

them (directly) they just become a copy of something' (from a conversation with artist, 27/05/09).

In *Lot's Wife*, for example, areas of passive colour and the central figure have been replaced by much more descriptive scribbled lines and tones. There are more props to help the narrative, and a tension to the postures of the players in the scene that changes the dynamic of the narrative completely.

Hanselaar's prints are made on intimately small etching plates, in contrast with the very large canvases that she usually uses. She says that these are worked on in tandem in the evenings at home. These plates are often reworked and re-etched five to ten times in a fluid, gestural frenzy. She is less precious about the printmaking medium, for example, rarely timing things in the acid, and applying stop out with a loose touch, confident that she will be able to scrape back and force out an image which she will be happy with at the end. Later, some of the techniques gained from making the etchings are used in her painted works.

In this regard, scenes of lightness become quickly etched into scenes with dramatic dark rich blacks. Bodies themselves develop a soft fuzziness from the fact that the plate is often reworked, but the old lines and tones rarely disappear completely - so the traces of part stories on the skin appear like haired scars or severed attachments. The monsters, birds and beasts develop a richness of tone in their dark modelling and velvety shade from the etching and aquatint process.

In the process of researching this paper, I have been constantly entertained and on the edge of being overwhelmed by the wealth of ideas and imagery relating to the representation of animal in print. Looking at Marcelle Hanselaar's prints has allowed me to reflect upon the rich symbolism and metaphor that the presence of an animal brings to an image, as well as appreciate the way in which she approaches her etching plates and other aspects of her broad range of techniques. As an artist and printmaker, I appreciate the primal language of the beast is a very powerful one, and hope to take the fruits of my research into my future artworks.

References

- Werness, Hope B. (2003). *Encyclopedia of Animal Symbolism in Art*. New York: Continuum.
- King, Helen. <http://www.encyclopedia.com/doc/1O128-metamorphosis.html>
- Kemp, Martin. (2007). *The Human Animal in Western Art and Science*, University of Chicago Press.
- Pinkola-Estes, Clarissa. (1995). *Women who run with Wolves*. New York: Ballantine.
- Ussher, Jane. (1997). *Fantasies of Femininity*. London: Penguin.

Defining Order: Print, Representational Taxonomies and Encyclopaedic Knowledge Systems

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With reference to my exhibition, *Subtle Thresholds*, at the South African Museum, this paper will attempt to identify how shifts in the visual geometry of knowledge systems alter the perception and interpretation of that information, and how schematics and diagrams perpetuate ideas about the world. The paper identifies how linear modes of representation and analogy emerged in book form and found their way into museum display, and gives a brief overview of museum taxonomy. It identifies the recent shift in evolutionary biology from the tree of life as a visual analogy to the web of life, and questions how this may provide an alternative way of presenting information. It discusses how the exhibition attempts to invert binary structures inherent both in the languages of print and biological and museological schema.

It is 4.30 pm on a wet Thursday afternoon. A harassed tour guide shuffles her solitary charge past whales and penquins, past plaster mammal-like reptiles from the Karoo, past Rock Art and into the gallery of 'indigenous culture' where the fractured gestures of three Naro women stand forever encased.

This is the South African Museum, Cape Town, where I stand surrounded by an exhibition under construction: electron microscope prints of animal excrement, viral light boxes constructed from pharmacological paraphernalia, steel bacterial cut-outs, 512 silhouetted hands, a bandaged capybara and giraffe head, a fox in an oxygen mask and chalk texts describing, amongst other things, Linnaeus's consultation by a woman with three live frogs in her stomach. 'What does this mean and how does it fit in?' asks the disgruntled tour guide, as much vexed by the thought of having to explain it to countless visitors as having to unpack it herself. And so I find myself starting to explain representational taxonomies and resort to the essential version - 'This is an exhibition about infectious disease and the politics of imaging'.

Having been resident on the floor for a number of weeks, I gleaned a sense of the expectation of the average museum visitor. I was intrigued as to how the leap between seals and San healing ceremonies seemed so easily reconciled in most visitors' minds, and how the fit of my exhibition invariably posed questions. In many ways this reinforced what I already believed to be true: that the visual structure within which images and objects are presented constructs their meaning, and that the close relationship between label and exhibit is anticipated within a museum context. A seal with a label, informing the viewer of its 'sealness' is reassuring, as the viewer believes they know what and how the seal

means. Any disruption of this expectation creates confusion as it contradicts the passivity of the natural history viewer's experience.

