THE NATURE OF (IN) PERFECTION

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While digital technology can be considered postmodern and progressive from a technological viewpoint, it nevertheless raises issues that have a longer history evident in art and science and an awareness of these can help our understanding and engagement with the technology/medium.

The prefix post (as in postmodern) can sometimes suggest the redundancy of ideas that are surprisingly persistent despite the aesthetic changes that come with the new ideology/technology. Looks can be deceiving!

Precision, perfection and beauty have a persistent presence in art, science and religion and a contemporary presence in digital technology, which *carries* these attributes/attitudes. Although the desire for and promise of progress can lead to image content that appears to supersede the preceding idiom, digital technology has a metaphysical character that has more in common with a pre-modern sensibility.

Another characteristic of digital technology is the extent to which the supposed separation of physical form and content actually masks its inherent qualities. Global communication suggests a transcendence of analogue imaging media such as photography and there is a sense that digital images are *free* or have gone *beyond* the physical limitations of older media. A photograph has intrinsic visual qualities inherent in the medium whereas a digital image does not; it can appear like it wants, even masquerade as a photograph. Measured against the standards of older media digital media can be thought of as trans-media.

However, digital media do have qualities inherent in the technology, although these only become visible if the operator/artist chooses to acknowledge them. Digitisation primarily involves the management and manipulation of data, underpinned by rationalism, precision and a relationship to space. The organizing principle of digitisation is mathematical and the *appearance* or pictorial content of the image is of no consequence to it. Like science, the *method* can be divorced from the outcome and the medium is indifferent to the consequences of image content. Mathematics like science can imply objectivity, lead to a sense of detachment and the loss of responsibility that comes with this. There is an aesthetic *and* ethical quality to the rationalisation inherent in digitisation and the difference between the aesthetic character of the medium/technology and the aesthetic relating to form/content of the image is therefore a significant quality of digital media. Umberto Eco addresses the "aesthetics of number" in his book *Art and Beauty in the Middle Ages*;

".....since number, or order or proportion, is as much ontological as it is ethical and aesthetic. Aesthetic qualities predominate if one adopts a contemplative perspective on something, rather than an active role." [1]

There is a case then for an active engagement with digital media, one that does not accept that technological progress involves the redundancy of older ideas and media; a refusal to be duped by the prefix "post". This engagement needs to explore digital media through an acknowledgement that, like science it has a longer history and can't be neatly quarantined from an imperfect past.

Margaret Boden identifies three types of creativity in her book *Creativity and Art: Three Roads to Surprise* "each distinguished by the types of psychological process that are involved in generating the new idea." [2] These are;

- Combinational - unfamiliar combinations of familiar ideas.
- Exploratory - exploring (existing) conceptual spaces.
- Transformational - transforming the space.

We generally think for digital media in the transformational context and this fits with Boden's hypothesis where the new media has "impossibilist" characteristics in relation to the preceding media but "with both structural continuities and structural discontinuities between the transformed space and the impossible successor." [3]

Transformational creativity is seen as progressive and there is often an emphasis on this when we teach art history. The transformation from representational to more abstract art that occurred in the later part of the 19th and early 20th century is a good example as is the development of perspective during the Renaissance. An important point in both these instances is that although paintings may have *looked* radically different the actual medium itself didn't change, allowing the transformation to be easily positioned in an art historical context. However, Paul Crowther in his paper *Ontology and Aesthetics of Digital Art* suggests that traditional idioms had reached their limits at a formal or structural level in terms of the semantics of likeness and the spatial coherence of space such as through perspective;

   "The exhaustion of large-scale artistic innovation is due, rather, to the fact that the *structural* conventions and properties that constitute pictorial representation are unable to sustain further significant development at the structural level itself.*"* [4]

Although he acknowledges that abstract art offered new possibilities he suggests that it too has been "exhaustively developed in structural terms." [5] Crowther places an emphasis on the structural/formal innovation of media as opposed to the pictorial content and its connection to the individual artist. There is a danger here that technological innovation becomes the primary factor in the artistic relevance of work created with digital media and its attitude toward the "exhausted" work of the past. Digital media involve a transformation of both medium (technology) and content but I would suggest that there are also exploratory and combinational aspects in relation to other media and art history in general. The extent of the transformation may not be as radical as we think.

