in an entirely different way, or extreme intensity of emotions. Memory can show changes in continuity over time, for example, either an implicit feeling that continuity is present or an explicit checking of memory that shows current experience to be consistent with continuous memories leading up to the present but with gaps suggesting an altered state; checking the fine details of the perceived environment (external or internal) against memories of how they should be to detect incongruities. Time/Space Sense (the construction of psychological space and time and the placing of events within it) shows changes such as, an unusual feeling of 'here and nowness'; the feeling of great slowing or speeding of time; a feeling of orientation to past and/or future, regardless of relation to present; a feeling of an archetypal quality to time; atemporal experience. One's Sense of Identity (the quality added to experience that

makes it a personal experience instead of just information) can show marked variations, ranging from an exhilarating enhancement of one's sense of self to a sense of unusual identity or role, which can cover a wide range, from serene detachment to alienation. Evaluation and Cognitive Processing (our cognitive evaluating skills and habits) can show alteration in the normal rate of thought; an alteration in quality of thought, such as, heightened sharpness, clarity; the alteration of rules of logic (compared with memory of usual rules). Motor Output (muscular and glandular outputs to the external world and the body) may manifest positive or negative alterations in the amount or quality of self-control, accompanied by changes in active body image, the way the body feels when in motion, or the proprioceptive feedback signals that guide actions. There can be restlessness, tremor, partial paralysis or dynamically enhanced motor activity. This links to Interaction with the Environment, which can be characterised by a range of enhanced performances of behaviours, sometimes with incongruity of consequences resulting from behavioral outputs, either immediate or longer term; changes in anticipation of consequence of specific behaviors–either prebehavioral or learned from observation of consequences; changes in voice quality; changes in the feeling of degree of orientation to or contact with immediate environment; changes in involvement vs. detachment from the environment; changes in communication with others–incongruities or altered patterns, consensual validation or lack of it.

It is evident that any or all of these subsystems is experienced in various degrees of intensity when engaged in making and experiencing artwork. They are obviously not peculiar to those states, given Ludwig's[16] description of them as:

> Any mental state(s) induced by various physiological, psychological, or pharmacological maneuvers or agents, which can be recognized subjectively by the individual himself (or by an objective observer of the individual) as representing a sufficient deviation in subjective experience or psychological functioning from certain general norms for that individual during alert, waking consciousness.

Langer's Four Stances

Applying Tart's Experiential Criteria for Detecting an Altered State of Consciousness to the process of artmaking and art experiencing we can find many if not all of them embedded in the four commonalities Langer[17] has extracted from her research on the way readers create meaning when immersed in a text:

1. Being Out and Stepping In
2. Being In and Moving Through
3. Being In and Stepping Out
4. Stepping Out and Objectifying the Experience

[16] Anton M Ludwig,. (1969) 'Altered States of Consciousness.' In, *Altered States of Consciousness: A Book of Readings.* Charles T. Tart (Ed.). New York: John Wiley & Sons, Inc. pp. 9-22.
[17] Judith Langer (1990) "Understanding Literature," Language Arts 67, pp 812-816

Langer states that these stances are not linear[18], having the potential to recur at any point in the reading, and are a function of varying interactions between the reader and the text. In Being Out and Stepping In, the reader encounters the text and begins to have some sense of the plot, characters and setting and how they come together. Being In and Moving Through sees readers, "…immersed in the text world, using both text knowledge and background knowledge to develop meaning." In Being In and Stepping Out, readers use text knowledge to reflect on personal knowledge. "They use what they read to reflect on their own lives." When readers reach the fourth stage, Stepping Out and Objectifying the Experience, they, "…distance themselves from the text world, reflecting on and reacting to both the content and the experience."