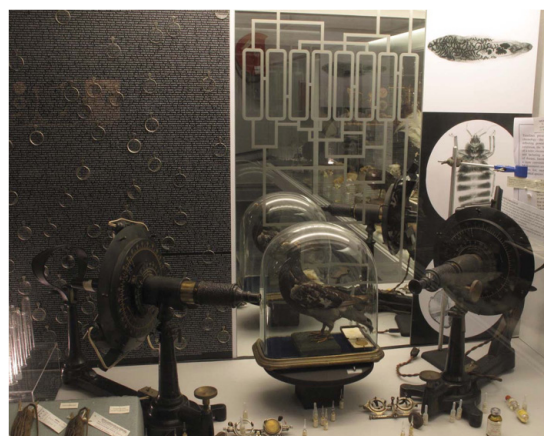
Within a populous still affected by the residue of racial classifications, a taxonomic mentality persists and the expectation is that museums should meet discipline-bound divisions. Display within the South African Museum is largely structured along oppositional lines that echo a Darwinian evolutionary tree. My contention is that a shift of the conceptual and schematic model may allow for a shift in the nature of display and dissemination of content. As a printmaker, I have found that my understanding of the world and my approach to the construction of exhibitions is mediated by the underlying tenets of the discipline of printmaking itself. Prints are rarely independent objects and generally form part of a series, sequence, edition or narrative, and thus I am drawn to encyclopaedic projects wherein I attempt to construct internal ordering systems within complex visual material and lists of information. My visual research has also focused on bio-medical representation and curation, and this paper reflects these two areas.

Subtle Thresholds is an exhibition of prints, objects and collections, primarily concerned with the visual representation of infectious disease and specifically how the epistemological constructions of 'difference' and 'analogy' have been used to mediate the cultural understanding of pathology. With reference to this exhibition, this paper will attempt to identify how shifts in the visual geometry of knowledge systems may alter the perception and interpretation of that information, and how schematic analogies perpetuate ideas about the world. The project reflects on the politics of taxonomies as well as their embedded history within museum collection and display.

Schematics provide a reliable, codified, if reductive, means of knowledge dissemination, often responsible for the dominant perception of that knowledge over time. The close alliance between schematics and ideology is evidenced in the Medieval *Imago Mundi*, which sought to represent a cosmology of the known world (the Creation and the created) within a geometric order: arranged in concentric circles and in numerical clusters of symbolic significance¹. Through brilliant, illuminated images, information about a closed, finite theology was communicated to those to whom the written word was inaccessible. The conceptual significance of light as a vehicle of truth and spiritual 'enlightenment' was intrinsically married to the ideological position of the knowledge that this system chose to impart.

The symmetrical geometry of the *Imago Mundi* is a development of an early Christian ordering system and worldview - the *Scala naturae* - in which the tree was a genealogical analogue. Pre-empting Darwin's tree of life, *Scala naturae* presented a divine order of nature, dividing animals and

divine beings along 'evolutionary' lines of ascent. This presented an early system of binary taxonomy wherein belief was built on the oppositional states of order and chaos; heaven and hell; human and animal (Weigel). Early museums were informed both by the legacy of the *Imago Mundi* - an encyclopaedic system of human knowledge - and by a pansophic philosophy, the idea of a comprehensive knowledge, evidenced through collections, and linking the natural, human and divine worlds.



Subtle Thresholds, Fritha Langerman: detail of display cabinet with tree schema, carrier pigeon and ophthalmometers.

Ken Arnold (2006, p.187-203) in his overview of early museums in England, points out that 17th century education reform, which recognised the ambiguity of language and called for a pedagogy based on a system of objects, was at the heart of museum philosophy of the time. A language of 'things' rather than 'words' demanded a classificatory order and grammatology of objects - the emergence of display - and simultaneously required a new system of naming by which things could be unambiguously understood. The visual was thus held above the textual as a means of knowing. Within 'houses of learning' objects were arranged to make visual arguments, and meaning was entirely contingent upon the perceived relationships between them. In early 17th century museums, a sense of order more often referred to neat, clean displays rather than display that related in any way to a precise taxonomic method (Arnold, p.211). Objects were arranged in relation to narratives, and according to personal, contextual or circumstantial sets of connections. Only in the late 17th century was there a move towards a system of order based on observation and physical evidence of objects - comparative binaries of observable differences and similarities (MacGregor, 2007, p.121). Objects were contextualised in comparison to others and difference became the centre of taxonomy and classification.