Perhaps the most significant and comparable transformative medium prior to digitisation was the development of photography where technology and image also combined. Indeed it has been suggested that photography's emphasis on representation was a contributing factor in the development of abstract art and photographic representation is still considered the "standard" means of depicting the world; so much so that digital media sometimes mimic this. Interestingly, there were stylistic similarities between early photographs and paintings, particularly in the poses for photographic portraiture where long exposures were possibly a factor. Photography too was initially seen as primarily a technical achievement, although the technology needs to be positioned in the context of the desire for a particular type of picture, that; "….was not a bastard left by science on the doorstep of art, but a legitimate child of the Western pictorial tradition." [6]

The archaeology of photography has been explored where the development of the medium is considered in the historical context of for example, the camera (camera obscura), optics, chemical processes, industrialisation and the psychology/history of pictorial representation. If photography was the defining medium of the modern then the characteristics of digital media can be considered definitive of the post-modern. In this context we could consider digital media as the development of the *contained* image and a relationship to light - a history of the image in a box, including; the camera obscura, photographic camera, television and computer. Yet there is a sense in which digital media are thought to have superceded history and Erkki Huhtamo and Jussi Parikka address this in the introduction to their recent book on media archaeology.

 "……..studies of new media often share a disregard for the past. The challenges posed by contemporary media culture are complex, but the past has been considered to have little to contribute toward their untangling. The new media have been treated as an all-encompassing and "timeless" realm that can be explained from within……..The past has been visited for facts… but .. their relationship to the observer and the temporal and ideological platform he or she occupies left unproblematized." [7]

Perhaps the most profound claims made in relation to digital media concern the materiality of information, the relationship to space and to the human body. At a basic level digitization is considered as a type of casting-off of the physical in that the number (code) involved is presented as if it were a concept, an idea. This dematerialized information can then be communicated independent of its physical carrier (its materiality) thus reconfiguring a relationship to space and time. In addition, the lack of perceived physicality allows for plasticity in relation to content and any media specific mode/style of representation. This desire to transcend the physical might have a religious impulse as Margaret Wertheim writes;

 "Here, contemporary dreams of cyberspace parallel the age-old Platonic desire to escape from the "cloddishness" of the body into a "transcendent" realm of disembodied perfection –the realm of the soul. Western culture carries this seed deep within it, inherited both from the Greeks and Judeo-Christianity." [8]

However, just as an idea requires embodiment in the human body or in an artefact in order to exist and be communicated (notwithstanding Plato's ideal forms), digital information requires a technological apparatus in order to exist. The basic element of digitisation is the expression of code electronically – the control and manipulation of electricity in the creation of light on a screen to display image or text. Computer code evolved as a means of *performing* electronically and the code is active because it relies on electricity to execute itself. The astounding achievement of digital media is in the precision/perfection required to actively control the billions of electrical signals needed to generate information/images.

We could also consider digital media in the context of the psychology of content, both in terms of the individual user/creator and in a collective sense. Indeed it has been suggested that cyberspace and the internet are a manifestation of our collective subconscious, complete with archetypes and gods - Mark Stefik explores this in the book, *Internet Dreams: Archetypes, Myths and Metaphors*. However, we can also consider the creation of the technology itself as a reflection of a collective culture or psychology, particularly now that the intrinsic (analogue) link between medium and message, between physical form and content has been broken for the sake of manipulation. Does precision stem from the desire for perfection and the feeling that we can/must escape the physical and might this attitude have a history that would better help us to understand digital media? Also, would this approach help position digital art in a broader historical context and more importantly, would it relieve digital artists of the pressure and iso-

lation of working in an "all-encompassing and timeless realm that can be explained from within." An interesting point here is the extent to which the quality of work produced by my undergraduate students has not "improved" over the past ten or fifteen years despite the significant improvement in the performance of the technology they are using. Their artwork isn't any "better" despite the increased sophistication of the tool and I wonder if technological development places a pressure on the art/artist to also be transformative.