I think that this is a description that Gadamer[19], or even Heidegger, could have related very closely to. It succinctly encapsulates both Gadamer's ideas of 'prejudice' and 'fusing horizons,' and Heidegger's reformulation of the various stages of the hermeneutic circle. The hermeneutic process for Heidegger needed what he called the "for-structure" of the understanding and the "as-structure" of interpretation. Whenever we wish to understand a thing (object/act), we Always-Already-Understand it within our Ready-To-Hand (*zuhanden*) activities. That is, it is just there, unreflectively, given as part of the world. Then, in our reflective manner, we interpret the thing as something, making any act of interpretation an already interpretative act. However, once the thing has been interpreted reflectively, the world of our first encounter with the thing is changed by the act of interpretation:

> This circle of understanding is not an orbit in which any random kind of knowledge may move; it is the expression of the existential fore-structure of *Dasein* ("Being-There") itself…. The 'circle' in understanding belongs to the structure of meaning, and the latter phenomenon is rooted in the existential constitution of *Dasein* -that is, in the understanding, which interprets. An entity for which, as Being-in-the-world, its Being itself is an issue, has, ontologically, a circular structure.[20]

From my own experience of making and interpreting artwork, I find Langer's four stances/relations to the text to be an extremely useful descriptive analysis of what goes on during those processes. Langer's emphasis on the non-linear, instepping/outstepping quality of the stances also suggests a sense of progression rather like water in a stream, full of eddies and currents, deep and shallow, fast and slow, impelled but never merely linear. Her four-step process correlates well with the various approaches to consciousness referred to above, including those from different cultures and eras. I now refer to Langer's process in a more detailed analysis of the neurophysiological actions occurring in the process of interpretation.

---

[18] Ibid. Langer calls these interactions with the text, "stances," which obviates the notion of a too-rigid hierarchy that other descriptors, such as "stages," or "sequence," might have.

[19] Hans-Georg Gadamer (1976) Philosophical Hermeneutics. David Linge (Trans.and Ed.). Berkeley: University of California Press

[20] Heidegger, Martin (1927/196*2) Being and Time*, trans. J. Macquarrie and E. Robinson. Oxford: Basil Blackwell, Section 32.

Langer's Theory as Metaphor and Organizational Template for the Visual Esthetic Experience

I am taking Langer's four 'stances' by which readers create meaning: (1) Being Out and Stepping In; (2) Being In and Moving Through; (3) Being In and Stepping Out; (4) Stepping Out and Objectifying the Experience, as a metaphor for the visual aesthetic experience and an organizational template for the following account of aesthetic experience described in terms of neuronal assemblies. The essential modus operandi of visual esthetic experience is the stimulation of a discrete-Alternate State of Consciousness (d-ASC)[21]. There is a continuum of d-ASCs from the mildly pleasant to the cosmic consciousness of mystical experience. The visual aesthetic experience is to be distinguished in degree if not in kind from the experience of the range of artifacts sanctioned by contemporary Institutional Theories of Art.

Whereas the visual esthetic experience is central to the nature of traditional art forms, it does not appear to be either necessary or sufficient for the experience of a great deal of recent and contemporary art recognized as such by Institutional Theories. The tradition of "anti-art" initiated by Dadaism and exemplified by Duchamp's "ready-mades" is the obverse of the aesthetic experience. It presents "ordinary" objects, deliberately chosen for their lack of aesthetically stimulating qualities, such as, urinals, snow shovels, bottle racks (and as a limp postscript, sharks in formaldehyde, unmade beds, and so on) as an affront and provocation to what was seen to be the contemporary decadence of the tradition in Western art in the hope that they would precipitate a terminal crisis in that tradition. That this febrile idealism indicated a massive naiveté on the part of the artists concerned about the resilience and opportunism of capitalism was quickly proven by the rapid assimilation of their anti-art gestures into the fabric of the art institutions. That the only response to this reality was cynicism was again exemplified by Duchamp's approval of limited editions of his supposedly unique, lethal strikes at the heart of the art world. The institutionalization of the "provocative" gesture has continued apace and now constitutes a major part of the art industry although inevitably operating to the law of diminishing returns the more it proliferates. In physiological terms, the startle reflex only works at full strength on the presentation of the initial stimulus; thereafter habituation tends to occur even with an increase in the strength and frequency of the stimulus, leaving only novelty as a possible initiator of interest. The same principle seems to operate for the cultural startle reflex.