18th century museums continued an oppositional organising principle, and objects were seen to receive meaning from their relationship to the rest of the collection rather

than from their own intrinsic value (Arnold, 2006, p.235). Objects were arranged according to animal, mineral or vegetable, as is reiterated in the Cape Town Gazette 1825: 'The establishment ...under the title of the South African Museum, for the reception and classification of the various objects of the Animal, Vegetable and Mineral Kingdoms which are found in South Africa' (Cape Town Gazette, 1825).

This system of ordering reflects the structure of Diderot and d'Alembert's *Encyclopédie* (1751-66) that aimed to classify and categorise everything about the known world. The structure of the printed publication had obvious impact on the manner in which information was understood: its contents organised according to tree schema of a 'system of human knowledge', broken into three branches: Memory (history), Reason (philosophy) and Imagination (poetry). The scope of the project allowed for infinite complexity and philosophical reasoning and the structure of the book form also introduced the notion of the index and cross-referencing. For the first time, different sets of ideas could be viewed comparatively, and in doing so, the reader was empowered within the act of knowledge creation. This relative freedom to build associative relationships was not as easily realised by the restrictions of museum display.

Synchronous with the publication of the *Encyclopédie* was Linnaeus's *Systema Naturae* (1735-67). In the museum, the realisation of this intensive classificatory, ordering and labelling project took the form of serialised cases, which were able to physically manifest taxonomic knowledge. Rational, unequivocal labels bound objects to provenance and attribution and catalogues of museum collections provided an index to objects in the field. The systematic ordering of object types provided a symmetrical reassurance and foresaw the Darwinian tree of life with its branching structure.

Diderot's encyclopaedic ordering system was replaced in the 19th century by an alphabetical index – thematic relationships were disassembled in favour of a system that was predictable and non-hierarchical. There was a parallel move towards themed museums, bound by discrete disciplines in which categories of knowledge could be intricately ordered. Arnold (2006, p.246) notes that contemporary museum practice has been to make systems of classification self-consciously visible, and in so doing, question the authority of these structures. There has also been a move towards integrating those polar divisions between museums of science and culture, in a post Snowdianⁱⁱ acceptance that the two cultures mutually inform one another, and it is in this context that my exhibition evolves.

The exhibition uses the languages of print and curation to examine the representational taxonomies of infectious disease. The South African Museum, with its co-habiting social and natural history exhibits, is essentially a museum that talks of the culture of science. Situated in a gallery wedged

between social history and natural history displays, the exhibition aims to create a conceptual bridge between these two areas by presenting a complex visual network of the inter-relationships between zoological, human and microbial worlds. It makes reference to Linnaean taxonomy and cladisticsⁱⁱⁱ, using various curatorial strategies in a lattice of conceptual and visual cross-referencing to undermine this oppositional understanding of species. As a result of cultural and linguistic description and codification, humans are understood as a hermetic species, with defined boundaries. Infectious disease offers a meeting point between species, as disease is not something discrete and of itself, but dependent on a relationship between a host and an organism in order to exist. This is evidence of an ongoing relationship of inter-speciation.

The culture of bio-medical and biological science is, in many ways, one of reading the visual. In an attempt to communicate bodies of knowledge, science^{iv} has often had to rely on analogy to carry complex ideas - and it is these visual analogies that hold persuasive power, occupying a central role in the formation of public perception. To use analogy as a means of representation simultaneously accepts its corollary, difference, and it is an unravelling of this binary system of knowledge construction that is of interest to this exhibition. One of the most pervasive analogies is that of the 'tree of life', representing both a linear view of species and one of implied ascendance. Human behaviour is a function of the inheritance of these Linnaean and Darwinian divisions and classification systems that have allowed for the separation into racial categories and types.