The computer code underpinning digitisation is actually the means by which we interact with the machines we build to control. This code needs to be rational and unambiguous and all inputs or content needs to be expressed in a mathematical/electrical form in order to be processed. Because there are no intrinsic visual characteristics to this reduction the machine/process is ambivalent about the image content. Digitisation intervenes in the relationship between the image and the object and it breaks the connection between images and objects such as exists with photography, where the medium receives and accepts something external to its self. This breaking of representation in the image-object relationship is significant in that the visual integrity of the source (the object) and its part in a dialogue with a component of an external (fixed?) reality is preplaced by the monologue of the virtual in the man-made machine. There is a kind of *turning away* from the external, from the representation of a fixed reality; a turning to the screen. The passive objectivity of the camera is replaced by the active and subjective character of the computer-based image, which is readily available for manipulation.

There is an interesting correlation here with debates regarding images prior to the Enlightenment when intromission and extramission were competing theories for the source of meaning. David C. Lindberg discusses this at length in his book, *Theories of Vision: from Al-Kindi to Kepler* where he explores vision, optics and light. In broad terms intromission accepted that images were external and received by the viewer whereas extramission involved the subject projecting light in order to produce the image. Although proponents of the theories did not approach the problem in the context of our current understanding of psychology, nevertheless there is a correlation between meaning that is fixed and external and that which is subjective and generated by the viewer. Images and light are problematic because we conceive of them as somehow being on the border of the physical/non-physical interface; metaphysical mediators if you like. Lucretius pondered this problem in the first century B.C. when he conceived of films emanating from the object as physical entities.

"Finally, Lucretius (ca. 55 B.C.) attempts to clarify the nature of the films (which he calls simularcra) coming from the visual object, through several comparisons: "among visible things many throw off bodies, sometimes loosely diffused abroad, as wood throws off smoke and fire heat..".. Vision, then, is reduced to a species of touch …If this intromission theory leaves many unanswered questions…it nevertheless answers the principal question: namely, the soul of the observer and the visible object make contact." [9]

Because Lucretius was an atomist he believed that sensation must be caused by physical contact and that all matter consists of small particles called atoms, which can be considered analogous of the atoms later discovered by scientists. However, these atoms coalesce to "form coherent units-films or simularcra" [10] so that the film has an integrity/continuity without gaps between the atoms – much like comparing the continuity of a photograph with the pixilation of a digital image. However, the photographic image is connected with optics and perspective and indeed the "laws" of perspective apply to photographs because the light rays from the object pass through a single point in the lens. Both photogra-

phy and perspective presuppose that light rays, travelling in straight lines connect the image and the object or the eye and the object. This presupposes a world of multiple point sources, a concept that mathematically fragments coherence. Lindberg addresses this;

 "…before Alhazen, the intromission theory *was* the theory of coherent images or forms. Alhazen was the first to utilize the analysis of the visible object into point sources, each of which sent forth its ray, as the basis of an intromission theory of vision. If such a step seems trivial today, that is because we are Alhazen's intellectual progeny." [11]

This concept of fragmenting the world into multiple geometric points involves a similar attitude to its fragmentation into multiple pixels for digitisation. Both seek to establish a reductive mathematical relationship based on rational data and although the digital data results from this process, its performative character and plasticity in relation to image content allows it to mask its rationalism. Digital media maintain their technical/rational character despite image content even when they seek to mimic other media such as painting for example. The benefit of this technical interaction with the world is control, a characteristic addressed by Michael Eldred in his paper *Digital Being, the Real Continuum, the Rational and the Irrational*;

 "The unique hallmark of specifically digital technology is that it is binarily encoded productive understanding of a segment of the world *outsourced* to an electromagnetic medium to control a machine." [12]

The segmentation of reality is further discussed by Eldred specifically in relation to the abstraction of time and he concludes that there is an ontological limit to the *calculation* of the continuum of reality; "Physical reality, even on a banal macroscopic level, therefore always exceeds what can be logically, mathematically, rationally calculated."[13] This *calculation* of reality has a long history, for example in the fifth century B.C. Philolaos stated that "All things that are known have a number: without number it would not be possible to know or think anything whatsoever." [14]

While we might conceive of an authentic reality (the original) and an inauthentic representation of it (the image), our experience of the image/technology is real and using a computer is *part of* reality even if we critique the ontology of the technology as somehow being a surrogate for our relationship to the world; the relationship between mind and nature.