Being out and Stepping in

In the first movement, Being Out and Stepping In, the visual artwork is encountered and may be found to be positively stimulating, hence rewarding[22]; this sense of reward can be induced by the artwork's drawing on genetic, appetitive, broad cultural, group or personal value stimuli or any combination of the five. This general formulation covers both 'traditional' and 'institutional' artworks. Where, in the institutionally ratified artwork the reward system may be stimulated more by a sense of social approbation, in the 'traditional' artwork the attention is stimulated and focused by form and subject combined as content, and characterized

[21] Charles T. Tart (1975) *States of Consciousness* E.P. Dutton & Co., New York

[22] Edmund T. Rolls, (2000) 'Neurophysiology and functions of the primate amygdala, and the neural basis of emotion.' In*, The Amygdala: A Functional Analysis*, J. P. Aggleton (Ed.). Oxford: Oxford University Press
Edmund T. Rolls, (2001) 'Emotion, Neural Basis of' *in International Encyclopedia of the Social and Behavioral Science*. Elsevier Science Ltd, pp 4444-4449

either by novelty (positive/negative), and/or the arrangement of elements of color, line, shape, texture, and so on, either as subject in themselves, or as reinforcing subject matter in such a way as to heighten its intrinsic interest and reward potential as an inducer of a discrete alternate state of consciousness (d-ASC). Focused attention produces an increased flow of the neurotransmitters, dopamine[23] created in the substantia nigra of the basal ganglia, noradrenaline in the locus coeruleus (LC), and serotonin in the raphe nuclei (RN).[24]

The LC, although containing only thousands of neurons as compared to the billions in the brain as a whole, plays a crucial role in that the axons of the neurons are both long and extremely branched. They project to a number of important structures including the thalamus, hypothalamus, basal ganglia, amygdala, hippocampus, olfactory bulb and neocortex, primarily medial prefrontal cortex, their primary effect being an increase in vigilant attention to objects and events in the environment. Closely connected as they are to the amygdala (the limbic system containing a greater concentration of noradrenaline (NA) neurons than any other part of the brain), the NA cells in the LC begin firing in response to the kinds of environmental objects and events that cause emotional stimulation, causing the release of NA at nerve endings throughout the cerebral cortex. This widespread activity is probably how cortical neurons are quickly sensitized to changes in the feeling states of the organism, and how every perception and thought is emotionally 'colored' or whether something will focus our attention or be disregarded.

Being in and Moving Through

The formation of neuronal assemblies through the agency of the various neurotransmitters (including dopamine in the substantia nigra and other centers increasing motivation through heightened anticipation, noradrenaline from the locus coeruleus leading to increased arousal and attention, plus serotonin from the raphe nuclei resulting in a sense of increased well-being) can lead to the production of phase synchrony of the type postulated by Greenfield[25] (and recently supported[26]) as well as the slower, larger neuronal assemblies over increasingly wider areas of the brain. The net result of this coordinated activity is the production of a d-ASC, characterized by focused attention, such that the experiencer (ME1 or ME2) fully concentrates on the image, which becomes the figure while everything else becomes ground. Klee[27] had an acute intuitive apprehension of the phenomenon, as seen in this excerpt from his Notebooks:

---

[23] "Dopamine Definition." *Medicinenet.com*. 23 Feb. 2008 <http://www.medterms.com/script/main/art.asp?articlekey=14345>.

[24] These are the main areas where activity can be discerned with present technology. Given that the brain in some ways resembles an extremely complex multi-processor it is more than likely that many more areas are involved.

[25] Christof Koch and Susan A. Greenfield (2007) 'How does Consciousness Happen?' In *Scientific American*: 76-83; October. Susan A. Greenfield and T.F.T. Collins (2005). 'A Neuroscientific Approach to Consciousness' in Progress in Brain Research, Vol. 150, 11–23. Subhojit Chakraborty, Anders Sandberg and Susan A. Greenfield, Differential dynamics of transient neuronal assemblies in visual compared to auditory cortex. *Experimental Brain research,* Volume 182, Number 4, 491-498,

[26] What happens in the Brain as it loses Consciousness? 13 June, 2011. http://www.sciencedaily.com/releases/2011/06/110610194526.htm.
What happens when a brain loses consciousness? 3-D images reveal answer
http://www.mnn.com/green-tech/research-innovations/stories/what-happens-when-a-brain-loses-consciousness-3-d-images-rev

[27] *Paul Klee: the thinking eye; the notebooks of Paul Klee*, Spiller, J. (ed.) (1964), New York: Wittenborn.