The topology of the tree provides a stability and reassurance. The character of organisms (objects) as singular, reliable entities means that they may be compared and organised with predictable outcomes. The oppositional nature of taxonomy, built on similarities and difference is currently believed to be contrary to speciation, which is both relational and contingent on space and time (Zimmer, 2008, p.49), and in addition to this, recent developments in bio-informatics, and the rate at which genomes can be decoded, have allowed for complex interspecies comparisons to be made. In the past few years, the results of these comparisons have caused biologists to question previous evolutionary, phylogenetic models, particularly the iconography of the Darwinian tree (Dagan, 2006, p.118). Lateral or horizontal gene transfer (LGT/HGT) observed particularly in microbes, suggests that species transfer genetic material between each other fairly regularly and that this is a fundamentally non-branching process, undermining the vertical de/ascent, imagined by Darwin. HGT allows organisms to carry simultaneous attributions: a partial snake genome has been located within the cow genome, presumably transferred by the action of viruses (Lawson, 2009, p.38). The dual ontology of a species – its chimerical presence – undermines the belief that spe-

cies evolve determinately from a single point, and the suggestion that a more appropriate visual model for evolution may be an interrelated network or web has implications for the interpretation of visual artefacts and visual knowledge bases.

In cladistic arboreal iconography, each branch or node has two finite objects, whereas in web or net iconography, objects are fluid, subject to reattribution and change. The reading of biomedical visual and material culture may be subjected to the same revisions. In doing so, chains of reference are unravelled and objects and images become ambiguous and multi-referential. This presents a potential major recalibration in the construction of knowledge systems. The primary question arising from this is, what implication does this destabilising of linear hierarchies have for the way in which visual information is interpreted and how can a form of curation that breaks down/denies precise readings be used as a strategy to test the 'horizontal transfer' of information?

The current shift in bio-evolutionary visual models towards non-fixity, mirrors the change in philosophical positions over the past few decades. Contemporary discourse recognises that there are at least two approaches to the production of knowledge: emergent, organic systems in which what constitutes knowledge and its production is both contingent and fluid; and the more conservative, Enlightenment perspective which accepts a coherent, objective world, presented within a single, if vast, collection. The legacy of this enlightenment thinking is inextricably bound to print as both a commercial and creative practice, as it suggests a pattern of thought that is based on binary referents – of an archive and its text, of object and image and of image and text. That print is always bound to an 'other' – a state outside of itself – positions it as a discipline of oppositions: matrix and impression, original and reproduction, negative and positive, oil and water, depth and surface. As such it has its own binary taxonomy and is historically framed by Enlightenment symmetrical order.

The challenge within this exhibition has been to destabilise these binary associations within print so as to use it as a medium to present an exploded view of bioscience, whereby meanings between objects can be reattributed and, through visual hyperlinks, the interconnectivity between organisms, world-views, mythologies exposed. Working against a linear reading, it suggests a slippage or seepage in the boundaries between bodies of knowledge. In acknowledging the history of the relationships between images and text and museums and text, this project attempts to disaggregate object and image from text and label, allowing for a layered reading of the material. The exhibition establishes its own internal system of organisation. It makes use of a number of elements, which exist both in series and find analogues in other parts

of the exhibition. Formal repetition, the use of both positive and negative shapes, material pairings and the use of the cabinets as an index to the wall and floor pieces, make the project self-referential.

In order to disrupt the stigma and fear typically associated with disease, it co-opts two curatorial strategies: wonder and layering. The light boxes and complex visual lattice defer to Stephen Greenblatt's well-quoted notion of wonder or the 'power of the displayed object to stop the viewer in his or her tracks, to convey an arresting sense of uniqueness, to evoke an exalted attention' (Greenblatt, 1991, p.49). The intention is that using this language as the interface between the viewer and the representation of disease provides an inviting point of access that promotes further discussion or investigation.



Subtle Thresholds, Fritha Langerman: wall detail with SEM image of animal excrement, 'concordance ruler', chalk texts, shadow painting, laser cut steel 'tuberculosis, coordinate plate and mythological index card.

There are three methods of layering. Firstly, there is a literal layering of images and objects. The walls contain eight discreet sets of images: shadow painting, a schematic diagram, chalk texts, Scanning Electron Microscope images of animal faeces in quatrefoil and trefoil frames, rusted and chromed laser cut discs based of bacterial form, a framed inventory of mythical diseases caught from animals, a seventy metre timeline and a set of GPS co-ordinates of disease outbreaks over time. Secondly, there is a thematic layering that picks up different stories in varied forms. As example, Darwin's diary entry of 1835 describes in chalk the moment of being bitten by the beetle known to cause Chagas disease 'most disgusting to feel the soft wingless insects, about an inch long, crawling over one's body' (Darwin, 1835). This date is picked up in a co-ordinate plate: 34° 45' S 59° 05' near Mendoza, Argentina, where the disease was contracted and this is further sited in the cabinets – a printed board attesting to Darwin's diary of health a few years prior to writing *Origin of the Species* (1859); a mirror inside a cabinet, sand-