Eldred states that there is no way to discuss digital being without reference to Heidegger and perhaps in this context it is worth considering Heidegger's three types of representation; "bodily presence", "empty intending" and the "perception of a picture". These categories presuppose an *original* object either actually present (bodily presence), dreamed/ imagined (empty intending) or physically depicted (perception of a picture). The sculptures of Greek gods referred to earlier do not fit easily into this classification as the original is imagined – we have "bodily presence" in the form of the actual sculpture of something that began as "empty intending". However, a photograph of the sculpture would involve "perception of a picture" of something with a "bodily presence" and we would be once-removed from the original "empty intending." But, what would a digital scan of the photograph be?

A digital image, which may be virtual or representative of something external to the computer, does not fit with a system that invests the original with authority in relation to meaning. A computer-generated fractal for example may have no physical correlation beyond the computer and the image on the screen

would thus involve "perception of a picture" of something that may have begun close to "empty intending" but needed the processing power of the computer to be realized as an image – an outsourcing of imagination perhaps!

However, the fractal image on the screen must have a "bodily presence" to be visible to another viewer; otherwise it would be "empty intending." Its "bodily presence" is something not intrinsically linked to the image as the millions of pixels or points of light can be reconfigured to represent anything. Perhaps this causes us to feel there is an inauthentic character to the digital image, but this would only be the case if we seek a link to something authentic (the original), whereas the digital image doesn't necessarily do this; it has a disregard for the original.

While digital technology can be considered postmodern and progressive from a technological viewpoint, it nevertheless raises issues that have a longer history and an awareness of these can help in our understanding and engagement with the technology/medium. To quote, Margaret Wertheim again from *The Medieval Return of Cyberspace*; "Through the medium of the computer a loophole has been found in the materialist metaphysics that has dominated Western culture for the past three centuries…" [15]

Perhaps I should leave the last word to Goethe who comments on reason and reality; "They were rational, clever, lively people who saw very well that the sum of our existence, divided by reason, never goes evenly, but always leaves the remainder of a queer fraction." [16] Of course Goethe means queer in the sense of odd or strange and my dictionary also lists queer as meaning; dubious, shady, giddy, slightly mad and counterfeit, which is possibly why I enjoy digital media so much!

References and Notes:

1. Umberto Eco, *Art and Beauty in the Middle Ages* (New Haver, CT: Yale University Press, 1986), 30.
2. Margaret Boden, *Creativity and Art: Three Roads to Surprise* (Oxford: Oxford University Press, 2010), 73.
3. Ibid., 74.
4. Paul Crowther, "Ontology and Aesthetics of Digital Art," in *The Journal of Aesthetics and Art Criticism* 66, no. 2 (2008): 161.
5. Ibid., 191.
6. Peter Galassi, *Before Photography: Painting and the Invention of the Photograph* (New York: The Museum of Modern Art, 1981), 12.
7. Erkki Huhtamo and Jussi Parikka, "Introduction," in *Media Archaeology: Approaches, Applications and Implications*, ed. Erkki Huhtamo (Berkeley, CA: University of California Press, 2011), 1.
8. Margaret Wertheim, "The Medieval Return of Cyberspace," in *The Virtual Dimension: Architecture, Representation, and Crash Culture*, ed. John Beckman (New York: Princeton Architectural Press, 1998), 55.
9. David C Lindberg, *Theories of Vision from Al-Kindi to Kepler* (Chicago, IL: University of Chicago Press, 1976), 3.
10. Ibid., 58
11. Ibid., 60
12. Michael Eldred, "Digital Being, the Real Continuum, the Rational and the Irrational," Artefact.org, http://www.arte-fact.org/untpltcl/dgtlcntm.html (accessed June 9, 2011).
13. Ibid.
14. Umberto Eco, *Art and Beauty in the Middle Ages* (New Haver, CT: Yale University Press, 1986), 62.
15. Margaret Wertheim, "The Medieval Return of Cyberspace," in *The Virtual Dimension: Architecture, Representation, and Crash Culture,* ed. John Beckman (New York: Princeton Architectural Press, 1998), 47.
16. Quoted in Michael Eldred, "Digital Being, the Real Continuum, the Rational and the Irrational," Artefact.org, http://www.arte-fact.org/untpltcl/dgtlcntm.html (accessed June 9, 2011).