> There is a resonance inside the particles, immanent within them. Their oscillations range from the very simplest to the composite modes. Inexorable law must express itself throughout. The bow can have no pity. Every expression or function must be cogently justified. Only then will that which is in the beginning, that which mediates, and that which is at the end belong together intimately. And nowhere will the dubious be allowed to obtrude, for each part fits ineluctably into the next.

The duration of the d-ASC is dependent on a number of factors, such as experience and training, mood, attentional rivalry (other calls on ME's attention), and the stimulatory qualities of the image. Bhattacharya and Petsche[28], in an experiment using multivariate EEG signals and comparing the brainwaves of two broad groups, professionally trained fine artists and non-artists as they first looked at projected slides of four paintings and then after an intervening 'neutral' activity, mentally recalled the paintings, found that there were considerable differences between the brainwave activities of the two groups. During the mental recall task, the artists showed extensive delta and theta band synchrony across multiple bilateral regions, and significantly higher beta and gamma band synchrony in temporal cortex, while non-artists also showed enhancement, but to a lesser extent, and primarily in frontal regions over multiple frequency bands. In artists, the right hemisphere was found to present higher synchrony than the left, while hemispheric asymmetry was found to be less salient in non-artists. A comparison of the two groups during the task, found artists to have significantly higher delta band synchrony compared to the non-artists, with desynchronization in the alpha band. Bhattacharya and Petsche surmise that enhanced synchrony in the high frequency (beta/gamma) band in the artists is most likely due to their increased binding capabilities of numerous visual attributes, while enhanced synchrony in the low frequency bands, primarily delta, is likely to be the involvement of more advanced long-term visual art memory, mostly in the imaging tasks. Overall, the results strongly indicated that patterns of functional integration during the spontaneous mental creation of images are significantly different for artists as compared to non-artists, most likely due to a combination of nature (genetic or other early-manifesting aptitudes) and nurture (intensive specialized training).

Being in and Stepping out

The central tenet of Friston's[29] ideas is that the behavior of neuronal systems can be viewed as a succession of transient spatiotemporal patterns of activity that mediate perceptual synthesis and sensorimotor integration. Populations of neurones are brought together in linear synchronous and nonlinear asynchronous assemblies of varying sizes that can last for anything

[28] J. Bhattacharya, H. Petsche (2002) 'Shadows of Artistry: cortical synchrony during perception and imagery of visual art.' Cognitive Brain Research 13, pp. 179-186. See also: S. L Bressler (1995) 'Large-scale cortical networks and cognition.' *Brain Research Reviews*, 20, pp. 288-304; V. Marenko, R. Llinás (1998) 'Experimentally chaotic phase synchronization in a neuronal system.' *Proceedings of the National Academy of Sciences of the USA (PNAS)*, 95, pp. 15747-15752; F. J. Varela, J-P. Lachaux, E. Rodriguez, J. Martinerie (2001) 'The brain-web: phase synchronization and large-scale integration.' *National Review of Neuroscience*, pp. 229-239.

[29] K.J. Friston (2000a) 'The labile brain.1. Neuronal transients and nonlinear coupling.' *Philosophical Transactions of the Royal Society of LondonB 355*, pp. 215-236; K.J. Friston (2000b) 'The labile brain.II. Transients, complexity, and selection.' *Philosophical Transactions of the Royal Society of London B 355,* pp. 237-252; K.J. Friston (2000c) 'The labile brain.III. Transients and spatiotemporal fields.' *Philosophical Transactions of the Royal Society of London B 355*, pp. 253-265.