blasted with a diagrammatic form of his tree of life; and in another cabinet a strip of old chemistry bottles are labelled with causes of death of fifteen naturalists – Darwin being one. Thirdly, there is a layering in the means through or by which reading occurs: reading through discreet disciplines; the material through which reading takes place (Chalk texts reflect the personal, mythical and philosophical reading of the diseased body); and limited access to text. The scale and height of the framed myths make them unreadable, the explanatory texts in the cabinets thwart analysis as they lose their numbering system and direct references and cabinet specimens are only labelled with the diseases that they carry.



Subtle Thresholds, Fritha Langerman: 512 laser cut hands derived from images of healing between 2500BC and 2000AD

A system of dualisms is co-opted in that the gallery is simultaneously read as a cathedral and as a laboratory. The angelic wings are constructed from silhouettes of historical art and popular images of healer's hands. The shape formally references a schematic tree, while it thematically refers to the religious binaries of damnation and salvation associated with disease and healing. This work is paired with the 'ex-voto plague altar', which uses the negative form of the hands as a screen, protecting six bandaged, taxidermied animals (surrogate plague saints) from the viewer. Plague doctor silhouettes run across the top of the screen, making further connections to the bird as a prevalent and ambiguous metaphor within the visual iconography of disease. Laser cut discs exist in two states: chromed and rusted; a timeline in the form of a printed ruler circumscribes the entire exhibition area and includes a biblical concordance of disease, literally running counter to a more conventional microbial history. The ruler measurements are indicated by a chordate species list, incrementally divided by microbial species in red; and cabinets 'contaminated' by language are tethered to agents of sterilisation.

The print in book form has been instrumental in the perpetuation of linear models of knowing the world. Powerful mnemonics are activated when the viewer is confronted with new visual evidence - and the default position is to rely on those established, learned patterns. Accepting this process, particularly within the museum environment that comes with expectations, the intention has been to create a system that demands active viewing, dislodging those strong visual prescriptors. The project forms its own index or lexicon, and texts and images within the cabinets cross-reference and provide clues to other elements. By actively engaging the viewer, forcing them to navigate and read the exhibition in a complex way, it is hoped that the structure of the exhibition undermines linear knowledge systems and a particular history of seeing, encouraging viewers to become producers of meaning.

Endnotes

ⁱ God in the centre surrounded by 4 Evangelists, 12 Apostles, saints and martyrs or as in the case of the Lausanne window, God surrounded by matter, time, the elements, Paradise and the winds.

ⁱⁱ CP Snow delivered *The Two Cultures and the Scientific Revolution* lecture in 1959, wherein he argued that the breakdown of communication between the 'two cultures' of modern society - the sciences and the humanities - had a detrimental affect on the intellectual climate.

ⁱⁱⁱ Cladistics is a system of biological systematics which uses common ancestry as a taxonomic system. In referring to evolutionary relationships, most cladograms rely on the tree form as schema.

^{iv} The term is used in its broadest sense, acknowledging that all branches of science have their own, specific discourses, methodologies and cultures.

References

- Arnold, K. (2006). *Cabinets for the curious: looking back at early English museums*. Ashgate: Aldershot.
- Dagan, T; Martin, W. (2006). The tree of one percent. *Genome Biology*. Issue 7, p 118.
- Greenblatt, S. (1991). *Learning to Curse: essays in modern culture*. New York: Routledge.
- Lawton, G. (2009). Uprooting Darwin's Tree. *New Scientist*, January 2009. p 34 - 39.
- MacGregor, A. (2007). *Curiosity and Enlightenment*. New Haven: Yale University Press.
- Pearce, S. (1994). *Interpreting objects and collections*. London: Routledge.
- Weigel, S. *Genealogy – On the iconography and rhetorics of an epistemological topos*. [Online]. Available from: <http://www.educ.fc.ul.pt/hyper/resources/sweigel> [Accessed 09-10-2008]
- Zimmer, C. (2008). What is a Species? *Scientific American*. June 2008. p 48 - 55.