from a microsecond to several minutes at a time, following each other in rapid succession in response to the strength and quality of stimuli. Such a theory provides a place for Greenfield's idea of small neuronal assemblies as the basis of a type of consciousness that, rather than accessing the rich connectivity making up the adult mind, deals solely with the present and is characterized by reacting to the world in a literal and passive way. This type of consciousness could be aligned with Deikman's receptive mode as a part of the aesthetic experience. An experience of this quality, that is, characterized by qualities of literalness and passivity could also be seen as corresponding with Kant's description of the aesthetic experience as disinterested - "nothing other than the state of mind in the free play of the imagination and the understanding."[30] Other processes going on at the same time or in quick succession, such as kinesthetic/tactile reactions stimulated by the rhythms (shape, colour, line, texture combinations) of the work, referencing previous knowledge to find similarities/differences to other works, etc, are subsumed into this state of disinterestedness, however briefly.

As Langer has pointed out these experiential stances are non-linear, having the potential to recur at any point in the reading, and are a function of varying interactions between the experiencer and what is being experienced. Similarly, experiencing visual artwork is not necessarily a fixed sequence of stances one to four but a complex, constantly fluctuating series of movements between them, of varying duration and intensity. At any one time the experiencer can move from a deep sense of depersonalized flow (Being in and Moving Through) to one of critical analysis (Being in and Stepping Out to Objectifying the Experience), or vice versa.

Stepping out and Objectifying the Experience

However, even though the art work is designed to attract and hold the interest, after a certain length of time a point is reached, either through visual habituation or by choice or through some extrinsic distractor, when the experiencer finally withdraws.

Now there is a change in the intensity and type of reaction to the artwork and a reversion to 'normal' levels of brain activity as the prefrontal and frontal cortex control the direction and quality of thinking towards a more cerebral relationship with the work. Here, the recent experience is compared and contrasted with similar others in memory and judged for overall quality.

Conclusion

To reiterate the purpose of this paper: it is an attempt to give a short account of some aspects of what is happening during the process of making and experiencing artwork, both from the position of the first maker/experiencer (ME1) and subsequent makers through experience (ME2) and which could be construed as :the aesthetic". Given that the broader generic description of 'alternate/altered state of consciousness' accommodates the range of sensations experienced during the making and experiencing of artworks and more particularly described as aesthetic, then aesthetic states are alternate/altered states of consciousness (ASCs). If this is so, it would mean that what is experienced during aesthetic states could be tested for under

[30] Immanuel Kant (2000) *Critique of the Power of Judgment*, trans. Paul Guyer and Eric Mathews, ed. Paul Guyer. Cambridge: Cambridge University Press,

the description of ASCs and the characteristics of those states taken as benchmarks for the presence of aesthetic states. This is not to say that the presence of aesthetic states would be the sole definer of what constitutes an artwork either historically or given the tradition that has developed in the last century of including artifacts that are determinedly 'unaesthetic' or anti-aesthetic as art. However, the induction of aesthetic states could be taken as an indicator of what has traditionally been accepted as a sufficient condition of being an artwork and therefore an important pointer to the presence of an extensive section of what is regarded as art. Again, given that what has been presented in this paper is valid regarding the nature of the visual (and possibly wider) creative processes, there is also the potential for neuroscientific research to investigate them in depth and from there for the development of techniques to focus and accelerate visual aesthetic training.

References

Arnheim, R. (1954/1974) *Art and Visual Perception: A Psychology of the Creative Eye; The New Version*. Berkeley, Los Angeles, London: University of California Press.

Attali, J. (1999*) The Labyrinth in Culture and Society: Pathways to Wisdom*, trans. Joseph Rowe. Berkeley: North Atlantic Books

Bhattacharya, J.H. and H. Petsche (2002) 'Shadows of Artistry: cortical synchrony during perception and imagery of visual art.' *Cognitive Brain Research* 13, pp. 179-186

Brentano, F. (1995). *Psychology from an Empirical Standpoint*, Trans. Antos C. Rancurello, D. B. Terrell, and Linda L. McAlister. London and New York: Routledge.

Csikszentmihalyi, M. (1992) *Flow: The Psychology of Happiness*. London: Rider

Csikszentmihalyi, M. (1997) *Finding Flow: The Psychology of Engagement with Everyday Life*. New York: Basic Books

Deikman, A. J. (1980). 'Bimodal Consciousness and the Mystic Experience,' in *Understanding Mysticism*, Richard Woods, OP (Ed.), Garden City, NY, Image Books, pp 261-269

Dilthey, W. (1894/1977) 'Ideas concerning a descriptive and analytical psychology.' In R.M. Zaner & K.L. Heiges (Eds.), *Descriptive psychology and historical understanding*, pp. 35-120. The Hague: Nijhoff

"Dopamine Definition." Medicinenet.Com. 23 Feb. 2008 <http://www.medterms.com/script/main/art.asp?articlekey=14345>.

Dormer, P. (1994) *The Art of the Maker*. London: Thames & Hudson, for an application of the novice-expert concept to the acquisition and use of craft skills.

Dutton, D. (2009) The Art Instinct: Beauty, Pleasure, and Human Evolution. New York: Bloomsbury

Friston, K.J. (2000b) 'The labile brain. II. Transients, complexity, and selection.' *Philosophical Transactions of the Royal Society of London* B 355, pp. 237-252

Friston, K.J. (2000c) 'The labile brain. III. Transients and spatiotemporal fields.' *Philosophical Transactions of the Royal Society of London* B 355, pp. 253-265.

Gadamer, H.-G. (1976) *Philosophical Hermeneutics*. David Linge (Trans.and Ed.). Berkeley: University of California Press

Gombrich, E. H. (1950/1979, 13th ed. 2nd Imp.) *The Story of Art.* London: Phaidon

Gombrich, E. H. (1960/1995) *Art & Illusion: A study in the psychology of pictorial representation*. London: Phaidon

Gombrich, E.H. (1963) *Meditations On A Hobby Horse and Other Essays On The Theory Of Art*. Oxford: Phaidon

Gombrich, E.H (1960/1982). *The Image and the Eye* Oxford: Phaidon.

Greenfield, S. A. (200) *Brain Story: Unlocking Our Inner World of Emotions, Memories, Ideas and Desires*. London: BBC Worldwide Limited

Heidegger, M. (1927/1962) *Being and Time*, trans. J. Macquarrie and E. Robinson. Oxford: Basil Blackwell

Husserl, E. (2001). *The Shorter Logical Investigations*. London and New York: Routledge

Joseph, R. (1996) 'The Limbic System' in, *Neuropsychiatry, neuropsychology, and clinical neuroscience: emotion, evolution, cognition, language, memory, brain damage, and abnormal behaviour.* Baltimore: Williams & Williams

Kant, Immanuel (2000) *Critique of the Power of Judgment*, trans. Paul Guyer and Eric

Mathews, ed. Paul Guyer. Cambridge: Cambridge University Press

Kern, H. (2000) *Through the Labyrinth: Designs and Meanings over 5,000 Years, Munich*. London and New York: Prestel

Klee, P. (1964) *Paul Klee: the thinking eye; the notebooks of Paul Klee*, J. Spiller (Ed.). New York: Wittenborn

Ludwig, A. M. (1969) 'Altered States of Consciousness.' In, *Altered States of Consciousness: A Book of Readings*. Charles T. Tart (Ed.). New York: John Wiley & Sons, Inc. pp. 9-22.

Marenko, V. R. Llinás (1998) 'Experimentally chaotic phase synchronization in a neuronal system.' Proceedings of the National Academy of Sciences of the USA (PNAS), 95, pp. 15747-15752
Maslow, A. (1969) *Towards a Psychology of Being*. New York: van Nostrand Reinhold
Maurer, D. (1993) 'Neonatal Synaesthesia: implications for the processing of speech and faces.' In, B. de Boysson-Bardies, S. de Schonen, P. Jusczyk, P. McNeilage, & J. Morton, (Eds.) *Developmental Neurocognition: speech and face processing in the first year of life*. Dordrecht: Kluwer Academic Publishing
Martindale, C. (1999) 'Peak Shift, Prototypicality, and Aesthetic Preference.' Art and the Brain I, *Journal of Consciousness Studies: controversies in science and the humanities* Volume 6, June/July, pp 52-54
Martindale, C. (1981). *Cognition and Consciousness*. Homewood: Dorsey Press
Maturana, H. R. and Varela, F. J. (1980*) Autopoiesis and Cognition: The Realization of the Living.* Dordrecht, Boston, London: D. Reidel Publishing Company.
Merleau-Ponty, M. (1962) *The Phenomenology of Perception*. trans. Colin Smith, London: Routledge
Merleau-Ponty, M. (1964) *Sense and Non-Sense*, trans. Hubert L. Dreyfus and Patricia Allen Dreyfus. Evanston: Northwestern University Press
Merleau-Ponty, M. (1964) *The Primacy of Perception and other essays: the philosophy of art, history, and politics*, James M. Edie, (Ed.) and intro. Evanston: Northwestern University Press
Merleau-Ponty, M. (1968) *The Visible and the Invisible: followed by working notes*, Claude Lefort (Ed.), trans. Alphonso Lingis. Evanston: Northwestern University Press
Mother Nature Network (2011). What happens when a brain loses consciousness? 3-D images reveal answer http://www.mnn.com/green-tech/research-innovations/stories/what-happens-when-a-brain-loses-consciousness-3-d-images-rev. Accessed 21 July, 2011
Ramachandran V. S. and W. Hirstein (1999) 'The Science of Art: A Neurological Theory of Aesthetic Experience,' Art and the Brain I, Journal of Consciousness Studies: controversies in science and the humanities. Volume 6, June/July, pp 15-51. Also, V.S. Ramachandran (2003) Reith Lectures: Lecture 3, The Artful Mind.
Ricoeur, P. (1974) *The Conflict of Interpretations: Essays in Hermeneutics*, Donald Ihde (Ed.). Evanston, Ill.: Northwestern University Press
Ricoeur, P. (1977) *Interpretation Theory*. Fort Worth: Texas Christian University Press
Rolls, Edmund T. (2000) 'Neurophysiology and functions of the primate amygdala, and the neural basis of emotion.' In, *The Amygdala: A Functional Analysis*, J. P. Aggleton (Ed.). Oxford: Oxford University Press
Rolls, E. T. (2001) 'Emotion, Neural Basis of' in *International Encyclopedia of the Social and Behavioral Science.* Elsevier Science Ltd, pp 4444-4449
Scruton, R. (1982) *Kant*. Oxford: Oxford University Press
Tart, C. T. (Ed.) (1969) *Altered States of Consciousness: A Book of Readings*. New York: John Wiley & Sons
Tart, C. T. (1975) *States of Consciousness* E.P. Dutton & Co., New York
Varela, F. J., J-P. Lachaux, E. Rodriguez, J. Martinerie (2001) 'The brain-web: phase synchronization and large-scale integration.' National Review of Neuroscience, pp. 229-239.
Wexler, B.E. (2006). *Brain and Culture: Neurobiology, Ideology, and Social Change.* Cambridge, Mass: The MIT Press.
What happens in the Brain as it loses Consciousness? 13 June, 2011. http://www.sciencedaily.com/releases/2011/06/110610194526.htm
Zeki, S. (1980) 'The representation of colours in the cerebral cortex.' *Nature* 284, pp 412-418
Zeki, S. (1993) *A Vision of the Brain*. Oxford: Basil Blackwell
Zeki, S. (1999) *Inner Vision: An Exploration of Art and the Brain*, Oxford and New York: Oxford University Press
Zeki, S (2002) *Neural Concept Formation and Art: Dante, Michelangelo, Wagner*. *Journal of Consciousness Studies: controversies in science and the humanities* 9, pp. 53-76

About the Author

Dr. Marius Paul O'Shea
Painter, draughtsman, photographer, writer. Works in public and private collections in the UK, USA, Singapore, and Australia. Born in Northern Ireland, UK. Educated in Belfast (DipAD), London (BA Hons), Sheffield (MEd), Leicester (MA)[UK], and Newcastle (PhD) [NSW, Australia]. Associate Professor of Art History, American University of Ras Al Khaimah, UAE. Has lived and worked in the UK, Singapore, Australia, and UAE. Interests: Visual Art, Photography, Cinema, Philosophy, Martial Arts.